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Neck Injuries & Postrehabilitation

INTRODUCTION:

Cervical spine—or neck pains—are symptoms, not diagnoses. Common causes of injury to the neck include "whiplash" and overuse syndromes. Regardless of the site of injury, the neck tends to respond in a similar manner—the musculature of the cervical and shoulder region goes into spasm in an attempt to splint or restrict the movement of the injured region. There are several layers of muscles extending across different levels of the vertebral bodies. The smallest muscles run between 1 or 2 different vertebrae; the largest can span from the base of the skull to midway down the back. Any combination of these muscles can go into spasm along with the muscles of the neck proper. Soft tissue contractures may develop if this spasm is allowed to persist and pain can then become a chronic problem. Headaches may be an accompaniment to either type of neck injury, but tend to dissipate as muscle spasms resolve and range of motion improves.

An acute injury, commonly called "whiplash," usually involves a hyperextension-flexion movement. This is a sudden snapping of the head backward and then forward, as occurs when an automobile is rear-ended. Whiplash syndrome is not an accepted diagnosis by many health care providers, primarily because it is nonspecific. A whiplash injury may involve a sprain of the ligaments, a strain of the cervical muscles, or a combination of the two. Since the chin can hit the chest wall, the forward flexion component is usually much less than the backward extension movement, as there is no body part to check this movement. Although any of the cervical musculature can be involved, the muscle usually strained is called the sternocleidomastoid. If you try to push your head sideways when applying resistance to your chin, the strap-like muscle that becomes prominent on the side opposite your hand is the sternocleidomastoid.

Like other spine conditions, neck injuries often require a period of relative rest, possibly with medications prescribed by the physician. Muscle splinting almost always occurs to some degree after a whiplash injury, but many times more harm is done by individuals who persist in wearing a cervical collar for far longer than necessary. Whiplash injuries are often considerably overrated and individuals tend to consider a soft cervical collar almost a required treatment. This is an example of inappropriate therapies possibly causing greater damage by allowing a minor spasm to develop into a more significant injury. In reality, a soft collar does little to immobilize the neck, providing its greatest limitation to forward flexion. Its primary purpose seems to be to provide stimulation to the skin to allow an individual to recognize when the neck may be moving to the extreme ranges of motion. Wearing a collar during the day for the first day or two after injury may be warranted, but it is rare that even a severe whiplash injury should require collar use for more than five days. The neck needs to be mobile, not restricted. Longer use only sets the stage for contractures and muscle weakness secondary to disuse. After the first two days the collar should be removed, at least for part of the day, with rapidly increasing periods of collar-free time. During the ensuing one to two weeks the collar may be used during driving. This helps prevent sudden neck movements as when looking to turn.

A herniated disc is treated very much like a whiplash syndrome. The most common levels of herniation involve the disc between C5 and C6, pinching the C6 nerve root, and the disc between C6 and C7, pinching the C7 nerve root. A soft collar may be worn for a short period of time, during which time gradual strengthening and stretching range of motion exercises are added. Modalities are added as required for pain relief. In about three to six months, cells in the body will remove the damaged portion of the disc.

Neck pain can also result from poor posture and long periods of immobility, usually termed “overuse syndrome.” Usually, there are additional complaints of shoulder pain and headaches. Treatment should include attempts to alleviate the cause of the discomfort. Most of the time, this involves rearranging a workstation or purchasing a more supportive chair. A lumbar cushion can provide support to maintain the natural curve of the low back, minimizing compensatory motions of the upper cervical spine. Massage, myofascial manipulation, and other therapies are designed to relieve muscle spasms and are very effective in this syndrome.

This book was designed to improve the ability of individuals to engage in self-directed exercise and therapy programs. Although they can be used in conjunction with a medical physician, physical therapist, personal trainer, or exercise physiologist, they are also adequate for self-study and application. The exercises are illustrated and described in visually appealing detail. They also provide a wide range of stretches and exercises that can be tailored to almost any condition, frequent or rare.

Self-care and rehabilitation are synonymous. Rehabilitation has more medical connotations, but someone does not need a medical condition to begin taking better care of themselves. Many of the conditions seen by physicians can be alleviated or substantially decreased through diligence with a home stretching or exercise program. This is becoming more important as people engage in jobs that overuse only a few muscles, for example, computer operators who maintain static positions of their neck, shoulder and arms for possibly an entire work day. Likewise, weekend warriors—whether they are doing battle on the ball field or the front lawn—frequently suffer from pain generated by strained muscles or ligaments that have been dormant the remaining six days of the week.

As with any exercise program, the input of a physician is necessary if an individual suffers from any type of chronic condition, e.g. heart disease, osteoporosis, diabetes, or chronic obstructive pulmonary disease. This is especially important if someone is just beginning a program after many years of sedentary activity. If there is any type of heart condition, you need to consult a physician before engaging in even the simplest of activities. Never underestimate the damage done by years of neglect or lack of activity.

The goal of this book, as with any approach to human health, is to promote a balance between the external environment and the internal body. Life is an interaction between mind, body and soul, that is shaped and influenced by job, family, and lifestyle. The latter has been sadly influenced to a large degree by television, time restraints, and commodities designed for a fast-paced existence. However, there is no short-cut to health. The good news is that very little time is required to maintain long term and cumulative gains. All that is needed is dedication, encouragement and the realization that everything that is done, no matter how minimal an effort, can add up to years of energy, relaxation, and improved health. I hope this book can contribute in some way to that path and outcome.

The programs described below are arranged in levels of intensity. A therapist will instruct you as to the intensity and frequency of each of the activities. Note any difficulties or unusual sensations you may experience for discussion with the therapist or physician. If you experience an exacerbation or flare-up of symptoms, decrease either the number of repetitions or the frequency of exercises per day until you can discuss the matter with the therapist or physician.

LEVEL 1: INITIAL RANGING

This activity is usually started immediately after an injury. The goal is simply to maintain as much range of motion as possible during the initial stages of healing so that muscle spasms are gently dissipated and contractures do not develop. The therapist may recommend the home modality techniques described at the end of this manual.

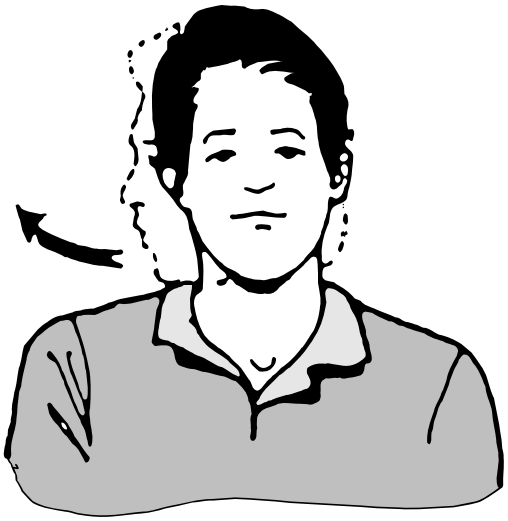
Since a whiplash injury involves a flexion-hyperextension movement (forward and backward bending), the first range of motion exercises prescribed by the therapist will primarily involve side bending and rotation. Flexion and extension exercises will be added later. This is different than the exercises prescribed in chronic overuse syndromes, in which movement in all directions is advocated.

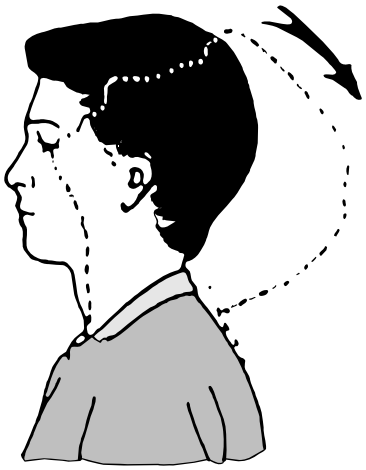
Exercise 1

Figure 1: ***Neck side bending.*** Keep your chin facing forward and tilt your head toward your shoulder, trying to touch your ear to the top of your shoulder. Do this for both your right and left side.

Exercise 2

Figure 2: ***Neck rotation.*** Turn your head and try to bring your chin over the top of your shoulder without bending your neck forward. You will most likely not be able to touch your chin to your shoulder; just rotate it as far as you can.



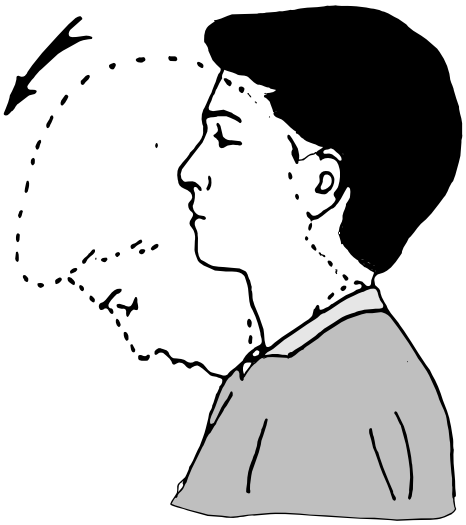


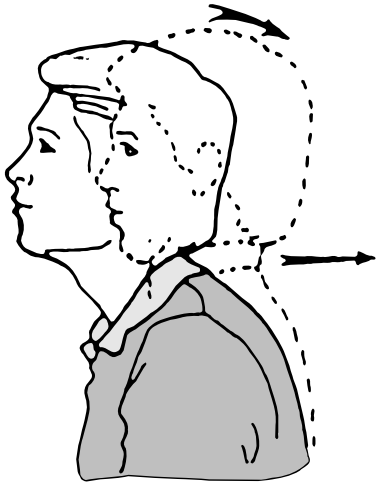
Exercise 3

Figure 3: ***Neck extension.*** Bend your head as far back as possible, then return to a neutral position. Do not bend forward.

Exercise 4

Figure 4: ***Neck flexion.*** Bend your head as far forward as possible, trying to touch your chin to your chest, then return to a neutral position. Do not bend backward.





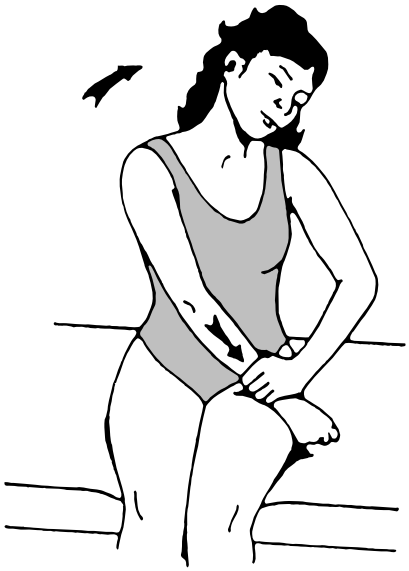
Exercise 5

Figure 5: ***Neck retraction.*** Keeping your chin and eyes level to the floor, bring your head straight back.

LEVEL II: STRETCHING

Stretches should be done before any type of strengthening activity. The therapist will state which of the following stretches are most helpful for your situation. A useful guide is termed the "rule of fives.'' Take five seconds to bring yourself into the stretch, hold the point of maximum stretch for five seconds, and then take five seconds to bring yourself out of the stretch. The body should be slowly pulled into a stretch. Avoid sudden jerky movements and be aware of shifting and possibly losing balance.

The stretches described below include muscles that also tend to be injured in both whiplash or overuse syndromes. It is important to follow the directions exactly as the position of other body parts helps determine which muscles are being stretched.

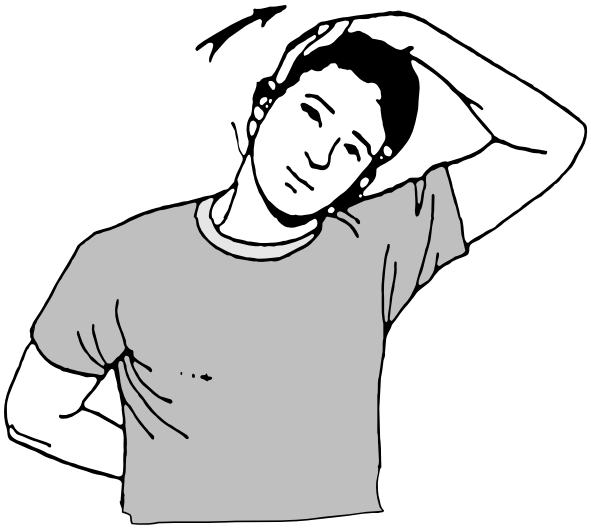


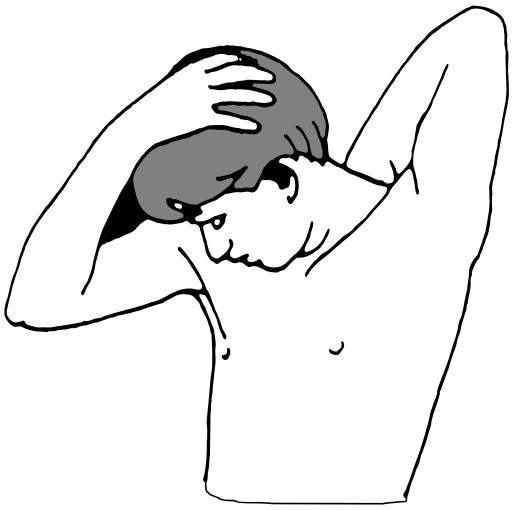
Exercise 6

Figure 6: ***General neck stretch.*** Pull your arm across the front of your body by grasping it above the wrist. When you have pulled as much as you can, try to touch your chin to the top of your shoulder on the side to which you have pulled your arm. Repeat this for the opposite side.

Exercise 7

Figure 7: ***Upper trapezius stretch.*** Place your hand in the center of your back, palm facing out. Grasp the side of your head and gently pull toward the opposite shoulder, trying to touch your ear to the top of your shoulder. Repeat this for the opposite side.





Exercise 8

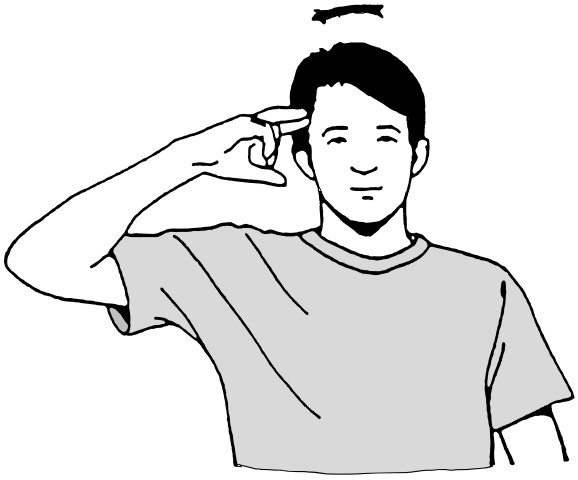
Figure 8: ***Levator scapulae stretch.*** Take your arm and reach behind your shoulder, placing your fingers over the shoulder blade of the same side. Do not reach over to the other shoulder blade. Try and point your elbow up into the air. Then, grasp the top of your head and stretch your head down and toward the opposite side; you should be looking toward the hip of this side. Repeat this for the opposite side.

Exercise 9

Figure 9: ***Corner stretch.*** Stand a short distance away from a corner in the position shown, with your hands at shoulder level. Be careful to not stand too far away or you may lose your balance or be too far away to effectively push yourself out; it is better to start close and then move out as needed. Note the ideal distance in your exercise log. Lean forward into the corner and you will feel a stretch between the top of your shoulder blades.

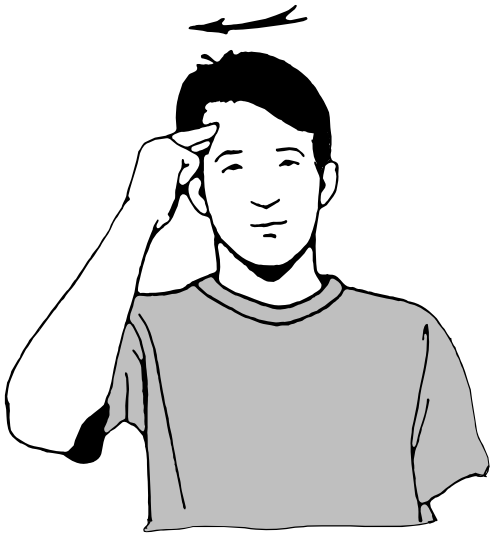
LEVEL III: STRENGTHENING EXERCISES

The next phase of the recovery program involves cervical isometrics. Before beginning a specific strengthening exercise, perform the corresponding stretch. Perform only the exercises noted by the therapist.



Exercise 10

Figure 10: ***Neck side bending isometrics.*** Refer to figure 1 for the appropriate pre-exercise stretch. Using your fingers or palm, press into your temple region and push against your hand. Keep your head in the midline and resist bending sideways. Repeat this for the opposite side.



Exercise 11

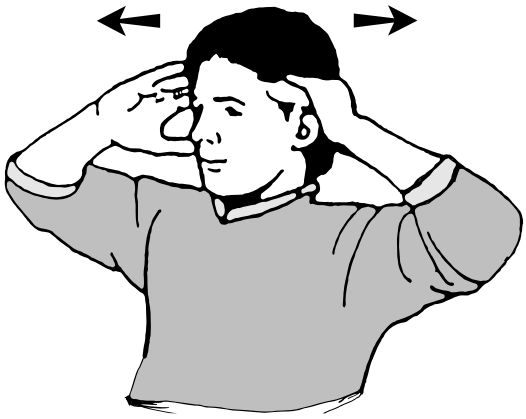
Figure 11: ***Neck rotation isometrics.*** Refer to figure 2 for the appropriate pre-exercise stretch. Using your fingers or palm, press into your temple region and rotate against your hand. Keep your head in the midline and resist turning your head sideways. Do this for the opposite side.

Exercise 12

Figure 12: ***Neck extension isometrics.*** Refer to figure 3 for the appropriate pre-exercise stretch. Using your fingers or palm, press into the back of your head and push against your hand. Keep your head in the midline and resist bending backwards.

Exercise 13

Figure 13: ***Neck flexion isometrics.*** Refer to figure 4 for the appropriate pre-exercise stretch. Using your fingers or palm, press into your temple region and push against your forehead. Keep your head in the midline and resist pushing forward.



Exercise 14

Figure 14: ***Alternating isometrics.*** Place your fingers or the palms of your hands on your temples. Alternate pushing against each hand. Your head should remain immobile.

Level IV: HOME MODALITIES

You may use heat or ice at home. You can purchase professional cold packs that are kept in a refrigerator. A package of frozen peas works just as effectively. In either case, place a damp towel between the cold pack and the skin. After you stretch or exercise, or for general pain relief, keep the cold pack on the affected area for 20 minutes, then off for 20 minutes. Repeat this for two to three sessions for a total of 60 minutes of cold treatment.

You can also fill small paper cups with water and freeze them. These are nicknamed “ice-popsicles” and are used by holding them in one hand and rubbing over the affected area, peeling away the paper as the ice melts. The therapist may recommend three phases to the home exercise program; (1) apply heat to neck before stretches and exercises; (2) proceed with exercise program, and; (3) finish with either heat or cold treatments. Again, check with the therapist.

Some people cannot tolerate ice and prefer heat usually applied using a heating pad. Again, 20 minutes on and 20 minutes off is an appropriate schedule. Another option is to alternate ice and heat. Ice will be more effective in reducing swelling and providing pain relief, but if it is not comfortable, heat can also provide some benefits. However, in some cases heat may be harmful, so you need to check first with the therapist.

MODALITY INSTRUCTIONS:

ACUPRESSURE FOR TRIGGER POINTS

A trigger point is a tender circular or rope-like area of muscle that you can feel within the surrounding muscle. Pressing on this area causes pain, and you may also be able to actually roll a piece of tight muscle under your fingers. These areas are common in back injuries and may develop anytime during rehabilitation. You or someone else, can apply direct pressure for at least 45-60 seconds over the tender point and then gently massage the muscle in the direction of the muscle fibers. A helpful aid is the "ice popsicle" described above. The cup can be held while the ice surface is pressed into the tender area. These points can recur, but consistent self-treatment can alleviate the majority of the discomfort. A tennis ball pressed between the wall and the area of discomfort can also be helpful.

BREATHING

Breathing is a natural pattern that can be utilized to provide additional comfort during the exercise program. Learning to breathe deeply and slowly helps you relax during exercises and stretches. Following is a script to help you breathe more appropriately.

"Begin by first noticing your breathing pattern before you start your program. Take in a deep breath, relax, and exhale all the air you possibly can. Do not force yourself to overbreathe on your inhaled breaths, but do try to empty your lungs as much as possible when you exhale. Do this in a rhythmic pattern before, during, and after either stretching or strengthening. This pattern of breathing will soon become more natural and you will find that it not only helps you deal with any discomfort that is part of your exercise program, but can also be used as a relaxation aid during the day, before sleep, or in periods of high stress."

SCRIPTS

The neck is not as likely to be re-injured, unless of course, you are involved in another automobile accident. Almost all cases of whiplash will be entirely symptom free within six months. However, it is still important to be vigilant against inappropriate body mechanics. Neck pain more likely to reoccur is that due to repetitive overuse in a strained working environment.

- "Remember, if you are sitting for a long period of time, for instance while looking at a computer screen, your neck and shoulder muscles must be continually active. The head weighs about 10-15 lbs; try to hold a 10 lb. weight in an outstretched hand for even 10 minutes and you can gain some idea of how much work your neck muscles are doing for several hours at a time. Unless the predisposing conditions are corrected it will not be long before pain returns. The therapist can provide recommendations to improve your work environment. This usually involves changing the height of computer terminals to allow more direct viewing and the use of phone holders or headsets to minimize neck bending as a means of holding a telephone. A cervical pillow, lumbar cushion, or some type of back support may be needed."

- "The goal is to incorporate these activities into your daily routine, not only at the beginning and the end of the day, but also during the work day as well. Running through a program of cervical isometrics before and after heavy work, prolonged sitting, or long drives can have ample rewards. Although these are simple preventive techniques, some people may not like the idea of interrupting their activities during the day. These exercises, as well as any other techniques demonstrated by the therapist, are only effective if incorporated into your lifestyle."

- "Neck pain is preventable, but it requires some effort and vigilance. Good posture in conjunction with a daily stretching and strengthening program are simple but effective ways to minimize discomfort and injury. Since it is generally accepted that neck injuries are the result of a lifetime of improper consideration to biomechanics, it is never too soon to begin correcting bad habits."

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EXERCISE LOG:

Record your progress in the log below, noting the number of repetitions or sets of each exercise completed. Record any additional notes you may wish to discuss with the therapist or physician.

EXERCISE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	NOTES

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