

**Body Mapping for the String Orchestra:**  
*Teaching Students to Stop Moving Against their Own Design to  
Prevent Injury and Sound Great!*

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**Session Handout**

**Preventing Neck Pain and Harsh Sounds**

Red Flag: Head is carried chronically forward, nodding movement appears to happen from bottom of neck.

Anatomical Truth: Head weighs between 10 and 15 lbs. Head sits balanced on spine way up high between the earlobes. Sound improves when violin/viola is not being squeezed by downward pressure from head, arm muscles don't need to push down on bow but can use momentum instead.

Finding a Free Neck: Awareness of back of head, lifting each others' heads, palpating front of spine.

**Preventing Shoulder Injury, Tingling Hands, Drooping Violins and Promoting Ease Getting to Frog**

Red Flag: Student will appear to have "sloping shoulders" from chronically holding the arm structure too low.

Anatomical Truth: The "shoulder," comprised of a collarbone and shoulder blade is actually just the upper portion of the Whole Arm and should therefore follow the rest of the arm in movement. It should not rest on the ribs- avoid the phrase "get your shoulders down." When collarbone is allowed to move with arm, violin will be elevated to jaw so head does not need to go to it. A freely moving right shoulder blade allows ease getting to frog for full bow sound.

Discovering the Whole Arm: Colouring on anatomical T-shirts; Use Barbie dolls; Foam rollers under arms; Elevator game, Swinging arms

**Preventing Lower Back Pain and Promoting Freer Arms**

Red Flag: An obvious over-arching in the lower spine region. Or an obvious C-curve slump throughout most of the spine.

Truth: The portion of the spine designed to hold us up is not in our backs but runs vertically through our centre like the core of an apple. Asking students to “sit up straight” commonly leads to those students developing lower back pain and experiencing pulled-down arms that are not free to shift or get to the frog or tip of the bow. Slumping into C-curve prevents cellos from being appropriately supported.

Finding Balance in Sitting:

Finding a balanced head and balanced arms above; Sitting on hands and palpating to discover the widest, thickest portion of the sit bones; Drawing profile of spine on Anatomical T-shirts; Walking backwards

### **Preventing Tendonitis and Promoting Accurate Intonation and Easier Off-String Strokes**

Red Flag: Hands get chronically tilted off to one side away from a neutral resting place so Pinkie never looks aligned with its side of the arm.

Anatomical Truth: The ulna (bone up pinkie side of forearm) has no function in rotating the hand from palm-up to palm-down- this is the sole job of the radius (bone up the thumb side of forearm). Tendons strain when the wrong bone is being asked to move in ways contrary to its design. A hand balanced on the radius’s end produces accurate intonation more easily than one muscularly held in a tilt. Bow side wrists cannot move passively for off-string strokes if being held muscularly in a tilt.

Finding Radial Rotation:

Mark on their own skin with a pen where the radio-humeral joint is; Three stickers along radius; Rotate hands from palm-up to palm-down while holding onto ulna with the fingers of the other hand- make sure it stays stationary while allowing the radius to rotate.

### **Preventing Finger/Hand Strain and Promoting Freer Vibrato and Faster Fingers**

Red Flag: Students’ fingers have an overly arched, “curled” and stiff appearance when playing.

Anatomical Truth: The muscles of the forearm move the fingers to play. In free movement, the muscles on the underside of the forearm take turns contracting with the muscles on the top side of the forearm. When they contract *simultaneously*, it is called “co-contraction” and fingers become stiff. They contract simultaneously when players try to

move from the “false joint” - the 3rd “skin crease” down each finger. Fast playing and vibrato become difficult.

Finding Freer Hands:

Drawing the true finger joint on their skin which is located in top of palm will free all finger joints making them faster and more pliable for an effective vibrato.

### **Inclusive Awareness**

Red Flag: Appearance of strain or “thinking hard” when playing or sight-reading

Anatomical Truth: “Concentration” is too strong for our awareness. Narrowing the awareness leads to narrowed (tightened) body. Avoid telling students to “concentrate” and teach how to focus while maintaining a “fuzzy” awareness of surroundings, like a good photographer focuses his lense.

Finding Freer Awareness:

Compare what it’s like to play:

1. while concentrating hard on one aspect (vibrato, bow contact, sight-reading)
2. while focusing on goal but still using peripheral vision and kinesthesia to pick out 1 object in room and 1 other sensation within body.