Violin Volition:

The Benefits of Playing String Instruments at Any Age

By Kiersten Fisher

Since ancient times, the use of string instruments has enlivened our worship, awakened our deities and added a sacred element to ceremony. The Roman goddess of victory was called *Victoria*; the Latin word *Vitulare* means "to be joyful," or "to celebrate a festival." Evolving into the family of instruments known as the *Viol* family, these sacred devices have four strings and are played with a bow. Because they have a perfect balance of even and odd harmonics, listening to the sound they create naturally connects one with the divine, that beautiful sense of universal love.

The healing benefits of playing a string instrument are countless, from the physical to the emotional, mental and spiritual. Listening to strings transcends the limitations of language, and the energy of the heart chakra is directly reached. Without words, the music is open to interpretation, reaching the listener in the most profound and personal way. Whether solo or in a group, the sound of strings unites us with elevated love. The range of frequencies encompassed by the string family reaches beyond the boundaries of the human voice to the edges of our hearing abilities, from the low E on the contrabass to the highest harmonics on the violin (about 41 Hz to 10 KHz). This allows us to extend our vocal range, plunging below the lows and soaring above the highs of human limits.

When playing violin, the arms and chest are engaged, opening the heart chakra and vibrating the instrument against the chest and neck. The cello has a similar effect, vibrating the chest and grounding the body into the center of the earth through the connection of the endpin and the floor. Both hands and arms act independently, working in synchrony while doing completely different things. The left hand uses varying amounts of finger, thumb pressure and movement during playing, increasing the responsiveness of the areas of the brain sensitive to these physical movements. Fine motor skills are enhanced, along with sensory connections and cognitive activity.

Playing a string instrument engages the mind in a relaxed and wakeful state, quieting internal chatter and leaving one free to imagine. Thinking about deep breathing and relaxed consciousness helps alleviate anxiety and nervous energy, cultivating internal awareness while the audible sonorities of the instrument entrain the brain into a meditative state. The entire being is thus massaged, vibrating the heart and lungs as well as the fingers as they dance over the strings. Both hemispheres of the brain are engaged, since the imagined sound and produced sound exist simultaneously. The player must be in connection with his bow, staying calm and aware of the connection with the string and the amount of pressure needed. Each string vibrates with a different amount of effort, and decreased spacing between notes is required as one travels higher up one string. This makes each note feel completely unique to play.

The pitch produced by the string is given by the frequency of the string vibration. For higher pitched instruments the frequency is higher: the string must vibrate faster. To build up resonance, you must pull the bow at the same speed as the vibration speed of the string. To attain this faster vibration, the bow needs to displace the string at a higher rate. Therefore the typical bowing speed is higher for higher pitched string instruments. Because you bow faster on a violin, to hold the note for the same length of time without returning the bow requires a longer bow than on lower string instruments (like the cello). This is why the higher pitched string instruments have longer bows. (Violins and violas are very close in pitch; they only differ by

one string; therefore their bows only differ slightly in length). Bows themselves are like paintbrushes, allowing us to color the sound with a myriad of subtleties.

The scientific explanation of how the viol family creates sound is by the string "slipping across" the bow. The bow catches the string (with the friction of the horsehair), pulls it a certain distance until the restorative force from the tension in the string overcomes the friction, and it snaps back to the original position. This happens because static friction is stronger than dynamic friction, so once the string starts moving, it will essentially return to starting position before being caught by the bow again. Although the string appears to move in a parabolic curve to the naked eye, its actual movement is more intricate. What appears to be a curve are actually two straight lines meeting at a relatively sharp angle. This angle (known as the Helmholtz corner) travels along the string, back and forth once per period. (For an open violin A string, this would occur at a rate of 440 times per second.) It is the angle's trajectory that draws the rounded outline we are familiar with seeing. This rolling motion gathers momentum once it begins, and changing its direction requires time and energy. Variables like bow pressure affect the tone quality of the sound as well; speed and pressure must balance each other perfectly to produce a full, rich timbre.

The open strings of violins, violas and cellos are tuned to perfect fifths: naturally evoking feelings of sturdiness, completeness and joy, as well as healing. The ability to play two strings simultaneously is inherently self-healing, allowing one player to sing in harmony with himself. Even the open strings played together resonate in a beautiful and contemplative creation, allowing one to connect with the divine and feel rooted to the ground simultaneously.

Whatever the age, playing and listening to string instruments aids in memory function, mental focus and comprehension, as well as neuroplasticity. A study in the Oxford Journal explored stroke patients who listened to music, finding that "regularly self-directed music listening during the early post-stroke stage can enhance cognitive recovery and prevent negative mood." At a hospital in Houston, Texas, patients with Alzheimer's disease with otherwise limited cognitive function who had never taken violin lessons were given biweekly sessions of instructional violin lessons in addition to passive music therapy. After 8 weeks when evaluated in comparison to another test group who had only received passive music therapy, those who had taken active lessons showed improved abilities in relation to everyday tasks such as remembering names and faces, in addition to improvements in mood and neuropsychiatric function, as well as learning some violin skills!

The sounds of strings can soothe you, assuage your fears, and instill a deep feeling of harmony and peace. They reach beyond your mind through to your soul, reminding you of infinity and the eternal music of the spheres. In this increasingly individualized society, the connection and continuity of strings remind us that we function better together, supporting one another in divine resonance. Whether we are old or young, enjoying music together will open our hearts to each other and heal our world.

"I know that the most joy in my life has come to me from my violin." – *Albert Einstein*