

**ERGONOMICS**

Promoting  
**Health**  
and **Safety**  
through  
**Education**



## **Mission of the BBC**

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Ensuring the health and safety of California consumers by promoting ethical standards and by enforcing the laws of the barbering and beauty industry.

# Ergonomics

Licensees spend a lot of time standing, bending, reaching, and repeating the same motions all day long. These activities can cause fatigue and pain in various parts of the body. Sometimes they can even cause serious injury.

The board would like licensees to consider ergonomics, common ergonomic problems found in establishments, and how to reduce these problems.

## What is Ergonomics?

Ergonomics is a science that looks at:

- How individuals do their work.
- What body movements and positions they use.
- What tools and equipment they use.
- What effect these things have on their health and comfort.

Ergonomics suggests ways to design jobs and equipment so they are easier on the body. It can help licensees avoid movements and positions that might cause health problems. Good ergonomic design fits the job and tools to the needs of the licensee's body. Ergonomics can make work more comfortable and less likely to cause injuries to the hand, wrist, shoulder, neck, back, foot, and leg.

## Employers

California Occupational Safety and Health Administration (Cal/OSHA) has an ergonomics standard that requires employers to take action to prevent repetitive motion injuries when two or more employees doing the same type of work are diagnosed with a repetitive motion injury (RMI). Every employer subject to this regulation is required to establish and implement a program designed to minimize RMIs. The program must include a worksite evaluation, control of exposures that have caused RMIs, and training of employees.

The regulation can be found in Title 8, California Code of Regulations, General Industry Safety Orders section 5110. For details, go to: [www.dir.ca.gov/dosh/dosh1.html](http://www.dir.ca.gov/dosh/dosh1.html).

Some of the solutions presented in this booklet require only basic changes in how a licensee moves and holds their body. Others may require use of different techniques, tools, or equipment. It is the licensee's task to find the combination of solutions that will work best for them and for the establishment.

The human body may not feel symptoms right away. Some problems occur immediately, but others develop gradually over a long period.



When the wrist is bent, muscles must work harder.

This booklet will consider some steps licensees can take to prevent pain and injury, now and in the future. Look at some target areas.

## Hand and Wrist

Most of the muscles that move a licensee's hand and fingers are in the forearm. Tendons, which are like cords passing through the wrist, connect the muscles to the hand and fingers.

### Activity

Using the fingers on your right hand, feel the muscles on the inside of your left forearm. Keep feeling them while you gently open and close your left hand into a fist. You should feel the muscles moving in your left forearm—these muscles move your left hand. Now, with the fingers of your right hand, feel the tendons on the inside of your left wrist. Keep feeling them as you open and close your left hand again. You should feel the tendons moving in your left wrist. These tendons are passing the movement from the forearm muscles to the hand.

### The Problem

Two of the hand and wrist issues that can occur are tendinitis and carpal tunnel syndrome. Tendinitis is swelling and inflammation of the tendons. When a licensee uses their hand and wrist in certain ways, stress can be put on the tendons. If this stress continues over time, tendinitis may develop. Tendinitis makes it painful to use the hand, especially when grasping things. The carpal tunnel is a tunnel in the wrist surrounded by bone and tissue. A nerve and several tendons pass through this tunnel. If a licensee has tendinitis and the tendons swell, there is less room in the tunnel for the nerves. When the nerves are squeezed this way, the condition is called carpal tunnel syndrome. Carpal tunnel syndrome often leads to numbness and weakness in the hand. If left untreated, it can make it very difficult to grasp things or use the hand. If an individual starts to feel numbness, tingling, or weakness in the hand, they should see a doctor immediately.

There are several motions that can place stress on the tendons, causing tendinitis and carpal tunnel syndrome. One of the most common motions is bending the wrist. When the wrist bends, the tendons must bend also, causing friction and irritation. When the wrist is bent, the muscles must work harder—both to support the hand and to move it. It is better to hold the wrist relatively straight, as when making a fist. One easy way to tell if the wrist is bent backward too much is if an individual sees wrinkles appearing on the back of their wrist. Another cause of stress on the tendons is frequent or forceful pinching or gripping motions. The harder the muscles and tendons work, the more likely they are to become swollen.

Additionally, doing the same hand and wrist motion repeatedly causes stress. If you perform any motion many times without allowing the tendons to rest, they can become swollen and inflamed. Lastly, doing more than one of the above will greatly increase the stress on your tendons. For example, if you both bend your wrist and repeat the same motion, like when curling hair, your chance of tendinitis or carpal tunnel syndrome increases.

One example of a service in an establishment that makes a licensee bend the wrist is cutting and styling hair. As a licensee cuts different sections of the hair, they may hold the shears with their wrist in a bent position. When a licensee holds a hair dryer at the crown or frontal area of a client's head, and stands behind or beside the client, they may bend their wrist downward. This could also be the case when using a round brush on a client. The licensee may use forceful pinching or gripping motions when cutting with shears that have not been lubricated properly, cutting with shears that do not fit the hand well, or using a comb that does not glide smoothly.

Repeating motions might occur if a licensee is cutting hair and using shears all day. If the shears are dull, the licensee will have to cut more times to get the same work done. Combing and holding the hair while cutting would be repeated with every cut as well. A licensee may not realize that all these motions are stressful for the body while performing them, but if a licensee does not stop to think about how to perform these services in a safer way, there could be effects on their health and comfort.

## The Solution

To prevent hand and wrist problems, get a better "fit" between the body and the job by either:

- Changing how the job is done.
- Changing the tools and equipment used.

Using the previous example of cutting and styling hair, how can a licensee keep from bending their wrist when working on a client?

First, the height of the chair should be adjusted to allow the wrist to be straight. The licensee should lower the chair when working on the crown of the head and raise it to work below ear level. To avoid bending the wrist, the chair should be a type that goes up and down at least five inches. Next, the chair should be swiveled so that the licensee does not have to reach over or across the client. Also, the client's head should be tilted so that the licensee does not have to bend their arms, hands, and wrists as much. In addition, the licensee should hold the hair dryer sideways.



An example of a service that makes a licensee bend the wrist is cutting and styling hair.



A wrist brace can provide support.

When drying the crown or far side of the head, change the grip on the hair dryer handle so the dryer is being held sideways or a hair dryer with a flexible handle should be used so that licensees can bend the handle instead of their wrist. Lastly, good hair cutting techniques should be practiced.

For example, instead of keeping the wrist bent downward when cutting the sides, back, and front, techniques should be used that allow the wrist to be kept straight.

There are also many ways to avoid forceful pinching or gripping while cutting and styling a client's hair. First, shears should be chosen that fit the licensee's hand. Shears come in different sizes and designs. If the licensee has slender fingers, they may need to use plastic rings in the finger holes so that the fingers fit snugly inside the finger hole. The finger holes should stay near the fingertips and shouldn't "ride up" toward the hand. Next, check the lubrication, sharpness, and tension adjustment of the shears daily to reduce the effort involved in cutting hair. As stated previously, licensees should practice good hair cutting techniques, as proper position of the client's head will help reduce pinching and gripping. In addition, a comfortable comb should be chosen, one that feels well-balanced in the licensee's hand. The comb should glide through hair with as little friction as possible. A comb with a silicone coating often glides more easily. Lastly, tools that are ergonomically designed should be used as they become available.

How can a licensee reduce the number of repetitive motions when cutting and styling hair? When using a round brush, twirl the handle between the thumb and index finger, instead of continually bending the wrist. A brush with a handle that allows a licensee to do this comfortably should be chosen. Additionally, keep shears sharp. Sharp shears will allow a licensee to use fewer cuts to remove the same amount of hair.

Think about other hand and wrist problems a licensee might face. When might a manicurist bend his or her wrist? When might an esthetician use forceful pinching or gripping motions?

It is better to think about these potential problems and how to avoid them before they may occur.

## Shoulders

The muscles in the shoulder are connected to the arm by tendons. Between the shoulder tendons and the bones of the shoulder are small sacs of fluid called bursa. They help “lubricate” the shoulder so it moves easily. When licensees use or move their shoulders in certain ways, stress can be put on the muscles, tendons, and bursa. The result may be muscle aches, tendinitis, or bursitis.

Muscle aches in the shoulder usually are the result of overworking the shoulder. Shoulders tire easily as they are not designed for long periods of use without rest. For example, when a licensee keeps their arm raised above their shoulder or at shoulder height, the muscles of the shoulder and neck begin to ache after a short time.

### Activity

Hold one arm at shoulder height, straight out in front of you. Notice that after just a few seconds, your shoulder muscles start to feel tired.



One of the activities that may cause shoulder problems is holding heavy clippers, especially if the arm is stretched out.

### The Problem

Tendinitis can occur in the shoulder as well as in the hand and wrist. Shoulder tendons may become swollen and inflamed, causing pain. Frequent stress on the shoulder can cause tendinitis. A licensee might get tendinitis in the shoulder if they:

- Often reach out or reach up.
- Often hold their arm up, so that the elbow is above shoulder height.
- Repeat shoulder movements.

Remember that the bursa are sacs filled with fluid. They are located between the tendons and bones in the shoulder. When they get squeezed between the tendons and bones, the bursa can become inflamed, resulting in bursitis. Bursitis can make it painful, or even impossible, to raise the arm. A licensee can get bursitis if they often raise their arm too high so that the elbow is above the shoulder. Shoulder problems like muscle aches, tendinitis, and bursitis all have something in common. They can all be caused by holding the arm stretched away from the body, or holding the arm above shoulder height, or both. Licensees are especially likely to have problems if they do these things often.



To avoid shoulder problems, get as close to the client as possible when cutting, perming, coloring, styling, and shampooing.

Some activities in the establishment that may cause shoulder problems include:

- Reaching to the crown of a client's head to cut, dry, or curl their hair.
- Reaching across a client's body to shampoo or dry hair.
- Reaching across a table to manicure a client's hands.
- Reaching for shears and combs on the counter.
- Reaching for supplies on a high shelf.
- Holding heavy clippers, especially if the arm is stretched out.

## The Solution

To avoid shoulder problems when working on a client, always try to keep elbows close to the body and not held too high. This way, the muscles and tendons of the shoulder have better leverage and do not have to work as hard. This will also prevent the bursa from being squeezed like they are when the arm is raised.

To prevent shoulder problems in the establishment, licensees can use some of the same guidelines discussed in preventing hand and wrist injuries. First, the licensee should adjust the height of the chair when working on a client. Arms should be positioned close to the sides of the body. In addition, the client's chair should be swiveled so that the licensee can get as close to the client as possible when cutting, perming, coloring, styling, and shampooing. The client's head should be tilted to a position that is comfortable for the licensee. Tools should be held in a manner so the licensee does not have to raise their arms, such as gripping a hair dryer sideways when drying the crown or far side of the head. In addition, techniques should be used that allow the licensee to keep their elbows close to their sides. For instance, the client should be extending his or her hand toward the licensee when a manicure service is being performed. Finally, an armrest or foam pad should be utilized when a licensee is performing a manicure service. Using an armrest or foam pad will provide support to the arms and cushion the table's hard surface.



## Points to Consider

When performing a service, the following questions should be considered with the intent of avoiding hand, wrist, and shoulder problems:

- Is my wrist bent?
- Am I making any pinching or gripping motions?
- Am I doing any motions repeatedly?
- Am I often reaching out or reaching up?
- Is my arm held in an extended position, away from my body?
- Is my arm often raised too high, above the shoulder?

If a licensee said “yes” to any of the above-mentioned questions, they should consider improving the positions, movements, techniques, and tools being used. A conscious effort should be made to become aware of how to prevent ergonomic problems.

Now focus on the neck, back, foot, and leg and how space and equipment in an establishment can be designed to reduce ergonomic problems.

## Neck and Back

A licensee’s spine runs from the top of their neck down to the lower back. It is made up of many bones called vertebrae, one below another. Between each pair of vertebrae are joints and discs. These give the neck and back flexibility, so they can move. Discs are flexible because they have a substance like jelly inside.




To avoid back problems, work with the back straight, raise the client’s chair to a comfortable height and tilt the client’s head for better positioning.

### The Problem

Bending forward or twisting the body can result in neck and back problems. When a licensee stands in a normal posture, they will have a small hollow in the back of their neck and back. When a licensee bends forward, these hollows disappear, resulting in the discs being squeezed. The discs are also squeezed when a licensee twists their body, such as reaching for something. As the discs are squeezed, they can press on different parts of the spine, including nerves. This can cause pain in the neck or back. It can also cause pain or numbness down the arm or leg, often called a pinched nerve or sciatica.

If a licensee were to spend many years bending forward or twisting the body, the constant squeezing of the discs can cause the “jelly” inside a disc to leak out. If a big blob leaks out at one time, we say that the disc is ruptured or herniated. This problem can cause a lot of pain and numbness if it irritates a nerve. If it occurs in



the neck, a licensee may feel pain or numbness down one or both of the arms. If it happens in the lower back, a licensee may feel pain or numbness in their hip or leg.

## The Solution

Licensees may bend forward or twist their body when giving a shampoo, cutting hair (especially low on the client's head, below ear level), performing a facial, giving a pedicure, performing an electrology service or if they cannot see clearly. To avoid bending forward or twisting, the most important rule is to work with the back straight. Bend at the hips instead of the waist, which is called the straight-back bend. The spine is tilted, but not bent or twisted. Use procedures that allow the back to remain straight. For example, if available, use a free-standing sink to wash a client's hair. By standing behind the client, a licensee can reach his or her hair without twisting. Also, as mentioned earlier in the lesson, raise the client's chair to a height that is comfortable to the licensee, and tilt the client's head to a better position.

It has been said that sitting up is good for the back. However, it may be difficult to do facials, manicures, or pedicures in that position. Licensees should still try to find some way to follow the basic rule of working with the back in a straight position. To bend at the hips instead of the waist, many licensees sit at the front edge of their chair. Some chairs have a seat that tilts forward, so the chair does the bending for the licensee. A kneeling chair or a chair with a wedge-shaped cushion might also help. In addition, licensees should make sure they have good lighting and clear eyesight so they do not have to bend over to see.

Besides bending forward or twisting, licensees can hurt their back by reaching overhead, bending backward, or standing for long periods. These actions put extra pressure on the joints between vertebrae and can cause lower back pain. Sometimes a licensee may bend backward without being aware of it, such as when reaching for supplies on a high shelf. When a licensee stands for a long time, they might unintentionally begin to "sway" or lean backward. Also, licensees may tend to bend backward when they stand or walk in high-heeled shoes.

To prevent back problems caused by reaching up or bending backward, follow these guidelines:

- Bend the knees slightly and pull in the abdominal muscles at the "belly button" when reaching up. This is called a pelvic tilt. This tilt prevents the back from arching.
- One foot should be placed on a small stool or rung under the client's chair when standing for long periods of time.
- Avoid wearing high-heeled shoes.
- Stand on a foot stool or ladder when reaching for supplies on a high shelf.
- Store commonly used supplies on lower shelves.

## Foot and Leg

As a licensee you may have already realized that most of your time spent working on clients will mean standing on your feet most of the day.

### The Problem

A foot and leg problem that licensees may be prone to is swelling of the feet and ankles. If a licensee stands still for a long period, the calf muscles are not working hard enough to circulate the blood pumped to the feet. The blood will be pumped back up the legs and the feet and ankles may swell. This can cause the feet to ache and shoes may feel tight. This may also develop into another problem, varicose veins (swollen veins). If a licensee stands for a long period, they have a higher risk of getting varicose veins. Calluses and irritation are another potential problem as pressure on any part of the foot reduces circulation. Licensees can get calluses, irritation, and other problems at the "pressure point." Possible causes may be shoes with poor arch support, hard soles, or improper fit. Wearing high-heeled shoes (higher than 1 1/2 inches) puts more pressure on the licensee's toes, especially if the shoes have pointed toes. Another cause can be standing on a hard floor as this causes pressure to build up on the heel or the "ball" of the foot.

### The Solution

To prevent foot and leg problems, follow these guidelines:

- Do not stand for a long period without taking a break and sitting down.
- Change positions frequently and rotate between standing and sitting.
- Raise feet onto a stool when taking a break. It is best if the stool is as high as the chair being used so that the licensee's legs go out straight.
- A stool or moveable seat should be used so that the licensee can sit and rest their feet while working on a client. Some seats attach to the client's chair and swivel to different positions around the client as the licensee works.
- Comfortable, rubber-soled shoes with good arch support should be worn. This type of shoe will help spread the pressure of standing to the entire foot.
- Use shock-absorbing inserts inside the shoes. Shoe inserts are available at many stores. They are especially important if the licensee is wearing shoes with hard soles.
- Avoid shoes with high heels or pointed toes.
- Use a cushioned floor mat around the client's chair to prevent having to stand on a hard floor. This way, the pressure is more evenly spread around the whole foot. The mat should have sloped edges to reduce the chance of people tripping on it.
- Use support hose or compression socks to reduce swelling in the legs. They will also help legs feel less tired.



Standing on a hard floor causes pressure to build up on the heel or the "ball" of the foot.



Consider using shock-absorbing insoles inside shoes.



A well-designed manicure station.

## Establishment Design

Besides changing a licensee's positions and movements, the establishment can be designed to make work easier on the body. Good positions and movements are easier if space and equipment are well-designed. Good design can help prevent all the different types of injuries from hand to foot and everything in between.

### Poor Establishment Design

Poor design can force a licensee to bend, stoop, twist, and reach in awkward ways. Bad designs include:

- Workstations that are too close together. If there is too little space, there will not be room for roll-about tables for keeping supplies in the work area. That means licensees may have to reach farther for supplies.
- Workstations (like countertops) that extend out too far from the wall. These force licensees to bend forward to get supplies near the back of the counter.
- Low cabinets above work surfaces. Licensees may have to bend under the cabinet to avoid hitting their head.
- High cabinets. Licensees may have to reach too high to get supplies.

### Well-Designed Workstations

Well-designed workstations and equipment allow licensees to keep their body in good positions. They make movements easy and convenient. They also make it possible to move around and switch between sitting and standing, so licensees are not in either position all day.

Here are a few ideas for good workstation design:

- Hydraulic chairs for clients should be adjustable at least 5 inches up and down. The foot pedal should be easy to reach and use. Very short or tall licensees may need an electric lift chair, which can adjust up and down as much as 12 inches.
- Stools or rolling seats. These let licensees sit while working on clients.
- Manicure stations should have arm rests both for the client and the licensee. If no arm rests are available, foam pads can help support the arms and cushion them from the table's hard surface.
- Manicurists' chairs should have a seat or cushion that tilts forward toward the table. This allows the manicurist to lean forward at the hips without bending the spine.

## Points to Consider

When performing a service, licensees should ask the following questions to avoid neck, back, foot, and leg problems:

- Am I bending my neck and back often?
- Am I twisting?
- Am I often reaching overhead?
- Am I often bending backward?
- Does this service require standing for a long time?
- Am I swaying or leaning backward?
- Am I wearing shoes with high heels, poor arch support, hard soles, or improper fit?
- Is the floor too hard?

If a licensee said “yes” to any of the above-mentioned questions, consideration should be given on ways they can improve their position and movements for the prevention of ergonomic problems.

## Stretching Exercises

Licensees may benefit from doing gentle stretching exercises between clients or during scheduled breaks. Stretch hands, wrists, shoulders, neck, back, feet, and legs to prevent them from becoming stiff or tense. Do not pull or push excessively and if there is any pain or discomfort, stop immediately. On pages 10 and 11 of *Stay Healthy and Safe While Giving Manicures and Pedicures: A Guide for Nail Salon Workers*, sample stretching exercises are provided that are designed to reduce aches and pains. In addition, notice the *Work Smarter, Not Just Harder* handout provided by Cal/OSHA. These resources should be kept easily accessible for future use as a licensee.



Licensees may benefit from doing gentle stretching exercises between clients or whenever they have a break.

## Resources

*Stay Healthy and Safe While Giving Manicures and Pedicures: A Guide for Nail Salon Workers*

<https://www.osha.gov/Publications/3542nail-salon-workers-guide.pdf>

*Work Smarter, Not Just Harder*

[https://www.dir.ca.gov/dosh/dosh\\_publications/autopost.pdf](https://www.dir.ca.gov/dosh/dosh_publications/autopost.pdf)

## Activity:

Practice recognizing ergonomic problems that may be found in an establishment. Find what is wrong in this picture:



### Hopefully licensees noticed:

- The licensee is not sitting up with her back straight.
- The licensee's arm is not cushioned from the hard table surface.
- The lamp is not properly positioned to light the work area.



**Now, list what improvements have been made:**

- The licensee raised the client's hand instead of bending forward.
- The licensee is not bending her head or neck forward.
- The licensee's arm is cushioned from the table's hard surface.
- The lamp is properly positioned to light the work area.

Many hand, wrist, shoulder, neck, back, foot, and leg problems in an establishment can be prevented by employing a thoughtful workstation design, using well-fitted equipment, and by practicing safe work techniques.



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