

# Oh, My Aching Back!

By Victor Sazer

What do celebrated concert artists, amateur musicians, music students, studio players, chamber musicians and orchestral players have in common besides their love of music? They all experience higher rates of back pain than most of the population. The severity may range from vague feelings of discomfort to conditions serious enough to impair their ability to perform. The rate of back pain among cellists is higher than for any other group of musicians, followed by harpists, pianists and bass players, in that order. Over time, those who suffer with these problems tend to accept pain as normal and inevitable. Although there are many causes of back pain, much of it is related to the way we sit when we play our musical instruments.

Sitting is more complicated than standing. When you stand, you are able to move more freely to maintain good body balance. Standing allows your body weight to shift, naturally, from one foot to the other as you move your arms. The ideal way to sit, is in a manner that provides your body the same support and freedom of movement as when you stand. If your body's natural weight shifts are inhibited, you cannot be completely balanced or free of tension. You may also notice, that when you sit and your feet are not properly placed, your knee and hip joints tend to lock, limiting your mobility. Carl Flesch, the noted violin pedagogue observed that "Even the simplest movements of the arms can be carried out properly only when the position of the legs is correspondingly correct."

## The Anatomy of Sitting

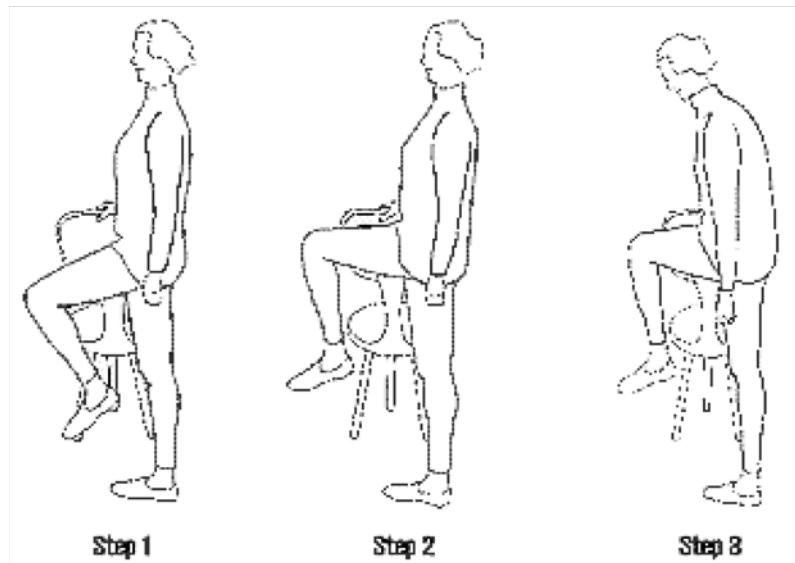
Understanding the anatomy of sitting is a vital first step to re-evaluating your sitting habits. In the past, when musicians suffered back pain from poor seating, little was known about the causes or how to prevent such pain. Today, as you will see, making seats more comfortable is not a difficult task.

In his book, *The Musician's Survival Manual 1*, Dr. Richard N. Norris asks, "When is a chair not a chair?" He answers, "When it is an instrument of torture." He then cites Dr. A.C. Mandel who found that "the human body was not designed to sit with the hips and knees bent at a 90 degree angle."<sup>2</sup> Dr. Norris explains that the thigh bone can only move freely about 60 degrees as it rotates in the hip socket. Moving beyond 60 degrees causes the pelvis to rotate backward.

When you sit upright on a flat chair with your thighs and torso at a 90 degree angle, your sitting bones can be forced to tilt as much as 30 degrees. This reverses your lumbar curve, flattens your diaphragm and collapses your chest, which limits full breathing. Your center of gravity is shifted behind your sitting bones in this position and "considerable muscular force is needed to sit upright."<sup>3</sup> Using this force repeatedly strains your back muscles, causing pain.

## Demonstration

Try the following demonstration to see how your back is affected by the way your trunk and legs are aligned when you sit.



1. Stand tall and hold the back of a chair for support. *Breathe deeply as you perform each step.*
2. Step 1. Lift one knee to bring your thigh to about a 60 degree angle to the floor.
3. Step 2. Keep your back erect as you slowly raise your knee higher, bringing your thigh parallel to the floor.
4. Step 3. Release your trunk and let your body slouch forward.

How does your back feel when your thigh is at a 60 degree angle to the floor? Does your back strain when you hold your thigh parallel to the floor?

### Observations

When your thigh is at a 60 degree angle to the floor, you feel no discomfort and can breathe freely. When you hold your thigh parallel to the floor (at a 90 degree angle to your torso), you can immediately feel your pelvis pulling under, straining your lower back. You are unable to breathe freely in this position because your lung capacity is reduced. Although slouching seems to relieve the strain on your back, it shapes your spine into a letter C, reversing your lumbar curve and weakening your skeletal alignment. When you try to breathe deeply in this position, you find again, that your lung capacity is diminished. The inability to breathe freely and deeply is the surest sign of tension in your body.

### Good seating

You can improve your seating by using a firm, wedge-shaped cushion that is about 2+1/4 inches thicker in the back than in the front. Or, or you can put spacers (books or boards) under the back legs of your chair to tilt it to the desired angle, provided your chair is the right height for you. It is not necessary to adjust your seat an entire 30 degrees. Most are comfortable with the back of their seat about 15 or 20 degrees higher than the front. The height of your chair can be raised by using a thicker wedge-shaped cushion or by placing a firm flat cushion beneath a smaller wedged one. (The tapered cushions are best made of rigid materials, covered with only about an inch of foam on the top for comfort. Those made completely of foam do not provide solid enough support.) Your chair is the optimal height if it allows you to sit with your knees several inches below your hips.

You can achieve the best support by having both feet several inches in front of your knees. Test this by leaning forward and backward as you vary the placement your feet. Another useful test is to raise and lower your arms as you move your feet to different places. Your arms will feel lightest when you feet are optimally placed.

Keeping your feet farther apart than is customary frees your body's natural balancing mechanism and provides the best support for all of your arm movements. Simulate playing full bow strokes as you broaden your base by moving your feet apart. Your own body will tell you when you find the best place for your feet. If you play the cello, you need an especially broad base in order to support the entire span of your bowing movements. The best way to accomplish this to keep your cello on the left side of you body and your right leg several inches (4" to 8", depending on your size) away from the right side of your instrument.

**References**

1. Norris, R. *The Musician's Survival Manual*. St. Louis:MBB Music 1993
  2. Mandel, A.C. *The Seated Man*. Copenhagen:Dafnia Press, 1982
  3. Norris, R. *The Musician's Survival Manual*. St. Louis:MBB Music 1993
- Drawings by Lea Lam Knight*