TEACHING PRINCIPLES OF BALANCE AND POSITIONING TO ADOLESCENT VIOLISTS THROUGH STANDARD REPERTOIRE

BY

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(Under the Direction of Maggie Snyder)

ABSTRACT

Students undergo significant physical transformations during adolescence. As a result, it becomes critical to readdress and explore stance, setup, and positioning with learners who are now navigating a new and potentially challenging anatomy. This process is of particular importance to students who perform the viola, as the nature of a relatively large instrument that is positioned against the neck, as opposed to the ground, poses intense challenges relating to center of gravity and balance for even the most experienced performers.

Adolescent students are still motivated to move forward in repertoire and technical studies, and the pursuit of more challenging concert selections provides indispensable benefits to musical

and cognitive development. As a result, teachers are challenged to find ways to reteach (albeit at a higher level) fundamental skills to the adolescent violist in the context of advancing repertoire. This paper aims to show a potential methodology and sequencing to concept exploration relating to balance, stance, and positioning that can be derived from the typical repertoire encountered and studied during adolescence. The repertoire selected is from the conventional canon of western art music, however the concepts can be applied across a spectrum of musical traditions.

INDEX WORDS: Viola, Pedagogy, Adolescence, Stamitz, Telemann, and Bruch

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I dedicate this document to my major mentor, Maggie Snyder, whose passion for teaching and performing changes the world each and every day one student and one performance at a time.

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INTRODUCTION

Just like dancers use movement to create visual art, string players use movement to create aural art. Unlike the dancer, however, the movements employed by performers of string instruments must account for an instrument in addition to the body itself. While the ground serves as a significant aid to the performer of the cello and bass, violin and viola players enjoy no such benefit. Viola players in particular encounter the unique challenge of engaging in artistic movement while supporting a heavy instrument through the body alone, with the difference in weight between violin and viola far from negligible. Average weights of the violin and viola, excluding the chinrest, are found in one study to be 379.2 grams and 603.3 grams respectively, highlighting the need of the violist to account for the addition of a significant physical stressor[1].

Rapid changes in anatomy compound this issue for the adolescent student. They must navigate a heavy instrument, a task that requires particularly advanced kinesthetic awareness even

[1] John Waddle and Jeffrey Leon, "Weights of Violin, Viola and Cello," *Catgut Acoustical Society Journal,* no. 8 (2003): 33

for adult performers, in a body that is constantly new and changing, all while continuing to progress through more challenging repertoire. Adolescence comprises a relatively early stage in the typical violist's course of study, meaning these students are likely still engaging in highly formative interactions with the instrument. Concurrently, many students either switch to the viola from the much smaller violin during adolescence, or switch to larger, more professional sounding instruments (keeping in mind children's sized violas often fail to produce even a characteristic sound on the C and G strings). Simultaneously, not only does adolescence result in rapid growth, but also significant changes in body proportion when compared to preadolescence[2]. Additionally, the growth experienced during adolescence is not uniform, but rather characterized by distalproximal development (meaning growth that occurs first in the extremities and finally toward the torso). Martha and Valentine-French explains in more detail the anatomical changes occurring during adolescence:

> First the hands grow, then the arms, and finally the torso. The overall physical growth spurt results in 10-11 inches of added height and 50 to 75 pounds of increased weight. The head begins to grow sometime after the feet have gone through their period of growth. Growth of the head is preceded by growth of the ears, nose, and lips. The difference in these patterns of growth result in adolescents appearing awkward and out-of-proportion. As the torso grows, so does the internal organs. The heart and lungs experience dramatic growth during

[2] Martha Lally and Suzanne Valentine-French, Lifespan Development: A Psychological Perspective (2019).

> this period. During childhood, boys and girls are quite similar in height and weight. However, gender differences become apparent during adolescence. From approximately age ten to fourteen, the average girl is taller, but not heavier, than the average boy. After that, the average boy becomes both taller and heavier, although individual differences are certainly noted. As adolescents physically mature, weight differences are more noteworthy than height differences. At eighteen years of age, those that are heaviest weigh almost twice as much as the lightest, but the tallest teens are only about 10% taller than the shortest.

While helpful, this description still may not sufficiently characterize the relationship between body and instrument that is experienced by adolescent string players. Compared to anatomy prior to adolescence, the body likely not just appears out of proportion, but also feels out of proportion. As a result, the kinesthetic vocabulary learned in childhood likely produces unexpectedly different and potentially undesirable results during adolescence, both within and outside of the context of viola playing. Additionally, because the proportions are constantly changing throughout this stage of anatomical development, the student can struggle to establish consistent cause and effect relationships between movement, comfort, and sound. In the framework of providing support to an instrument that is over fifty percent heavier than the violin, the adolescent violist must be uniquely aware of the role of positioning and balance in musical performance. Insufficient appreciation of this relationship may partially account for perceived differences in performer quality between violinists and violists.

While it is tempting for the teacher of the adolescent student to recommend highly specific solutions to help students navigate the instrument with ease, this approach is problematic from a variety of perspectives. The aforementioned issue of working with a student whose anatomy is changing in rapid and seemingly unpredictable ways is one such issue, complicating the notion of recommending a specific setup solution (setup referring to the positioning of the viola against the head, neck, and torso), bow hold, stance, etc.

Simultaneously, highly specific strategies employed by the teacher may not translate to every individual student since body types vary from person to person. Students who do not share the same body type as the teacher may not benefit from the instruction if the solutions are overly explicit and derived primarily from the teacher's own success in experimentation. For example, biologically female vs. male anatomies result in significantly different centers of balance yielding differing relationships with the instrument. Additionally, appendage length can vary as a result of genealogy, with differing perceptions regarding whether or not a correlation between race and anatomy is significant enough for consideration. Some research promotes a loose association between individuals of Asian descent and shorter appendages relative to torso and individuals of African descent and longer appendages relative to torso, with individuals of European descent

somewhere in between[3]. While each student must be considered individually, an awareness that macro-variance exists is important for the teacher to be kinesthetically responsive to the student, particularly in respect to appendage length which can drastically alter balance. For example, while a student with longer appendages may seemingly be able to facilitate a bigger instrument, if the torso is not yet proportionally developed, the larger viola may create undue and unmanageable stress on the spine.

With each of these factors affecting every performer in significantly different ways, this discussion advocates an exploration of balance and positioning through the dissemination of guiding principles as opposed to advocating specific best-practice solutions. This approach not only accounts for variance in body type (remembering that this variance that not only exists between students, but also, and possibly more importantly, chronologically within the context of the same student, especially during adolescence), but also ensures that instructional approaches align with those advocated by learning theorists. An approach agreeable with Jean Piaget would advocate that students in adolescence move from rigid concrete thought processes to abstract ones (such as hypothesis testing) as they progress from the concrete operational stage into the formal

[3] Phyllis Eveleth and James Tanner, "Worldwide Variation in Human Growth," *CUP Archive* (1976).

operation stage. Therefore, a cause and effect approach centered around exploring the interaction between principles of positioning and balance and the resulting musical product is potentially more ideal than a rules based approach that is better suited for a student in preadolescence or earlier. Erik Erikson's eight stages of development show the adolescent learner in stage five, defined by exploring and testing out different identities. Correspondingly, in a musical context, adolescent students are likely considering differing artistic outcomes in personal and meaningful ways for the first time, and not necessarily looking to carbon copy a teacher-initiated model. In fact, adolescents may even be motivated to reject a teacher-prescribed best practice, despite its merits. By interacting with balance through investigating causal effect relationships as opposed to teacher-induced diagnosis and correction, the adolescent student is provided instruction appropriate for their stage of cognitive development as well as their anatomical development. As a result, the adolescent student may realize a viola curriculum more responsive both mentally and physically through guided exploration of balance and positioning than through the completion of concrete tasks or implementation of specific instructor-initiated modifications.

HOW STANCE AND POSITIONING EFFECTS BALANCE

Overview

The right arm apparatus creates sound through interaction with the bow. The left arm apparatus manipulates pitch. Anatomically speaking, the rest of the body functions primarily to support these two appendages and the instrument itself. However, this support serves a critical function, with the head, neck, torso, legs, and feet profoundly influencing the range of motion each arm enjoys, the ease with which motions takes place, and the performer's overall center of balance. As previously explored, these relationships are amplified in adolescent students whose arms are fully developed, but whose torso has not yet caught up proportionately.

Head and Neck

The head provides an anchor to the instrument. Gravity exerts a downward force upon the instrument, whereas the head helps to provide a counterbalance. Although performers are often simply looking to find positions of the head that are comfortable and provide the instrument

stability, this goal is one of the most challenging ones to achieve, especially for the adolescent whose proportions are constantly changing.

The positioning of the head effects the spinal cord, making its role particularly influential. In Defining the Alexander Technique, Tim Soar explains the balance of the head:

> The head is balanced on top of the spine on the atlanto-occipital joint (AOJ). If you feel behind the lobes of your ears you will find the bony bumps of the mastoid processes, and you will be able to locate the axis of the small nodding movement available at the AOJ.
>
> Clearly there is more of the head in front of the AOJ than behind it (the centre of gravity of the head is shown on the drawing) and it is this imbalance which causes the head to "nod off" if we fall asleep in a sitting position.
>
> In order to keep the head upright in normal activity, the muscles of the back of the neck need to be active. However, if this muscular activity is excessive, as it is in most people, the head is not merely prevented from falling forwards, but is actively pulled back and down in a startle-like movement.
>
> In a well coordinated person there is no hint of this jamming of the head back and down onto the spine, but rather the neck muscles release in order that the weight of the head (on the verge of falling forward) exerts an upward stretch through the muscles of the back of the neck (and in fact, throughout the length of the back): the neck is "free" (not stiffened) in order that the head can go "forward" (nodding forward under its own weight) and "up" (leading the stretch up through the neck muscles).[4]

Keeping the neck free and relaxed allows the head to roll forward, enabling this part of the body to comfortably serve its function as an anchor to the instrument. However, with the neck of the

[4] Tim Soar, The Balance of the Head (London: Alexander Technique London and Online). https://www.alexander-technique.london/articles/defining-the-alexander-technique/balance-of-the-head (accessed September 13, 2023).

adolescent student rapidly lengthening, violists of this age may instinctively and unknowingly begin to contract the neck muscles to provide a firmer grip on the instrument, paradoxically causing the undesired effect of head rolling backwards. It may be necessary to explore with students how engaging and releasing neck muscles affects the placement of the head in order to find optimal comfort with the quickly growing viola student. The teacher may also consider jaw tension with the adolescent violist, as when these muscles are engaged, it is possible to see this translate to tension in the neck. It is possible that jaw tension is a symptom of attempting to control the viola if and when the setup does not feel secure. Excess tension in the jaw is particularly likely when students navigate larger instruments without sufficient support in the torso.

While not anatomical, variables such as chinrests and shoulder rests affect the positioning of the instrument against the head. These components must fill space sufficiently between a torso anchor point and an anchor point on the head. However, too much space filled will cause hyperextension. Additional variables include the position of the chinrest on the instrument, type of chinrest used, and the specific location where the chin is placed on the chinrest. Whether or not the chin is utilized as the anchor point or the jaw is one more possibility to consider. Shoulder rests are highly manipulable and provide simply too many options to mention, but generally adjust

upwards and downwards and can be reoriented slightly to “catch” different portions of the torso. Sponges and performing without a shoulder rest are also options commonly employed by violists. While sponges are particularly responsive to the body, they can also hamper resonance. The removal of the shoulder rest can enhance resonance, but the strategy is somewhat less idiomatic and potentially impossible for many body types. Adolescent students in particular may benefit from experimenting with all three options (sponge, shoulder rest, and instrument alone), especially since numerous changes will likely be required in a short period of time as the neck grows.

A less obvious variable is the proportion of space “filled” by the shoulder rest when compared with the chinrest, which can raise and lower the bowing plane and left arm position. Planes that are too high or too low may be uncomfortable, so filling space with the chinrest as opposed to the shoulder rest or vice-versa could be helpful. Selecting chinrests and shoulder rests that can be easily adjusted in height provide the student more opportunities to explore this causal effect relationship, but the teacher may have to make the student aware that the relationship exists.

A teacher may find it advantageous to facilitate the exploration of variables relating to the head and neck by progressing from macro to micro, since the variables are so numerous and causal affect relationships are more obvious at the macro level. It may also be helpful to continuously

experiment and re-experiment with setups of adolescent students since a strategy that was at one time not desirable may later become useful later when student proportions change. Finally, it must be mentioned that gravity is not the only force mentioned that exerts a downward force on the viola, potentially placing stress on the head and neck. The fingers of the left hand and the bow can also can exert significant downward pressure on the instrument. Therefore, a teacher may decide to regularly explore these variables with adolescent students using light bow weight and finger weight (perhaps even natural harmonics) before engaging in motions that add comparatively more stress to the setup.

Thorax

While the head serves to anchor the viola, the weight of the instrument primarily rests against the thorax. As a result, this portion of the body must not only provide support for the head and arms, but also the instrument itself. The positioning of the thorax and its relation to the instrument directly influences the range and ease of motion experienced in each arm, affecting performer comfort and facility. The adolescent student can learn to manipulate a number of variables involving the thorax as they navigate changing centers of gravity resulting from constant fluctuations in anatomical proportions. Developing these motor skills as they relate to the thorax

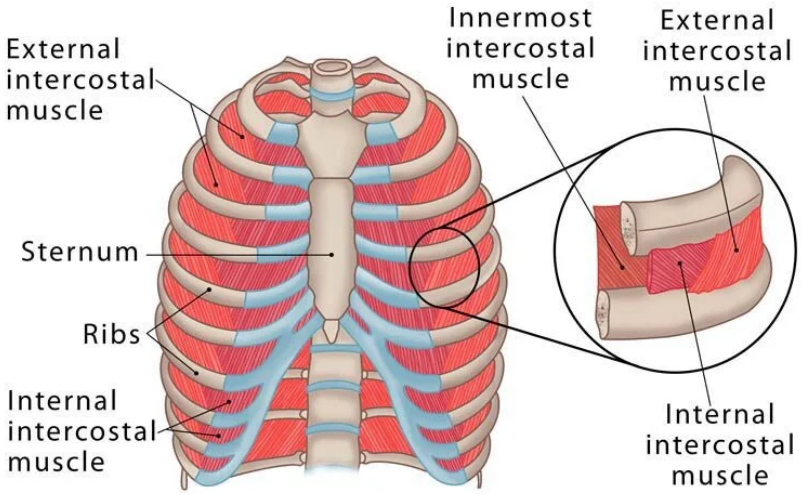
can ultimately help adolescent students discover movements that are free of tension, that are musical, and that are reliable.

Once again moving from macro to micro, one of the most immediately obvious variables at play relating to the thorax is the position of the sternum and ribcage. Working in tandem, these two components form an apparatus that can be positioned so it is fully expanded and elevated, fully contracted, or in any position in between. Since the viola rests somewhere on the upper portion of this apparatus and/or upon the clavicle (whose position directly correlates with the position of the apparatus), the implications of ribcage position upon the comfort and freedom of the performer is particularly acute. Additionally, the position of the arms corresponds directly with the position of the ribcage and sternum. Arms will likely naturally expand out to the side when the ribcage apparatus expands, and correspondingly contract inwards when the ribcage apparatus contracts. As a result, the range of motion for each arm increases when the ribcage apparatus expands. An expanded and elevated ribcage and sternum can help provide more support for the

[5] "Human Rib Cage," Illustration, Encyclopædia Britannica, October 28, 2023. https://www.britannica.com/science/rib-cage

weight of the viola, helping counter the downward pull of gravity and any weight of the action of the arms and hands.

Interactions with the respiratory process make the ribcage a unique variable to consider. The sternum and ribcage elevate and expand through activation of the intercostal muscles, which can be triggered through inspiration (both active and passive)[6]. Deep inhalation that fully inflates the lungs with air may help a student find the position of the ribcage where it is fully elevated and expanded. Completely evacuating the lungs of air will likely help a student find the opposite position of this apparatus.



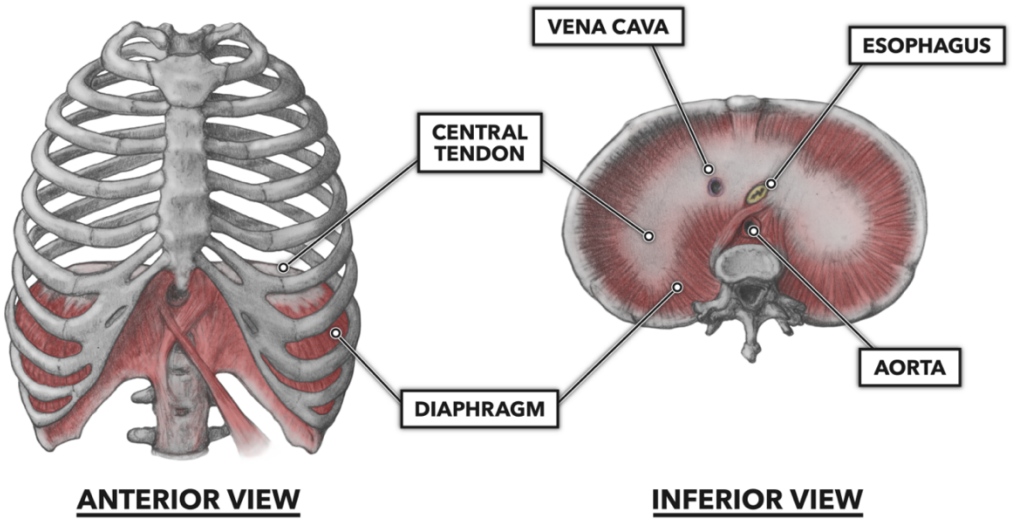
The diaphragm works in concert with the intercostal muscles throughout the repertory process and can also interact with ribcage placement.[7] As De Troyer and Wilson establish:

[6] J.N. Han, et al., "Respitory Function of the Rib Cage Muscles." European Respiratory Journal, no. 5 (1993): 724
[7] André De Troyes and Theodore Wilson. "Action of the Diaphragm on the Rib Cage." *Journal of Applied Physiology* (2016): 396

> When the muscle fibers of the diaphragm are activated during inspiration, they develop tension and shorten. As a result, the axial length of the apposed diaphragm diminishes, and the dome, which is primarily made up of the central tendon, descends. This descent produces both an expansion of the pleural cavity and a caudal displacement of the abdominal viscera leading to an outward motion of the ventral wall of the abdomen. Consequently, intrapleural pressure (Ppl) falls, lung volume increases, and abdominal pressure (Pab) rises. Tension in the diaphragm sheet generates an effective transdiaphragmatic pressure (Pdi) that balances the difference between Pab and Ppl (Pdi = Pab − Ppl). Moreover, the diaphragm displaces the rib cage as it contracts.

In potentially more approachable language, the muscle fibers of the diaphragm attach to the central tendon, and when they contract the central tendon descends, which may result in a feeling of pulling the abdomen down into the pelvis. As a result, the cavity enclosed by the ribcage tends to expand. And while the synopsis provided here may help with an initial understanding of this mechanism, fully unpacking the description directly through the terminology used by De Troyer and Wilson above sheds significantly more detailed and potentially helpful insight into how the relationship between respiration, diaphragm, and ribcage unfolds.

Active respiration, particularly inspiration supported by the diaphragm, can help the violist reposition a collapsed ribcage apparatus into a potentially more desirable position. Simultaneously, respiration can continue while the ribcage remains expanded and elevated and while the muscle fibers of the diaphragm remain contracted. This allows the performer to use respiration and the diaphragm to establish a desired position of the ribcage apparatus, but still continue to breathe without causing continued fluctuation in the torso and, consequently, the instrument and arms.



The spine is additionally a variable to consider. Highly malleable and thus containing infinite possibilities, entire professions are devoted to the alignment of the spine, especially given

[8] "Diaphragm," Illustration. Crossfit, October 24, 2023. https://www.crossfit.com/essentials/thoracic-musculature-part-2

its role in supporting the entire body (and indirectly the instrument, which rests on the body). Suboptimal positioning of the spine can, of course, lead to inhibited range and freedom of motion, discomfort, and even injury.

Alexander Technique may offer musicians the most practical conversation regarding the spine since medical and physiological literature is highly specific and may largely be inaccessible to a lay audience. The spine in particular benefits from being explored as opposed to specifically manipulated given the countless possibilities.

Returning to Tim Soar's work in the field of Alexander Technique, he provides this analysis of the spine:

> The most noticeable distinguishing feature of an experienced Alexandrian is her back. A well coordinated back is effortlessly erect, it appears both immensely strong and stable, yet at the same time improbably fluid and supple. Above all, a good back seems natural, easy, inevitable – as if it could not be any other way.
>
> This integrity of the back is cultivated through [lengthening and widening]…
>
> When well coordinated, the spine, combined with the musculature which stabilises and moves it, acts a little like a compression spring; it responds to being "loaded" (in bearing the weight of the head and upper body, and in providing support for work like digging or carrying) by generating what might best be described as an "upthrust". In the Alexander Technique this upthrust is referred to as the back lengthening. This is the essence of going up…
>
> A great many structures of the body, from the larynx to the heart, the diaphragm to the digestive organs are suspended, more or less directly, from the spine. These structures

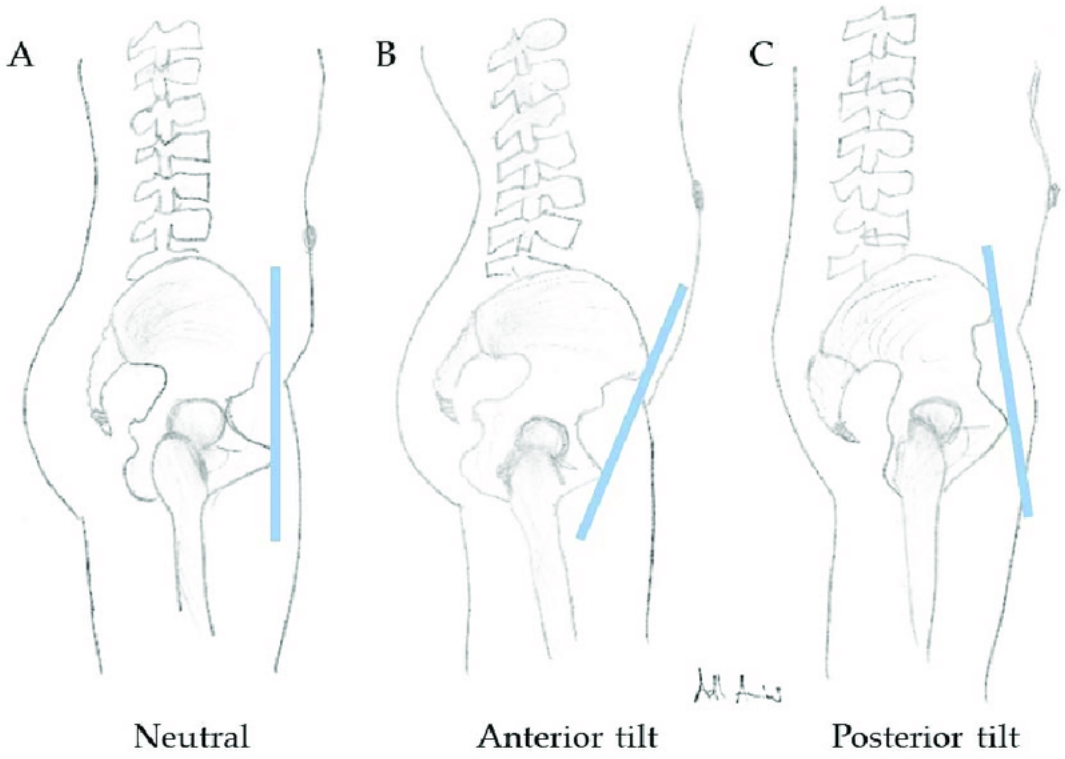
> depend upon the natural spring of the spine or lengthening of the back to support them correctly so that they can function optimally.
>
> This is most obvious in the way that a lengthening back supports the shoulders and the ribs in an open, strong and mobile way. If the back is not lengthening then the chest cavity collapses and/or rigidifies and the shoulders narrow; if then there is any aerobic demand or the arms have to act vigorously, there is no option but to employ huge amounts of inappropriate effort in order to gain the desired end.
>
> When the back is working well and its natural upthrust is supporting the shoulders, ribs, internal organs, abdominal muscles and so on, we say that the back is not only lengthening but also widening.

From Soar's discussion, it is learned that the natural lengthening in the spine is particularly ideal in providing the body support (and in turn the instrument). It is also learned that expansion and elevation of the ribcage apparatus is associated with a lengthened and healthy spine. Finally, it is learned that the spine can serve as a spring, which can expand upwards to provide support to the viola in a flexible way.

The pelvic tilt has implications for the lengthening of the spine. Positions of the pelvis range from posterior tilt to anterior tilt, with a position somewhere in the middle commonly referred to as neutral. Tucking the tailbone down is associated with a posterior tilt, whereas the anterior tilt is characterized by a tailbone pointed out. The tailbone (coccyx) is the lower most extremity of the spine. Therefore, the position of the pelvis directly corresponds to the ability of

the spine to fully lengthen. Anterior tilts naturally compress the spine, likely making this extreme of position undesirable. Posterior tilts force the spine to lengthen, but a neutral position could also be considered. Because this variable is geographically distant from the viola itself, a teacher would potentially need to point out to the adolescent student the need to consider and interact with pelvic position in order to provide optimal support to the thorax and instrument.

Additionally, the lengthening of the spine can also be supported through lengthening of the abdominal muscles, opening up space in the trunk that the spine ultimately must expand to fill.



[9] Henryk Haffer, " Neutral (A), anterior (B), and posterior (C) pelvic tilt (APPt)," Illustration, "The Impact of Spinopelvic Mobility on Arthroplasty: Implications for Hip and Spine Surgeons," *Journal of Clinical Medicine,* (2020).

Lumbar muscles can be engaged in supporting the spine as to prevent it from compressing under the weight of the body and/or instrument. Contracting the scapulae (shoulder blades) in toward the spine can also provide more support, but potentially negatively affects freedom of motion in the upper arm and/or results in fatigue.

The positioning of the viola also interacts with the spine, with differing placements providing a range of benefits and drawbacks. Violas held with the scroll more or less parallel to the floor (akin to violin position) can provide the arms and hands the greatest applicable range of motions in relationship to the instrument, compounded by the fact that this positioning is usually associated with the instrument held somewhat out to the side (the scroll parallel to the floor is a potentially impossible position to achieve with the instrument held in front of the performer). Because this position pushes the center of gravity of the performer relatively far away from the body itself, the torso must play a more active role in supporting the instrument and any absorbing any shocks resulting from downward forces. On the other hand, positions of the viola that are more downward sloping (scroll pointed toward the floor as if drooping) are usually associated with forward facing setups, since the shoulders inhibit the ability to allow the viola to slope. The center of gravity is much closer to the performer, minimizing the need of the torso to provide a counter

balance, but significantly inhibits the freedom and range of movements enjoyed by the hands and arms since they are now oriented in front of the performer, perhaps most notably when shifting to higher positions (which usually requires forward movement of the elbow in order to "reach" around the viola). A student performing repertoire not requiring significant left hand facility may initially prefer the downward position, only to discover its limitations later when encountering more demanding left hand passage work. However, it cannot be overlooked that seasoned professionals frequently and intentionally employ the downward position of the instrument. Chamber music violists in particular may prefer the downward sloaping position of the instrument. This may be due to the motivation to select a significantly larger and, therefore, louder instrument, thus making navigating center of gravity a higher priority. A downward slope is generally workable in chamber music settings given that ranges are relatively limited in this medium. Consequently, rapid shifts in and out of higher positions become less of a priority as it might in orchestral and solo playing. An adolescent may benefit from exploring different setups in different performance contexts, discovering how multiple approaches to positioning the instrument can influence tone, comfort, and reliability in unique ways.

Finally, it is important to note that the torso is not the only contact point involved when balancing the instrument. In the previous section, the role of the head was explored. The left hand can also be employed in this process, reducing stress on the thorax. However, the more the left hand is relied upon to provide support to the instrument, the less freedom it enjoys to navigate the fingerboard, produce varying vibrato colors, etc.

Remembering that the typical adolescent experiences growth characterized by distalproximal development, the limbs will grow before the thorax. Accordingly, there will likely be a stage for the adolescent student where arms are particularly heavy and long compared to the thorax, creating an unfamiliar strain on the thorax (and the spine in particular) that is seemingly excessive when compared to the stages of physiological development that precede and follow. One common symptom is the rolled forward position of the spine (arms “dangling” in front) that can potentially have undesirable consequences upon instrument set up, performer comfort, and the range of motion of the arms. However, this may be a prime opportunity to begin addressing variables in the spine and thorax, as the causal effect relationships are amplified and therefore more readily apparent. In any case, continuously assisting the student in reexamining variables in

the thorax as student proportions change can help the adolescent navigate these challenges and learn to interact with the thorax in ways they can utilize for the rest of their performing lives.

Lower Extremities

The legs, knees, ankles, and feet all serve to support the torso. While they do not engage the instrument directly, their positioning influences the overall balance of the performer. As a result, variables in the lower extremities impact performer comfort and expressive range in substantial ways.

This discussion considers the lower extremities in the context of standing. Standing provides the student a greater consistency of outcome when exploring causal affect relationships, since the ground is a relatively stable constant. On the other hand, chair size, angle, shape, positioning of the performer on the chair, etc. are highly variable. Even the positioning of the violist to the left or right of the music stand when seated (particularly applicable when performing with a stand partner) can affect balance quite drastically (although this is potentially psychological

more than physiological).[10] Additionally, the violist may find the seated positioning a particular challenge when compared to standing as it can encourage spinal compression (since the tailbone is potentially no longer suspended in the air, but rather it is compressed against the seat).

The feet are straightforward, but also exert significant influence over the way the trunk is supported. Feet that are closer together generally provide the performer less stability than feet that are further apart. Placing the left foot in front of the right foot can assist in balance, providing extra support to the side of the body where the viola is positioned. Feet that are angled with toes facing outward can additionally serve to provide extra support to the performer. Many violists choose to sway while performing, a process during which weight shifts from one foot to another. The positioning of the feet, of course, affects the balance of the sway. Feet that are too close together inhibit swaying through excessive instability, for the shifting of weight could cause the violist to collapse, particularly if placed very close together. Feet that are too far apart also inhibit swaying, this time through excessive stability, with the bending of the knees at angles too severe to accommodate an easy and natural transfer of weight. A range of options exists in between these

[10] Claudia Spahn, et al., "Comparing Violinists' Body Movements while Standing, Sitting, and in Sitting Orientation to the Right or Left of a Music Stand." Medical Problems of Performing Artists, no. 2 (2014): 90

two extremes, with violists retaining the option to use a multitude of feet positions within the same performance should they want to pair specific swaying motions with particular passages.

Lifting portions of the feet off the ground (i.e. balance on toes, heels, or even lifting an entire foot itself) facilitates a quick transfer of weight, but creates significant less stability. For example, an extreme shift in weight to the front left toe could support pushing the viola into the bow, but is so unstable that it becomes particularly unsustainable for an extended period of time. A quick shift of weight backward to the heals could facilitate an immediate release by pulling the body away from the viola, but also provides a center of gravity that is unsustainable.

The ankles, knees, and hips are all affected by foot placement. The angles of these joints can move the center of gravity higher and lower by adjusting the height of the performer. The angles of these joints can also move the center of gravity backward and forward through adjusting the position of the torso in relation to the feet. Positioning these joints almost as if crouching is an option available to performers, bringing the center of gravity lower to the ground and backwards, counterbalancing the forward pull of the instrument. However, large bends in these joints are less stable and the unusual weight distribution can cause fatigue. Simultaneously, performers could utilize legs that are fully straightened, achieving stability through locking the knees, however this

ultimately minimize options for swaying and manipulating the center of gravity while performing. Additionally, locked knees, while helping to prevent unwanted movement in the legs, remove a shock absorber, resulting in potential instability.

The placement of the feet and legs and the corresponding angles of ankles, knees, and hips are particularly malleable in the course of a performance, a benefit enjoyed as a result of interacting indirectly with the instrument and bow. While significant in the helping the performer navigate the instrument with expression and ease, large movements create subtle affects, lending this portion of the body to an abundance of risk-free experimentation. The adolescent violist, particularly one who is risk-adverse, may find the lower extremities the most approachable variables to initially experiment with.

Right Arm Apparatus

The sole function of the right arm and fingers is to guide the bow. For the purpose of the bow arm discussion, there is no "hand" since in reality the fingers extend all the way to the wrist. Unlike the previously discussed anatomical regions, movements in the right arm apparatus interact directly with the music making process, meaning changes in balance and positioning exert

significant and immediate influence over the sound that is produced. Akin to writing, painting, and other activities involving the manipulation of objects, the motion is typically led by the fingers and/or forearm while the upper arm follows. This allows the user the greatest possible control over the bow at points closest to the source of sound production. In contrast, motions instigated by the upper arm cause the bow, forearm, and fingers to move as an indirect consequence, inhibiting the ability of the performer to employ a wide vocabulary of highly detailed sounds.

The fingers can directly instigate the bow movement, such as in collé derived bow strokes, allowing the bow to immediately respond to the impetus of motion (resulting in a feeling of more control over sound production). Strokes can also be led through the forearm, with the fingers reacting. Fast, repetitive motions such as those involved in strokes akin to tremolo and spiccato are sometimes better executed with the fingers moving as a consequence of movements in the forearm. Muscles in appendages that are relaxed and not engaged will move faster than those that are. Therefore, balancing the hand and fingers as a passive appendage of the forearm (as if "jiggling") can facilitate quicker repetitive movements from the bow than if the hand and fingers are directly engaged in the process, making the tradeoff between direct control and facility particularly beneficial in many contexts. Nuances in the character of longer bow strokes can also

be realized through active vs. passive motion of the fingers, with fingers that move as a consequence of forearm motion producing sounds that are perhaps more fluid than if instigating the motion directly. Adolescent students may struggle with the concept of active vs. passive engagement, making this exploration in the right arm particularly valuable.

The bow is balanced between the fingers and the instrument itself, a relationship commonly overlooked by adolescents who frequently view the bow as being held entirely in the hand. The arm is ideally positioned in a way to balance the bow in tandem with the instrument, but without exerting forces that conflict with the desired motion of the bow. Since the right arm is in motion when sound is being produced, the entire bow stroke must be considered when determining desired positioning. For example, if moving the bow from frog to tip, the ideal balance must be determined at the frog, additionally at the tip, and then the performer must make a connection between those two points, ensuring the positioning of each extreme relates favorably for each type of connecting movement desired. Factors such as weight, speed, and contact point are infinitely variable and must also be considered when determining balance and position of the right arm, however these factors affect micropositioning more so than macropositioning.

String crossings affect macropositioning. In terms of string crossings, a balanced bow arm is one where the forces involved do not encourage the bow to collapse in either direction or cause undesirable stresses on the wrist and fingers in order to maintain the desired position of the bow. Moving from string to string can be executed by the fingers, forearm, or upperarm. If the overall balance of the bow arm on a particular string is to be maintained, and the string crossing is but a temporary interruption in this balance, motions in the fingers may be preferable. The contraction and extension of fingers is the primary means through which these temporary interruptions in balance occur. It is usually more practical to reposition the entire bow arm as opposed to utilizing the fingers when string crossings involve relatively extended passages on a new string. The forearm can lift to instigate string crossings upward (from higher pitched strings to lower pitched strings) with the upper arm following. Gravity usually instigates string crossings in the opposite direction, making the upper arm an ideal apparatus to lead downward string crossings. However, it may not be the upper arm itself instigating the string crossing, but rather a controlled release of the upper arm that allows gravity to roll the position of the arm as to allow the bow to move to the desired string. With typical adolescent students often more focused on left hand than right hand, it becomes critical to expose all these variables in the bow arm and the resulting effects.

Of course, the bow hold itself exerts significant influence over the balance of the whole right arm apparatus. A bow that is not balanced in the hand serves as a stressor to the muscles and inhibits the freedom of movement the arm requires to navigate the instrument quickly, musically, and with ease. Remembering that hands are rapidly growing at the onset of adolescence, students of this age are best served through exploring the principles of a highly functional bow hold as opposed to the typical rules based approach employed with students in the concrete-operational stage (pre-adolescence).

Because the fingers must either react to movements in the right arm or instigate the movements themselves, they must be loose and flexible. A bow held firmly in the fingers eliminates the necessary ability of the fingers and hand to participate in the process, providing the performer a generic and limited vocabulary of sounds. The inability of the fingers to instigate or react to movements can also lead to undesirable and unbalanced contortions in rest of the right arm apparatus.

When the fingers are available to participate in the movement of the bow, they each serve specific functions. The middle two fingers work together with the thumb to provide the bow a fulcrum, through which the bow moves back and forth and pivots up and down. This fulcrum must

be able to move with the bow as the pushing motion and pulling motion associated respectively with up and down directions of the bow requires the fingers and thumb to extend and contract. The index finger and pinky stabilize the fulcrum to provide balance. Index fingers and pinkies that are more engaged reduce freedom of motion in the bow, but provide stability, whereas less engaged index fingers and pinkies facilitate the bow's ability to move and react as a consequence of motion in the right arm, hand, and bow fulcrum. The bow placement in the hand also affects its balance and ability to respond to the right arm apparatus. Bow placement closer to the fingertips (distal phalanges) allows for a wider range of motions, however bow placements further inward (intermediate phalanges) better facilitate the transfer of weight from the arm into the bow, aiding in the production of tone. Adolescent students who develop sufficient understanding of these causal-effect relationships within the bow hold itself are not only well suited to respond to their own anatomical changes, but are also afforded the ability to make changes and alterations to their bow hold to expand their own vocabulary of sound colors.

Finally, it is valuable to note that the right arm apparatus enjoys the most freedom of motion in either direction when positioned so the elbow forms a right angle between the forearm and upper arm. This means the forearm can easily expand and contract in either direction. This

point of equilibrium in relation to where the bow is placed on the string changes as the arm grows. Whereas a shorter arm may enjoy a point of equilibrium closer to the lower middle half of the bow, a significantly longer arm would realize this ninety-degree angle further out toward the tip. Intensely exploring or reexploring the balance of the bow in positions where the elbow forms acute angles (lower half of bow) may be necessary for the student with quickly growing limbs, since this positioning of the bow arm suddenly becomes significantly more relevant. Spiccato and off string strokes may become a challenge in particular for students with suddenly longer arms, since these strokes thrive on balance.

Left Arm Apparatus

The fingers of the left hand are responsible for pitch and must manipulate and navigate the four strings. Of all the anatomical components of the body involved when performing the viola, the work of the left hand is perhaps the most sensitive to precision. Adjustments of tenths of millimeters create immediately and easily discernable differences in the musical output.

Fast passage work typically requires the left hand to rapidly alternate between strings and fingers. Much like the technique of skilled typists, fingers ideally remain close to the point of

action even when not engaged so they are available to drop and release as frequently as multiple times per second. Slower passage work typically demands vibrato, requiring the distal interphalangeal joints of the left hand to oscillate between flexion and extension, also as frequently as multiple times per second. Akin to the aforementioned discussion as to how the fingers of the bow hand move faster when reacting to movement as opposed to instigating movement, the left hand works the same way. As a result, the fingers do not produce the vibrato, but rather are moving as a consequence of action in the wrist and/or elbow. Similarly, the tips of the fingers drop and lift most efficiently as a reaction to movements in the metacarpophalangeal joints as opposed to the distal phalanges directly instigating the movements themselves. The release/lifting action of the finger ideally occurs quick enough as not to interrupt the next finger dropping, allowing the hand to remain free and balanced. Fingers that drop overlapped, particularly in less idiomatic passagework, can easily contort the shape of the hand (although this is different from intentionally leaving fingers down periodically to promote efficiency, a necessary practice).

Fingers that drop lightly are less demanding on the hand than those that drop with great force. The shock of a finger that drops heavily not only provides stress to the setup through creating a significant downward force that must somehow be compensated for, but also can easily contort

the hand in to less balanced positions. This can cause significant discomfort and encourage the wrist and arm to react in undesirable ways.

The elbow, being a rotary joint, can rotate the forearm clockwise and counterclockwise. This variable is valuable in orienting the position of the hand so the fingers align with the string. The elbow can also, in coordination with the shoulder, expand and contract to move the hand to different places on the fingerboard (i.e. a shift).

The shoulder can swing the arm back and forth. This can help align the fingers with a given string and facilitate shifts into higher positions. The shoulder can also raise and lower. Raising the shoulder pushes the viola into the head, potentially stabilizing the instrument. However, in relation to the torso, the shoulder itself becomes significantly less stable, likely negating any potential positive effects. Raising the shoulder also can be associated with pain and fatigue. The shoulder lowered to its most downward position provides the greatest stability since it is essentially resting, whereas the raised shoulder is constantly fighting fluctuating downward forces.

Establishing (and constantly re-establishing) a balanced setup may be the first step in facilitating the adolescent student's exploration of the left arm apparatus. While this appendage should simply function to orient the fingers so they can reach the string in an optimal way, a rapidly

growing student may instead inadvertently begin to use the left arm apparatus to support the instrument itself, often in unhealthy ways. Although many seasoned violists allow the instrument to rest in the left hand, relying too much on this approach reduces the ability to vibrate and inhibits facility in critical ways. Raising the shoulder to "pinch" the viola is even more problematic for the reasons mentioned above. In fact, a teacher may encourage the student to rest the instrument almost entirely in the hand as an initial means to an end, despite the issues both approaches pose. The development of the thorax, spine, and head is required in order to support the instrument, and this is a potentially lengthy process that is partially reliant on the shoulder remaining lowered and relaxed. Because less demanding repertoire can be realized accurately by holding the instrument in the hand, allowing the hand to prop up the instrument is a potential transitional solution that removes the motivation for the student to raise the shoulder.

Left arm positioning may initially be better facilitated through fourth position than first, and the adolescent violist may benefit from extensive or even exclusive work in fourth position. First position requires the arm to extend relatively far away from the body, not only moving the center of gravity out away from the performer, but increasing the significance of the downward action of the dropping fingers. Fourth position brings the arm closer to the body, significantly

reducing the stress on the setup and minimizing the influences of forces that may trigger the shoulder to raise, the ribcage to collapse, and/or undesirable strains in the head, neck and spine. Working slowly from fourth back to first position over time can provide a way to gradually introduce the variables discussed in preceding sections and employ them in increasingly demanding contexts. Moving the left hand closer to the center of the fingerboard is also ideal for the development of vibrato for many of the same reasons, especially since vibrato is so sensitive to balance.

Vibrato requires the hand to balance on top of the forearm, with the ability to swing easily back and forth in each direction. Because this balance is relatively particular, especially when seeking to employ specific shades and colors of vibrato, a performer's entire left arm could largely be oriented around facilitating this motion. Once again as if "jiggling", the performer could explore how the vibrato is affected by varying arm placements in the air without the instrument, and then add the instrument in as a second step once a potentially optimal arm placement is found. This allows the student to move from simpler balance activities to more complex ones that involve the instrument.

Unbalanced and stressed hand positions significantly inhibit vibrato, if not prevent it all together, since the transfer of energy from the wrist/elbow to fingers cannot take place. The conscious addition of vibrato on each note (usually in a slower tempo or out of tempo altogether) in a student that has developed fluency with this technique can aid the student in prioritizing left hand balance. Since subtly unbalanced hands or excessively tense hands can be hard to detect but still carry significant implications, a teacher could rightfully suspect that a student capable of performing vibrato but struggles to employ it in a specific passage has not yet achieved a balanced left arm position in the context of that passage. Conversely, the presence of an uninhibited vibrato is a telltale sign that the student has achieved this balance.

To the student who always seems to ask if they should play their scales and warmups with vibrato, in context of balance the answer might very well be “yes”, especially during stages of physiological development when anatomical proportions are in constant flux.

Non-Anatomical Factors

Movement is initiated in the brain, so a focus on anatomic and physiological variables alone cannot fully account for the creation of balanced motions and optimal positioning.

Psychological and musical considerations play equally important roles, however these factors are far outside of the scope of this research. While at times the most glaring examples are discussed, such as the lifting of the shoulder to catch the instrument when it feels insecure, subtle nuances that are equally impactful are not addressed in this document, such as the impact of stress on muscle engagement, false correlations between employed movements and desired musical outputs (such as pressing with the bow to achieve more resonance), etc.

BALANCE AWARENESS AND ADOLESCENT REPERTOIRE

Telemann Viola Concerto

The second movement of the Telemann Concerto for Viola and Orchestra in G Minor is frequently one of the first major works viola students encounter. The concerto is easily approachable by students with minimal skill development, is almost entirely idiomatic, and demands only the simplest techniques to execute. The second movement in particular uses detaché almost exclusively (usually one of the first bow strokes explored by beginners), is playable entirely in first position apart from one measure, and uses primarily the low two, high two, and high three finger patterns. The mere notion that the movement can even be described using this terminology is a testament to its relative approachability.

In fact, the ease with which it can be performed (especially in context of the remaining canon of works traditionally studied by viola students) can inadvertently pose challenges for the teacher of the adolescent. The concerto is, ironically, so approachable that it can be executed with haphazard technique that yields little to no consequence that is obvious to the typical student.

Developing causal effect relationships may be a challenge since the effect is particularly minimal in the context of easier repertoire. However, the Telemann is still acutely valuable in setting a performance standard that more challenging works will later be compared against. It is also a helpful "playground" piece that allows students, particularly those with less confidence, to explore variables of balance and positioning without encountering any particularly catastrophic consequences.

Following the "handshake stage" (the first few days-to-weeks when a student is just getting to know the repertoire through sightreading, listening, and other introductory activities), a typical adolescent student likely begins to focus on the limited passages that are less approachable. As a result, it may be advantageous to begin discussion and exploration of balance and positioning using those measures, as the student is already motivated to tackle these challenges.

However, before exploring these passages it should be noted that tempo directly affects positioning and consequently balance. Therefore, as a student studies the piece under tempo, the motions in context of each passage when performed up to tempo must remain close by. Pizzicato is a valuable strategy for students who looking to explore how left hand positioning works in a faster tempo, but have not developed the bow skills necessary yet to execute at higher speeds.

Pizzicato also removes the downward pressure on the viola caused by the bow, easing strain on the torso (keeping in mind that this element of adolescent anatomy is likely underdeveloped).

Measures 33-40 provide a valuable excerpt through which to explore the balance of the left hand. The positioning of the left hand must facilitate quick navigation by all four fingers across all four strings. As a result, the performer must think about left hand balance across large groupings of notes, as opposed to individual pitches. Determining the outermost extremities demanded by the first and fourth fingers is critical to identifying a balanced hand position, a strategy that can be employed by the student with frequency in nearly any and all musical endeavors that follow. In this passage, the extremes lie between first finger B on the A string and fourth finger D# on the G string. Placing those fingers on the strings simultaneously reveals the necessary position of the hand (n.b. omitting the left thumb encourages the hanging feeling and assists the student in discovering this balance, while attempting to vibrate the aforementioned “double stop” also helps in identifying a balanced position of the left arm and hand). The position of the left forearm and upper arm can then be arranged to facilitate maximum comfort and balance, primarily by contracting or expanding the elbow toward/away from the body. A student may discover a forward positioning of the left elbow is required to facilitate this finger span as a result of the extended

fourth finger (D#). Students who perform violas too large to accommodate the passage within the available finger span would likely discover a compromise, a middle positioning of the hand that rocks slightly back for the first finger and slightly forward for the fourth finger. Regardless, students who do not think about the passage wholistically in terms of balance, but rather one note at a time in rapid succession, likely employ the wrist to navigate the passage, a common practice which is unreliable, unbalanced, and excessively cumbersome. The skill of exploring left hand balance wholistically across an entire passage is a critical prerequisite for the study of all music that follows and is perhaps one of the most valuable outcomes of a student's interaction with these measures.

The right hand requirements of this same passage (mm. 33-40) can be organized in a similar way. The "G" string serves as one extreme and the "A" string serves as the other. Here is another example where the context of the passage in full tempo must remain close by. While in slower tempos the motion of the string crossing can be executed through the forearm and upper arm, faster tempos likely require wrist and finger motion to take control. It may be advantageous to allow the student performer to explore this concept, as well as the corresponding left hand strategy mentioned above, through trial-and-error as opposed to providing the "best practice" solution

through direct instruction. A trial-and-error approach affords the student the opportunity to experience the cause and effects of the interaction of the many variables at play as opposed to blind replication of a prescribed teacher-administered remedy. The teacher can guide the student's discovery of the D string serving as the center of balance for this passage, with small motions in the wrist and fingers through extending and contracting interrupting the balance to access notes on the G and A strings. The fulcrum of the bow hold can be explored to facilitate a student's understanding of the role of the fingers and hand in navigating string crossings. For students with little to no experience executing rapid string crossings through the right hand and fingers, a return to the balance point bow hold can serve as a significant aid. Regardless of the bow hold employed, students benefit from practicing the passage with the index and pinky fingers removed from the bow, essentially holding the bow only using the fulcrum elements of the right hand (middle two fingers and thumb). Contracting the fulcrum into the hand pivots the bow to the G string, while extending the fulcrum away from the hand accesses the "A" string. In tempo, the remaining right arm apparatus can be allowed to follow the wrist and fingers to the G and A strings as much as the performer desires and the speed allows. The more the apparatus is free to follow the bow, the more balanced the arm becomes when engaging notes outside of the D string (which consequentially

expands opportunities for phrasing as balanced positioning increases the range of motion available). However, a repositioning of the entire apparatus for one note on a given string is unfeasible and unwieldly, with excessive motion yielding less than desirable musical outcomes, an important discovery for the student.

Locked, rigid, or excessively tense muscles inhibit freedom of movement and impede balance. Relationships between concentration and excessive tension have been established[11]. Separating the hands when exploring the previously discussed strategies may be advisable to reduce cognitive load and better facilitate the exploration of balance. This is another causal effect relationship that may be advantageous for the student to explore at this stage of their musical development as its relevancy to the performance preparation process continues to heighten as more and more challenging repertoire is explored.

The shift in the left hand required to execute measure 64 also demands the student consider the passage wholistically to determine appropriate balance. Whereas a student with relatively limited experience may be inclined to initiate the shifting movement from first position to third

[11] Martin Gellrich and Richard Parncutt. "Concentration and Tension." British Journal of Music Education, no. 2 (1991): 173

position by leading with the fingers and/or hand, after a few notes in the new position the student will soon discover the hand is not sufficiently balanced to accommodate the facility this measure requires. Rather, isolating the third position passage in measure 64 by itself, then the first position passage in the previous measure, and finally connecting the dots will hopefully lead the student to discover the shift is best instigated through contracting and expanding the elbow as opposed to utilizing the wrist and fingers. Finding the balance of the hand in third position, potentially a relatively new skill for the typical student approaching the Telemann, can be accommodated by removing/releasing the thumb from the neck of the instrument, testing the extremes required of first and fourth finger (as we did in the passage starting in measure 33) and finally tapping the thumb back to the neck in the position most natural for the hand. In this case, the first and fourth fingers may be placed in between the strings (as if loosely blocking fifths) to test the extremes required of the hand frame.

The second movement provides significant opportunities for students to explore the positioning of the head, instrument, thorax, and lower limbs. Employing baroque performance techniques inevitably leads to experimentation with the positioning of the viola and its relationship with the head, with the balance of the instrument shifting from torso to hand, the corresponding

impact on the bow arm and optimal angles for the execution of detache, and the effect on overall performer center of gravity. Removing the shoulder rest and/or chin rest and holding the instrument in similar ways to period performers reveals the potential to shift the weight of the viola from the head, torso and neck to the hand in extreme ways, while still allowing the music to be executed at the highest possible level (the Telemann being a rare example of a piece in the traditional student canon of repertoire that can facilitate this). Placing the bow hold at the balance point as opposed to the frog can be highly valuable in exploring baroque bows strokes, but also moving the center of gravity of the bow to a more comfortable position, facilitating exploration of hand and finger movements with greater ease as mentioned above. Lighter bow strokes and emphasis on bow speed, as opposed to weight, also allow students to explore how the bow affects downward pressure on the instrument, torso, and spine.

The Telemann serves as an effective sandbox for the young performer, allowing the student to explore principles relating to balance in the context of their own anatomy, to develop fundamental strategies that will be necessary in the more challenging repertoire that follows, and to cultivate confidence, an especially important element for students who are at the onset of adolescence and are often uncomfortable and increasingly self-conscious performers.

Stamitz Viola Concerto

Whereas the Telemann offers the student flexibility to explore a variety of seemingly extreme approaches to balance and positioning without compromising a reliable and musical execution of the concerto, the Stamitz is much more demanding in terms of attention to detail. Subtle nuances in the placement of torso, arms, viola, and bow affect execution in drastic ways. In particular, the facility and freedom of movement the concerto requires makes balanced positioning an imperative in order to navigate passages with technical and expressive competence.

This discussion focuses on the first movement, although many strategies can be applied elsewhere in the concerto. The first movement requires the performer to employ extensive and fast passage work across all four strings and in multiple positions, lyrical double stops, and sudden changes of register all in the context of delicate and finessed phrasing with the bow.

Facility demands balance and, much like a pianist would struggle to navigate a keyboard moving in unpredictable ways, the ability to maintain the viola in a relatively static (yet relaxed) position is fundamental to the success of the performer. While this may seem like a rudimentary skill, in the context of sweeping movements of the bow and the left arm that cause intense shocks to the setup, this is a challenging feat for almost any violist.

The opening passage (mm. 72-79) exposes the need for stable and reliable setup. Not only must the setup accommodate heavy and repetitive bow lifts (circle bows), but also the frequent release and repositioning of the left hand. Because there are moments where the performer releases both hands simultaneously, the viola must be supported exclusively using the head and torso in a way that does not result in excessive give, as to allow the hands to return to viola in an accurate and reliable way. The student can begin to explore variables such as the positioning of the head, elevation and expansion of the ribcage and sternum, and engagement of the diaphragm as they look to find ways to accomplish this task. Initially removing the triads in measures 72, 74, and 76 may aid the student, as less experienced players will often unnecessarily use a heavier hand and bow to execute double and triple stops, resulting in an unnecessary downward force on the viola and corresponding strain on the setup. This strategy also reduces cognitive load, particularly for the student less comfortable playing multiple strings at once. The short length of this passage creates a task that is manageable for the learner, as opposed to attempting to apply new and unfamiliar variables across an entire piece.

The skills learned in the first passage can later be applied to measures 84-89, particularly the ascending arpeggiated broken octaves in the final two beats. The left hand must release and

reposition rapidly and with a particularly high degree of accuracy, meaning the reliability of a performer's execution is contingent upon a stationary instrument. The left arm must be uninhibited as well as to allow effortless navigation across a large span of fingerboard in a short period of time, once again demanding the torso and head provide almost exclusive support for the instrument. The passage as a whole demands the student make conscious decisions about the balance of the left arm, as it travels from first position on the C string to seventh position on the A string. The string changes in the left hand can be accommodated through the fingers extending and contracting, the left elbow rolling, or a combination of the two. The elbow position must contract to execute the shifts at the end of the passage, meaning the student will need to consider how and when to combine the rolling of the elbow with its contraction in toward the body. These measures are particularly effective in exposing a potentially unfamiliar, but highly useful relationship between fingers, arm, and setup, with the arm guiding the fingers around an instrument that is supported entirely independently from the appendage itself.

Measures 120 – 128 reinforce previously introduced concepts in differing contexts. The idiomatic double stopped portion of the passage readily encourages left hand balance, and the addition of vibrato not only supports the lyricism of the phrase but also helps the violist find

balanced positions of the entire appendage. The transition from double stops on the lower two string to ones on the higher two strings exposes the role of the elbow, which will likely be relied upon entirely to execute this string crossing. A half rest separates the lower string iteration from the higher one, helping facilitate a relaxed and natural reposition of the left arm. However, a student may discover that the successive string changes in the final two bars of the passage are better initiated through the fingers, as the virtuosic nature of the run makes the elbow an unnatural and cumbersome choice.

The viotti bow stroke is employed in this movement at measures 109 and 191. Characterized by an active and quick down bow followed a passive and relatively slow rebound, this bow stroke thrives on balance. Ideally, the forearm tosses the hand and the hand bounces effortlessly back to its initial position, as if spring loaded. The student discovers the relationship between active forearm and passive fingers through learning to execute this bow stroke.

Rapid string crossings and bariolage in sixteenth note passages requires similar attention to the bow fulcrum and right arm mechanism as discussed in the Telemann, albeit the Stamitz is far more demanding. By utilizing the lower half of the bow, where the natural weight will catch the string with relative ease, as opposed to the middle to upper half which will likely require the

left arm to lean into the bow in order to engage the string, students can reduces downward pressure on the setup and help minimize strain on the head and thorax.

It will take the student time to develop full control over new variables such as the ribcage, sternum, and diaphragm. The student may find it particularly helpful to initially work within the piano dynamic range to minimize the downward force of the right arm until the setup of the thorax is more secure. Facilitating tone production through horizontal bow movement as opposed to vertical weight also reduces stress on the thorax. Light finger pressure in the left hand is also beneficial in mitigating downward forces. As the student grows more comfortable, confident, and as their torso grows to match the proportions of the rest of their body, heavier bows can be added back in to achieve a more desirable "concerto" tone. Adding in heavy bows at the onset of a student's study may compromise their entire success with the piece, however, especially if the student's torso cannot physically support the weight.

Bruch Romance for Viola and Orchestra

Just as the Stamitz requires the performer to realize a different relationship with the instrument when compared to the Telemann, the Bruch Romance demands the adolescent student

interact with the viola in new and unfamiliar ways. The regular use of full, lyrical, and relatively weighty bow strokes is a likely previously unencountered challenge. The addition of continuous (or something very close to continuous) vibrato inherently demands different interactions with the left hand that prioritize balance on each individual finger alongside the hand frame as a whole. Oscillating between lyricism and virtuosity additionally requires the performer to critically evaluate the varying priorities within each passage and apply strategies relating to balance that reflect those priorities.

The Bruch challenges the student to find balance in the right arm apparatus through interacting with the legato stroke, unlike the Telemann and Stamitz which prioritize the use of detaché and martelé. Whereas the detaché and martelé strokes are characterized by simple motion (essentially impetus and release of the hand and forearm), legato strokes are highly varied, intricate, generally involve the entire right arm, and often demand the use of full or nearly full bows. Students may instinctively apply bow weight and even pressure as a blunt force in order to achieve a full resonant sound when executing legato strokes, which not only constricts resonance, but also creates excessive tension that impedes balance.

The fulcrum of the bow hold becomes integral in a student's approach to legato bowing. Facilitating the transfer of weight naturally from frog to tip, a functioning fulcrum will allow the balance of the bow to be felt against the pinky in the lower parts of the bow and the index finger in the upper portion. Locked and excessively tense thumbs prevent this weight transfer, meaning a teacher will likely need to be aware of any tendency of the student to squeeze the bow while attempting to create a full sound. Measures 2-10 are a helpful opportunity to explore this relationship, which can then be applied throughout the piece, especially since the passage is centered around the D string (generally the most accessible for the violist in terms of finding an optimal balance in the right arm). Once again, removing the pinky and index finger as a practice strategy exposes the role of the bow fulcrum. Particular attention to the ability of the thumb to flex or roll with the bow as it moves from frog to tip can be helpful. Employing subdivisions in sixteenth notes (or even thirty-second notes) in the context of down and up bow staccato, with the bow stopping in between each subdivision and the pinky/thumb still removed, can allow the student to explore the natural tendency of the bow fulcrum to facilitate the transfer of weight without the need to draw a long and connected bow stroke. Continually exploring this concept and

then returning the pinky and index finger to the bow as a follow up step is helpful not only in the opening, but throughout the piece.

Students of the Bruch also readily encounter the challenges of connecting legato bow strokes. Students are often tempted to squeeze or press to help the sound continue through the bow change, essentially trying to maintain weight on the bow as to smear the down bow into the up bow and vice versa. Guiding the student to explore other more optimal strategies, namely bow speed, to connect the bows can help mitigate the excess tension. Loose bow holds that allow the bow to "breathe" are helpful in allowing finger motion to guide transitions during bow changes, a variable that might seem counterintuitive to the student trying to pull the largest possible sound from their instrument. Returning to a balance point bow hold as an exercise may help students explore looser bow holds and encourage the finger motion that is critical to connected, lyrical, legato bowing.

Finally, the upper arm must be available to respond to the positioning of the bow throughout the legato stroke, much like in full bow martelé. Lightly sketching bow strokes against the string in piano dynamics (so that the bow arm is fully released and muscles are not actively engaged) can expose this relationship. A loose and relaxed shoulder socket will allow the upper

arm to flow and reposition around the rest of the right arm and the bow itself. The student can then follow up on this strategy by finding ways to add weight back into the bow stroke without engaging the shoulder and upper arm in undesirable ways.

The emphasis the Stamitz places on supporting the instrument without the left arm is particularly applicable in the Bruch as well, although admittedly the Stamitz may still be more demanding in this regard. The application of varied, consistent, and uninhibited vibrato throughout the Bruch require the left arm to be largely free from supporting the weight of the instrument. Virtuosic episodes also demand this freedom. Continuing to emphasize the exploration of ways to provide support to the instrument through the head, ribcage apparatus, sternum, and diaphragm will allow the left arm to navigate the demands of the Bruch with ease.

The balance considerations in the left hand itself change between virtuosic passages and ones that prioritize vibrato. Fast, left hand passage work demands the fingers to remain close to the string as to access notes with speed and minimal interruption in balance. Conversely, vibrato (particularly wider vibratos such as those desired in the Bruch) can benefit from keeping fingers not in use somewhat removed from the string, both preventing unwanted contact between idle fingers in a shaking hand and the instrument and additionally helping to create the instability

required for the hand to oscillate back and forth to a wide degree. The hand must still be balanced as to produce an even vibrato, however the relationship differs than that of a hand prioritizing facility. Highlighting how this relationship changes between passages akin to the lyrical opening and ones similar to the *un poco stringendo* reveal additional variables in the left hand. A teacher and student may pay particular attention to the first finger, as the index finger can often feel more balanced (especially in the context of vibrato) through inadvertently collapsing the wrist, however this repositioning will inevitably fail the student when other fingers are reengaged with the string. Much like in the Telemann, we discover the balance of the hand across the entire passage must be considered when implementing vibrato, as opposed to attempting to "connect the dots" between individual vibratos created on each specific finger.

The Telemann, the Stamitz, and the Bruch have served as cornerstones of the student repertoire for nearly a century, however it is the conversation surrounding balance that makes these pieces highly relevant to adolescent violists. The typical teenage student, one with a smaller torso paired with a larger instrument to match their suddenly longer arms will likely particularly struggle achieving balanced and comfortable technique, making a curriculum centered upon anatomical awareness indispensable to their continued success. The development of this curriculum hinges

upon the understanding and appreciation of the challenges posed to every adolescent by distal proximal development.

LECTURE RECITAL SCRIPT

It is well known that students undergo physical and cognitive transformations during adolescence, however the specifics of these transformations and how they are best navigated is far from common knowledge. Teachers motivated to learn more about these transformations are in fact left few, if any, resources to consult. A review of method books, teacher manuals, pedagogical treatises, and available published research reveals a topic given little-to-no attention, despite its particular relevance in string classrooms and private studios who largely serve adolescent students.

If dancers create visual art through movement, string players create aural art using the same mechanisms. Growth spirts in the feet, legs, hands, arms, and head require dance students to reinvent their approaches to the medium, yet in the string classroom and studio lesson we too often boldly overlook these consequential developments while simultaneously watching students struggle with fundamentals that were once a breeze.

However, the growth patterns that take place during adolescence are far from random, and with awareness of the patterns alongside a toolbox filled with effective strategies, we can help our string students navigate these new anatomies and grow into confident, lifelong musicians.

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Today's session is divided into two parts. In this first section we unpack the basics of adolescent anatomy. This includes how adolescents grow, when they grow, and the effect of this growth upon their ability to perform a string instrument.

The second section focuses on the private viola studio that serves adolescents, breaking down this transformation into stages and associating each stage with foolproof strategies derived from commonly studied repertoire.

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The idea that adolescents grow rapidly is common knowledge, however it is less known that students of this age grow highly disproportionately.

Different parts of the body grow at different times, often leading to the stereotype of awkwardness in appearance among this age group. Certain parts of the body grow first, followed by other parts of the body at later stages. In fact, as we will explore, the sequence of growth

couldn't be less ideal for the string player and creates numerous challenges for young musicians looking to learn a string instrument.

This topic is also of paramount importance because of how the timeline of anatomical development overlaps with the string curriculum. Most students are beginning their instruction just prior to the onset of adolescence, meaning students are encountering these rapid, disproportional, and awkward growth spirts in some of the earliest stages of their learning. This limits their ability to self-diagnose and adjust to changes in their own anatomy as they are only just beginning to form a bow hold, establish a quality instrument position, and develop their left hand technique. It would be akin to a child just beginning to learn to walk and then days later their legs are suddenly two feet longer.

Many abide by the common logic that students will continue their study of an instrument if two criteria are met. First, that they are getting better, and second, that they enjoy it. When we fail to help students navigate the challenges posed by the adolescent body, we inhibit their ability to get better and prevent the student from developing a relationship with their instrument that is comfortable and pleasurable. It is easily arguable that a large chunk of attrition we see with this

age group is an extension of a failure to address these growth patterns, leading to students who cease to progress, who are uncomfortable, and sometimes even worse, injured.

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We discussed earlier how the growth spirts adolescents experience occur in different parts of the anatomy at different times. The term that defines the way adolescents grow is distal proximal development. This term may be the single most important one from today's conversation.

Distal proximal development describes the order in which adolescents grow. The growth takes place first at the extremities (fingers, toes, and head) and then works its way toward portions of the anatomy closer to the spine.

For the sake of this conversation, we can describe the process in three stages. Hands, feet and head grow first. We can call this stage one. It is interesting to note that within stage one there are sub stages. For example ears, nose, and lips grow before the rest of the head grows, but these sub stages are less relevant to our discussion. It is helpful to note that the brain grows rapidly with the head in this first stage, meaning the cognitive power of adolescents increases rapidly at the onset of adolescence, much before the rest of the body catches up.

If hands, feet, and head comprise stage 1, stage 2 is defined by the growth in the arms and legs. In stage 2, the appendages quickly lengthen to catch up to the hands, feet and other extremities that developed in stage 1.

Finally the torso and internal organs grow, which we can refer to as stage 3.

Of the three stages, the second may be the trickiest to navigate. Keep in mind the significance of a small, undeveloped torso supporting an adult sized head, arms, and legs, not to mention the instrument itself in the case of violinists and violists.

While the growth spirts occur quickly, the entire process takes 3-4 years to complete. That means student may be stuck in stage 2, with large, heavy, fully developed appendages and no corresponding growth in the torso, for entire grades of schooling. The development of the internal organs in the final stage adds weight to the body, often creating a stability that does not exist in the second stage. Therefore, as string teachers we really have our work cut out for us with students who are in this second stage. These students are unbalanced, highly disproportionate, and navigating an instrument at a level that requires rapid, ballistic motions, using heavy, fully developed appendages.

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All three stages of growth challenge the string student in unique ways, despite the unique obstacles posed by the second stage.

As pointed out, adolescents experiences growth in the fingers first. While this does not usually impact the balance of the entire performer, it often leads to undesired or unintentional changes in playing position. As the fingers grow longer, the placement of these fingers can change. Students may begin to perch the fingers in both hands. Less common, but still possible, we see students who allow the fingers to extend past desirable points, such as beyond the bottom of the frog of the bow with the right hand.

The second stage results in sudden lengthening of the arms and legs. The balance implications become drastic, particularly for performers of the violin and viola. The lengthening of the legs brings the center of gravity further above the floor, which is a destabilizing force for most students. However, even more consequentially, the lengthening of the arms pushes the center of gravity further away from the performer's torso, also a destabilizing force. Combined, the lengthening of the legs and arms without the counterbalance of a heavier torso creates a "falling forward" affect for the student. Teachers commonly decide to increase instrument size to compensate for these longer appendages, and unknowingly exacerbate these issues in the process.

The lengthening of the arms may also change the placement of the bow, with many adolescent students favoring the upper half in order to maintain the normal positioning of the forearm in relation to the upper arm.

The final stage sees the torso finally grow, along with internal organs, to match proportionately the preceding growth in the arms, head, and legs.

[SLIDE CHANGE]

The thorax supports not only the head, but also the arms, and in the case of viola players, a very heavy instrument. Training the core of our anatomy becomes critical for our success as violists, especially adolescents navigating long appendages with a child-sized torso in the second stage.

The positioning of the thorax and its relation to the instrument directly influences the range and ease of motion experienced in each arm, affecting performer comfort and facility. The adolescent student can learn to manipulate several variables involving the thorax and developing these motor skills as they relate to the thorax can ultimately help adolescent students discover movements that are free of tension, that are musical, and that are reliable.

Moving from macro to micro, one of the most immediately obvious variables at play is the position of the sternum and ribcage. Working in tandem, these two components form an apparatus that can be positioned so it is fully expanded and elevated, fully contracted, or in any position in between. Since the viola rests somewhere on the upper portion of the ribcage or upon the clavicle, the implications of ribcage position upon the comfort and freedom of the performer are particularly acute. Additionally, the position of the arms corresponds directly with the position of the ribcage and sternum. Arms will likely naturally expand out to the side when the ribcage apparatus expands, and correspondingly contract inwards when the ribcage apparatus contracts. As a result, the range of motion for each arm increases when the ribcage apparatus expands. An expanded and elevated ribcage and sternum can help provide more support for the weight of the viola, helping counter the downward pull of gravity and any weight of the action of the arms and hands.

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Interactions with the respiratory process make the ribcage a unique variable to consider. The sternum and ribcage elevate and expand through activation of the intercostal muscles, which can be triggered through inspiration (both active and passive). Deep inhalation that fully inflates

the lungs with air may help a student find the position of the ribcage where it is fully elevated and expanded. Completely evacuating the lungs of air will likely help a student find the opposite position of this apparatus.

The diaphragm works in concert with the intercostal muscles throughout the repertory process and can also interact with ribcage placement. The muscle fibers of the diaphragm attach to the central tendon, and when they contract the central tendon descends, which may result in a feeling of pulling the abdomen down into the pelvis. As a result, the cavity enclosed by the ribcage tends to expand.

Active respiration, particularly inspiration supported by the diaphragm, can help the violist reposition a collapsed ribcage apparatus into a potentially more desirable position. Simultaneously, respiration can continue while the ribcage remains expanded and elevated and while the muscle fibers of the diaphragm remain contracted. This allows the performer to use respiration and the diaphragm to establish a desired position of the ribcage apparatus, but still continue to breathe without causing continued fluctuation in the torso and, consequently, the instrument and arms.

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The spine is additionally a variable to consider when analyzing the role of the core. Highly malleable and thus containing infinite possibilities, entire professions are devoted to the alignment of the spine, especially given its role in supporting the entire body (and indirectly the instrument, which rests on the body). Suboptimal positioning of the spine can, of course, lead to inhibited range and freedom of motion, discomfort, and even injury.

Alexander Technique teaches us a few integral principles regarding the spine. First, encouraging the natural lengthening in the spine is particularly ideal in providing the body support (and in turn the instrument). Second, the expansion and elevation of the ribcage apparatus is associated with a lengthened and healthy spine. Finally, the spine can serve as a spring, which can expand upwards to provide support to the viola in a flexible way and mitigate downward forces (namely gravity, finger action, and bow action).

The pelvic tilt has implications for the lengthening of the spine. Positions of the pelvis range from posterior tilt to anterior tilt, with a position somewhere in the middle commonly referred to as neutral. Tucking the tailbone down is associated with a posterior tilt, whereas the anterior tilt is characterized by a tailbone pointed out. The tailbone being the lower most extremity of the spine, pelvic tilt directly correlates with the ability of the spine to fully lengthen. Anterior

tilts naturally compress the spine, likely making this extreme of position undesirable. Posterior tilts force the spine to lengthen, but a neutral position could also be considered. Because this variable is geographically distant from the viola itself, a teacher would potentially need to point out to the adolescent student the need to consider and explore pelvic position to provide optimal support to the thorax and instrument.

While the entire body is involved in establishing balance, the role of the core is unmatched in its significance to this conversation. There will likely be a stage for the adolescent student where arms are particularly heavy and long compared to the thorax, creating an unfamiliar strain on the thorax (and the spine in particular) that is seemingly excessive when compared to the stages of physiological development that precede and follow. Adolescence is a prime opportunity to begin addressing variables in the spine and thorax, as the causal effect relationships are amplified and therefore more readily apparent.

[SLIDE CHANGE]

Viola students commonly study the Telemann and Stamitz viola concerti, as well as the Bruch Romance, during their adolescent years. The availability of student level repertoire being highly limited for the viola, and the works of Telemann, Stamitz, and Bruch held in high musical

esteem, it is logical for students to continue to loosely pursue this sequence. However, our approaches to these pieces rarely, if ever, take the specific elements of adolescence into consideration. However, we can easily use this repertoire to develop an entire curriculum that responds to the anatomical processes of the age group most likely to be studying this literature for the first time. We will begin our discussion of this curriculum with a performance of the second movement of the Telemann, which will then give way to the specific strategies we can employ to help adolescents develop balance in the context of changing bodies and centers of gravity.

[PERFORMANCE: TELEMANN VIOLA CONCERTO, II]

The second movement of the Telemann Concerto for Viola and Orchestra in G Minor is frequently one of the first major works viola students encounter. The concerto is easily approachable by students with minimal skill development, is almost entirely idiomatic, and demands only the simplest techniques to execute. The second movement in particular uses detaché almost exclusively (usually one of the first bow strokes explored by beginners), is playable entirely in first position apart from one measure, and uses primarily the low two, high two, and high three finger patterns. The mere notion that the movement can even be described using this terminology is a testament to its relative approachability.

In fact, the ease with which it can be performed (especially in context of the remaining canon of works traditionally studied by viola students) can inadvertently pose challenges for the teacher of the adolescent. The concerto is, ironically, so approachable that it can be executed with haphazard technique that yields little to no consequence that is obvious to the typical student. Developing causal effect relationships may be a challenge since the effect is particularly minimal in the context of easier repertoire. However, the Telemann is still acutely valuable in setting a performance standard that more challenging works will later be compared against. It is also a helpful "playground" piece that allows students, particularly those with less confidence, to explore variables of balance and positioning without encountering any particularly catastrophic consequences.

Following the "handshake stage" (the first few days-to-weeks when a student is just getting to know the repertoire through sightreading, listening, and other introductory activities), a typical adolescent student likely begins to focus on the limited passages that are less approachable. As a result, it may be advantageous to begin discussion and exploration of balance and positioning using those measures, as the student is already motivated to tackle these challenges.

However, before exploring these passages it should be noted that tempo directly affects positioning and consequently balance. Therefore, as a student studies the piece under tempo, the motions in context of each passage when performed up to tempo must remain close by. Pizzicato is a valuable strategy for students who looking to explore how left hand positioning works in a faster tempo, but have not developed the bow skills necessary yet to execute at higher speeds. Pizzicato also removes the downward pressure on the viola caused by the bow, easing strain on the torso (keeping in mind that this element of adolescent anatomy is likely underdeveloped).

Measures 33-40 provide a valuable excerpt through which to explore the balance of the left hand. The positioning of the left hand must facilitate quick navigation by all four fingers across all four strings. As a result, the performer must think about left hand balance across large groupings of notes, as opposed to individual pitches. Determining the outermost extremities demanded by the first and fourth fingers is critical to identifying a balanced hand position, a strategy that can be employed by the student with frequency in nearly any and all musical endeavors that follow. In this passage, the extremes lie between first finger B on the A string and fourth finger D# on the G string. Placing those fingers on the strings simultaneously reveals the necessary position of the hand (n.b. omitting the left thumb encourages the hanging feeling and assists the student in

discovering this balance, while attempting to vibrate the aforementioned “double stop” also helps in identifying a balanced position of the left arm and hand). The position of the left forearm and upper arm can then be arranged to facilitate maximum comfort and balance, primarily by contracting or expanding the elbow toward/away from the body. A student may discover a forward positioning of the left elbow is required to facilitate this finger span as a result of the extended fourth finger (D#). Students who perform violas too large to accommodate the passage within the available finger span would likely discover a compromise, a middle positioning of the hand that rocks slightly back for the first finger and slightly forward for the fourth finger. Regardless, students who do not think about the passage wholistically in terms of balance, but rather one note at a time in rapid succession, likely employ the wrist to navigate the passage, a common practice which is unreliable, unbalanced, and excessively cumbersome. The skill of exploring left hand balance wholistically across an entire passage is a critical prerequisite for the study of all music that follows and is perhaps one of the most valuable outcomes of a student’s interaction with these measures.

The right hand requirements of this same passage (mm. 33-40) can be organized in a similar way. The “G” string serves as one extreme and the “A” string serves as the other. Here is another

example where the context of the passage in full tempo must remain close by. While in slower tempos the motion of the string crossing can be executed through the forearm and upper arm, faster tempos likely require wrist and finger motion to take control. It may be advantageous to allow the student performer to explore this concept, as well as the corresponding left hand strategy mentioned above, through trial-and-error as opposed to providing the "best practice" solution through direct instruction. A trial-and-error approach affords the student the opportunity to experience the cause and effects of the interaction of the many variables at play as opposed to blind replication of a prescribed teacher-administered remedy. The teacher can guide the student's discovery of the D string serving as the center of balance for this passage, with small motions in the wrist and fingers through extending and contracting interrupting the balance to access notes on the G and A strings. The fulcrum of the bow hold can be explored to facilitate a student's understanding of the role of the fingers and hand in navigating string crossings. For students with little to no experience executing rapid string crossings through the right hand and fingers, a return to the balance point bow hold can serve as a significant aid. Regardless of the bow hold employed, students benefit from practicing the passage with the index and pinky fingers removed from the bow, essentially holding the bow only using the fulcrum elements of the right hand (middle two

fingers and thumb). Contracting the fulcrum into the hand pivots the bow to the G string, while extending the fulcrum away from the hand accesses the "A" string. In tempo, the remaining right arm apparatus can be allowed to follow the wrist and fingers to the G and A strings as much as the performer desires and the speed allows. The more the apparatus is free to follow the bow, the more balanced the arm becomes when engaging notes outside of the D string (which consequentially expands opportunities for phrasing as balanced positioning increases the range of motion available). However, a repositioning of the entire apparatus for one note on a given string is unfeasible and unwieldly, with excessive motion yielding less than desirable musical outcomes, an important discovery for the student.

Locked, rigid, or excessively tense muscles inhibit freedom of movement and impede balance. Relationships between concentration and excessive tension have been established[8]. Separating the hands when exploring the previously discussed strategies may be advisable to reduce cognitive load and better facilitate the exploration of balance. This is another causal effect relationship that may be advantageous for the student to explore at this stage of their musical development as its relevancy to the performance preparation process continues to heighten as more and more challenging repertoire is explored.

The shift in the left hand required to execute measure 64 also demands the student consider the passage wholistically to determine appropriate balance. Whereas a student with relatively limited experience may be inclined to initiate the shifting movement from first position to third position by leading with the fingers and/or hand, after a few notes in the new position the student will soon discover the hand is not sufficiently balanced to accommodate the facility this measure requires. Rather, isolating the third position passage in measure 64 by itself, then the first position passage in the previous measure, and finally connecting the dots will hopefully lead the student to discover the shift is best instigated through contracting and expanding the elbow as opposed to utilizing the wrist and fingers. Finding the balance of the hand in third position, potentially a relatively new skill for the typical student approaching the Telemann, can be accommodated by removing/releasing the thumb from the neck of the instrument, testing the extremes required of first and fourth finger (as we did in the passage starting in measure 33) and finally tapping the thumb back to the neck in the position most natural for the hand. In this case, the first and fourth fingers may be placed in between the strings (as if loosely blocking fifths) to test the extremes required of the hand frame.

The second movement provides significant opportunities for students to explore the positioning of the head, instrument, thorax, and lower limbs. Employing baroque performance techniques inevitably leads to experimentation with the positioning of the viola and its relationship with the head, with the balance of the instrument shifting from torso to hand, the corresponding impact on the bow arm and optimal angles for the execution of detache, and the effect on overall performer center of gravity. Removing the shoulder rest and/or chin rest and holding the instrument in similar ways to period performers reveals the potential to shift the weight of the viola from the head, torso and neck to the hand in extreme ways, while still allowing the music to be executed at the highest possible level (the Telemann being a rare example of a piece in the traditional student canon of repertoire that can facilitate this). Placing the bow hold at the balance point as opposed to the frog can be highly valuable in exploring baroque bows strokes, but also moving the center of gravity of the bow to a more comfortable position, facilitating exploration of hand and finger movements with greater ease as mentioned above. Lighter bow strokes and emphasis on bow speed, as opposed to weight, also allow students to explore how the bow affects downward pressure on the instrument, torso, and spine.

The Telemann serves as an effective sandbox for the young performer, allowing the student to explore principles relating to balance in the context of their own anatomy, to develop fundamental strategies that will be necessary in the more challenging repertoire that follows, and to cultivate confidence, an especially important element for students who are at the onset of adolescence and are often uncomfortable and increasingly self-conscious performers.

We now turn to the first movement of the Stamitz Viola Concerto, which typically follows the Telemann in the student progression, either immediately or with additional repertoire in between for those who benefit from additional reinforcement before approaching this larger work. As before, I will provide a performance of this selection to preview our discussion of specific strategies and how they support a larger curriculum centered around balance.

[PERFORMANCE: STAMITZ VIOLA CONCERTO, I]

Whereas the Telemann offers the student flexibility to explore a variety of seemingly extreme approaches to balance and positioning without compromising a reliable and musical execution of the concerto, the Stamitz is much more demanding in terms of attention to detail. Subtle nuances in the placement of torso, arms, viola, and bow affect execution in drastic ways. In

particular, the facility and freedom of movement the concerto requires makes balanced positioning an imperative in order to navigate passages with technical and expressive competence.

This discussion focuses on the first movement, although many strategies can be applied elsewhere in the concerto. The first movement requires the performer to employ extensive and fast passage work across all four strings and in multiple positions, lyrical double stops, and sudden changes of register all in the context of delicate and finessed phrasing with the bow.

Facility demands balance and, much like a pianist would struggle to navigate a keyboard moving in unpredictable ways, the ability to maintain the viola in a relatively static (yet relaxed) position is fundamental to the success of the performer. While this may seem like a rudimentary skill, in the context of sweeping movements of the bow and the left arm that cause intense shocks to the setup, this is a challenging feat for almost any violist.

The opening passage (mm. 72-79) exposes the need for stable and reliable setup. Not only must the setup accommodate heavy and repetitive bow lifts (circle bows), but also the frequent release and repositioning of the left hand. Because there are moments where the performer releases both hands simultaneously, the viola must be supported exclusively using the head and torso in a way that does not result in excessive give, as to allow the hands to return to viola in an accurate

and reliable way. The student can begin to explore variables such as the positioning of the head, elevation and expansion of the ribcage and sternum, and engagement of the diaphragm as they look to find ways to accomplish this task. Initially removing the triads in measures 72, 74, and 76 may aid the student, as less experienced players will often unnecessarily use a heavier hand and bow to execute double and triple stops, resulting in an unnecessary downward force on the viola and corresponding strain on the setup. This strategy also reduces cognitive load, particularly for the student less comfortable playing multiple strings at once. The short length of this passage creates a task that is manageable for the learner, as opposed to attempting to apply new and unfamiliar variables across an entire piece.

The skills learned in the first passage can later be applied to measures 84-89, particularly the ascending arpeggiated broken octaves in the final two beats. The left hand must release and reposition rapidly and with a particularly high degree of accuracy, meaning the reliability of a performer's execution is contingent upon a stationary instrument. The left arm must be uninhibited as well as to allow effortless navigation across a large span of fingerboard in a short period of time, once again demanding the torso and head provide almost exclusive support for the instrument. The passage as a whole demands the student make conscious decisions about the balance of the left

arm, as it travels from first position on the C string to seventh position on the A string. The string changes in the left hand can be accommodated through the fingers extending and contracting, the left elbow rolling, or a combination of the two. The elbow position must contract to execute the shifts at the end of the passage, meaning the student will need to consider how and when to combine the rolling of the elbow with its contraction in toward the body. These measures are particularly effective in exposing a potentially unfamiliar, but highly useful relationship between fingers, arm, and setup, with the arm guiding the fingers around an instrument that is supported entirely independently from the appendage itself.

Measures 120 – 128 reinforce previously introduced concepts in differing contexts. The idiomatic double stopped portion of the passage readily encourages left hand balance, and the addition of vibrato not only supports the lyricism of the phrase but also helps the violist find balanced positions of the entire appendage. The transition from double stops on the lower two string to ones on the higher two strings exposes the role of the elbow, which will likely be relied upon entirely to execute this string crossing. A half rest separates the lower string iteration from the higher one, helping facilitate a relaxed and natural reposition of the left arm. However, a student may discover that the successive string changes in the final two bars of the passage are

better initiated through the fingers, as the virtuosic nature of the run makes the elbow an unnatural and cumbersome choice.

The viotti bow stroke is employed in this movement at measures 109 and 191. Characterized by an active and quick down bow followed a passive and relatively slow rebound, this bow stroke thrives on balance. Ideally, the forearm tosses the hand and the hand bounces effortlessly back to its initial position, as if spring loaded. The student discovers the relationship between active forearm and passive fingers through learning to execute this bow stroke.

Rapid string crossings and bariolage in sixteenth note passages requires similar attention to the bow fulcrum and right arm mechanism as discussed in the Telemann, albeit the Stamitz is far more demanding. By utilizing the lower half of the bow, where the natural weight will catch the string with relative ease, as opposed to the middle to upper half which will likely require the left arm to lean into the bow in order to engage the string, students can reduces downward pressure on the setup and help minimize strain on the head and thorax.

It will take the student time to develop full control over new variables such as the ribcage, sternum, and diaphragm. The student may find it particularly helpful to initially work within the piano dynamic range to minimize the downward force of the right arm until the setup of the thorax

is more secure. Facilitating tone production through horizontal bow movement as opposed to vertical weight also reduces stress on the thorax. Light finger pressure in the left hand is also beneficial in mitigating downward forces. As the student grows more comfortable, confident, and as their torso grows to match the proportions of the rest of their body, heavier bows can be added back in to achieve a more desirable "concerto" tone. Adding in heavy bows at the onset of a student's study may compromise their entire success with the piece, however, especially if the student's torso cannot physically support the weight.

The next major mile marker for the typical budding violist is the Bruch Romance, albeit many teachers and their students embark on a variety of paths. However, the Bruch Romance can be used as an archetypal lyrical piece, and certainly a rite-of-passage for aspiring performers. As before, we will begin with a performance of this selection to preview our conversation.

[PERFORMANCE: BRUCH ROMANCE]

Just as the Stamitz requires the performer to realize a different relationship with the instrument when compared to the Telemann, the Bruch Romance demands the adolescent student interact with the viola in new and unfamiliar ways. The regular use of full, lyrical, and relatively weighty bow strokes is a likely previously unencountered challenge. The addition of continuous

(or something very close to continuous) vibrato inherently demands different interactions with the left hand that prioritize balance on each individual finger alongside the hand frame as a whole. Oscillating between lyricism and virtuosity additionally requires the performer to critically evaluate the varying priorities within each passage and apply strategies relating to balance that reflect those priorities.

The Bruch challenges the student to find balance in the right arm apparatus through interacting with the legato stroke, unlike the Telemann and Stamitz which prioritize the use of detaché and martelé. Whereas the detaché and martelé strokes are characterized by simple motion (essentially impetus and release of the hand and forearm), legato strokes are highly varied, intricate, generally involve the entire right arm, and often demand the use of full or nearly full bows. Students may instinctively apply bow weight and even pressure as a blunt force in order to achieve a full resonant sound when executing legato strokes, which not only constricts resonance, but also creates excessive tension that impedes balance.

The fulcrum of the bow hold becomes integral in a student's approach to legato bowing. Facilitating the transfer of weight naturally from frog to tip, a functioning fulcrum will allow the balance of the bow to be felt against the pinky in the lower parts of the bow and the index finger

in the upper portion. Locked and excessively tense thumbs prevent this weight transfer, meaning a teacher will likely need to be aware of any tendency of the student to squeeze the bow while attempting to create a full sound. Measures 2-10 are a helpful opportunity to explore this relationship, which can then be applied throughout the piece, especially since the passage is centered around the D string (generally the most accessible for the violist in terms of finding an optimal balance in the right arm). Once again, removing the pinky and index finger as a practice strategy exposes the role of the bow fulcrum. Particular attention to the ability of the thumb to flex or roll with the bow as it moves from frog to tip can be helpful. Employing subdivisions in sixteenth notes (or even thirty-second notes) in the context of down and up bow staccato, with the bow stopping in between each subdivision and the pinky/thumb still removed, can allow the student to explore the natural tendency of the bow fulcrum to facilitate the transfer of weight without the need to draw a long and connected bow stroke. Continually exploring this concept and then returning the pinky and index finger to the bow as a follow up step is helpful not only in the opening, but throughout the piece.

Students of the Bruch also readily encounter the challenges of connecting legato bow strokes. Students are often tempted to squeeze or press to help the sound continue through the bow

change, essentially trying to maintain weight on the bow as to smear the down bow into the up bow and vice versa. Guiding the student to explore other more optimal strategies, namely bow speed, to connect the bows can help mitigate the excess tension. Loose bow holds that allow the bow to "breathe" are helpful in allowing finger motion to guide transitions during bow changes, a variable that might seem counterintuitive to the student trying to pull the largest possible sound from their instrument. Returning to a balance point bow hold as an exercise may help students explore looser bow holds and encourage the finger motion that is critical to connected, lyrical, legato bowing.

Finally, the upper arm must be available to respond to the positioning of the bow throughout the legato stroke, much like in full bow martelé. Lightly sketching bow strokes against the string in piano dynamics (so that the bow arm is fully released and muscles are not actively engaged) can expose this relationship. A loose and relaxed shoulder socket will allow the upper arm to flow and reposition around the rest of the right arm and the bow itself. The student can then follow up on this strategy by finding ways to add weight back into the bow stroke without engaging the shoulder and upper arm in undesirable ways.

The emphasis the Stamitz places on supporting the instrument without the left arm is particularly applicable in the Bruch as well, although admittedly the Stamitz may still be more demanding in this regard. The application of varied, consistent, and uninhibited vibrato throughout the Bruch require the left arm to be largely free from supporting the weight of the instrument. Virtuosic episodes also demand this freedom. Continuing to emphasize the exploration of ways to provide support to the instrument through the head, ribcage apparatus, sternum, and diaphragm will allow the left arm to navigate the demands of the Bruch with ease.

The balance considerations in the left hand itself change between virtuosic passages and ones that prioritize vibrato. Fast, left hand passage work demands the fingers to remain close to the string as to access notes with speed and minimal interruption in balance. Conversely, vibrato (particularly wider vibratos such as those desired in the Bruch) can benefit from keeping fingers not in use somewhat removed from the string, both preventing unwanted contact between idle fingers in a shaking hand and the instrument and additionally helping to create the instability required for the hand to oscillate back and forth to a wide degree. The hand must still be balanced as to produce an even vibrato, however the relationship differs than that of a hand prioritizing facility. Highlighting how this relationship changes between passages akin to the lyrical opening

and ones similar to the *un poco stringendo* reveal additional variables in the left hand. A teacher and student may pay particular attention to the first finger, as the index finger can often feel more balanced (especially in the context of vibrato) through inadvertently collapsing the wrist, however this repositioning will inevitably fail the student when other fingers are reengaged with the string. Much like in the Telemann, we discover the balance of the hand across the entire passage must be considered when implementing vibrato, as opposed to attempting to "connect the dots" between individual vibratos created on each specific finger.

The Telemann, the Stamitz, and the Bruch have served as cornerstones of the student repertoire for nearly a century, however it is the conversation surrounding balance that makes these pieces highly relevant to adolescent violists. The typical teenage student, one with a smaller torso paired with a larger instrument to match their suddenly longer arms will likely particularly struggle achieving balanced and comfortable technique, making a curriculum centered upon anatomical awareness indispensable to their continued success. The development of this curriculum hinges upon the understanding and appreciation of the challenges posed to every adolescent by distal proximal development.

Thank you so much for attending today. I would like to use this remaining portion to answer any questions you may have.

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