

Set-up:

Fitting the Instrument to the Body, When All Bodies Are Different!

by Liz Dinwiddie

One prevalent issue among private and public school string teachers is setting up violin and viola students with a good shoulder rest/chin rest combination. There are many products on the market, and most teachers would agree, no single product fits all students. Inevitably there are students whose necks are too long, jaws are too wide or narrow, or shoulders are broader than their classmates. What can a teacher do if he has limited time to get a classroom full of kids set-up well?

The classification of body shapes can help teachers to consistently pick the best shoulder rest by looking at students' body types. Although knowledge of bones and muscles would be helpful for teachers, a basic knowledge of the three extreme body types is more helpful for a quick glance at the initial set-up. The types are endomorphic, ectomorphic and mesomorphic. Teachers who have an awareness of the features of these different body types can use this knowledge to establish a comfortable set-up for their students regardless of the body type. Knowing the three body types can provide students with a comfortable set-up at the beginning of their violin experience and may help eliminate years of trial and error for the student. There are many possible combinations of body shapes and chin rest/shoulder rest combinations. In an article such as this, all possibilities cannot be exhausted; instead, a basic overview of shoulder rest options for some general body types is given.

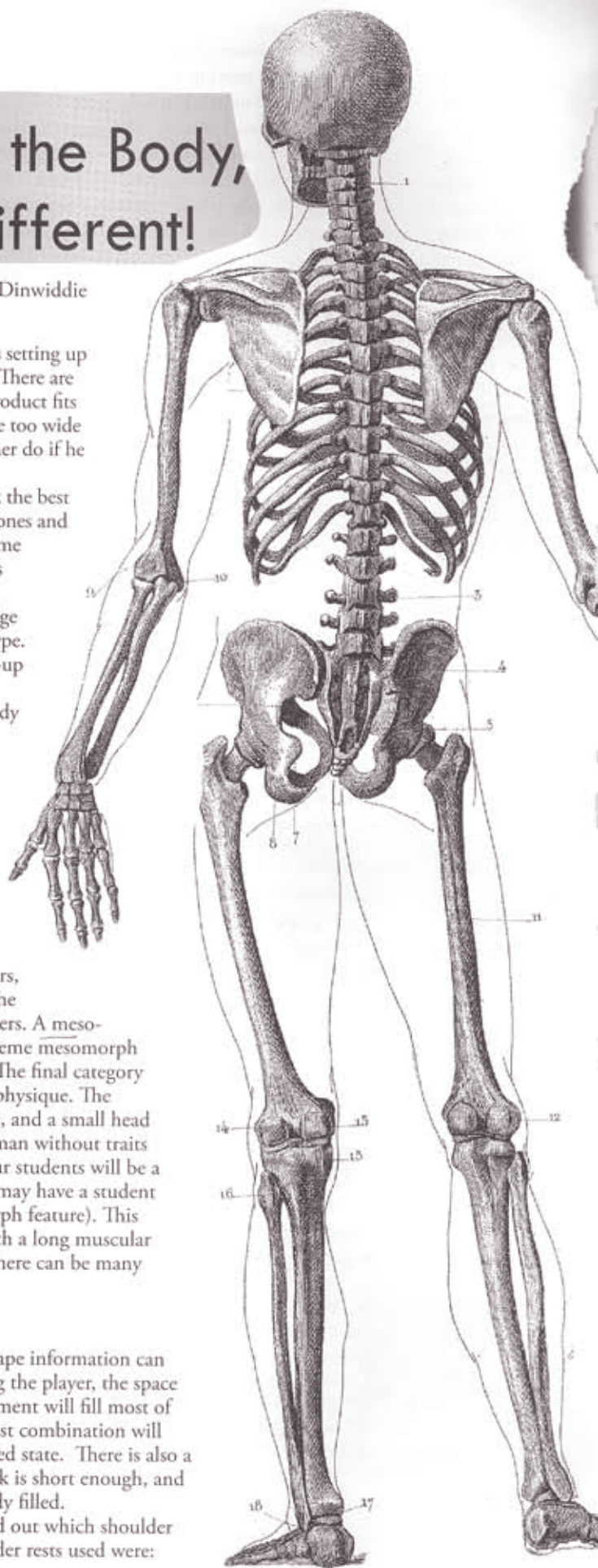
Three Basic Body Types

Somatology is the study of physical anthropology, which categorizes the human physique. In the 1940s, William Sheldon studied the outward body shapes of more than 4,000 college-aged men. He found there were three major body types which he designated: endomorph, mesomorph, and ectomorph. These categories can be very helpful for violin/viola teachers: in particular, the descriptions for the shoulders, jaw, and neck shapes. An **endomorph** has a soft roundness to the body. The extreme endomorph has a short neck, spherical face, and rounded shoulders. A **mesomorph** has a square, hard body, like that of a pro football player. The extreme mesomorph has broad shoulders, a long muscular neck, and a prominent square jaw. The final category is an **ectomorph** which is a linear, lean body, like as a marathon runner's physique. The ectomorph has droopy shoulders, a long neck without much musculature, and a small head with a pointy jaw. In Sheldon's study of 4,000 men, he did not find one man without traits of two or more of these extremes. For string teachers this means all of your students will be a combination of two of Sheldon's physique descriptions. For example you may have a student with broad shoulders (mesomorphic feature) with a pointy chin (ectomorph feature). This combination of shapes would require a different set-up than a student with a long muscular neck (mesomorph feature) and droopy shoulders (ectomorph feature). There can be many combinations, each requiring a different shoulder rest.

How Does Knowledge of Body Types Help String Players?

Once a teacher can recognize the shapes of the students, the body shape information can easily be applied to set-up. To prevent tightening the muscles and injuring the player, the space between the collarbone and jaw needs to be filled. The body of the instrument will fill most of the space, and the addition of an appropriately-sized shoulder rest/chin rest combination will fill in the rest. Filling in the space allows the neck muscles to be in a relaxed state. There is also a possibility that the player may not need a shoulder rest. If the player's neck is short enough, and the instrument/chin rest combination tall enough, then the space is already filled.

In 2004, I completed a small study of four different musicians to find out which shoulder rest, out of a possible six, would work best for their body type. The shoulder rests used were:



Zaret molded foam, Wolf, Resonans, Kun, Viva, and Bon Musica. The latter four rests are all adjustable platform rests which can be used to varying heights. The molded foam is flat on one side and has a concave curve on the other. Each of these rests has strong and weak features in its design unrelated to body shape. After consulting with area string teachers and music stores, these six shoulder rests were picked because of they are the most frequently used and all are readily available.

The Shoulder Rest Study

All of the study's participants were musicians, although none play violin or viola regularly. They were chosen to model because they had taken lessons at some point in their career and had a basic knowledge of holding the instrument. Most violinists' and violists' bodies have adjusted to years of playing. For example, often the left side neck muscles are shorter than the right side neck muscles. These participants did not have any of these tendencies from years of playing and were therefore similar to beginning students. The players kept track of which shoulder rest felt the most comfortable. I kept track of information by taking photographs of each set-up. As Sheldon did in his study, I took a photo from the front, side, and back to analyze how the body reacted to each set-up. To help focus the study just on shoulder rests, only a Hill chin rest was used. I chose it because of its relatively flat cup depth and overall size. In all cases, the set-up in which the body had no visible muscle tension was also the shoulder rest the participants picked for themselves.

In the study, two participants had similar body types with a six-inch height difference. They both had generally ectomorphic features with broad (mesomorphic) shoulders. Even with a significant difference in height, they both picked the *Bon Musica* as the most comfortable shoulder rest choice (see *Figures 1 and 2*). This was a little surprising, but showed that despite a height difference the same shoulder rest was needed. The *Bon Musica* has a very bendable platform, which can be shaped over the shoulder. This "hook" feature helped stabilize the shoulder rest on the players' broad shoulders. The participant with the most muscular neck (mesomorphic) had the best set-up with the *Viva rest* (see *Figure 3*). The best option for an ectomorph with endomorphic shoulders, such as the fourth model, was the *Wolf shoulder rest* (see *Figure 4*).

Possibilities for a bad set-up include tense neck muscles (see *Figure 5*). In this photo, one can see the strap-like muscles of the neck protruding on the left side. Another undesirable set-up occurs when the shoulder rest is too big for the body (see *Figure 6*). Unlike the other pictures of models with the *Bon Musica*, this model's shoulders are not broad enough to use the rest. To highlight the importance of checking a set-up from the side (see *Figure 7*). This participant's shoulder is coming up and forward, and you can see his jaw gripping onto the violin. Naturally, one shoulder rest option will not be ideal for all body types. The key to a comfortable set-up is to understand the features of the body in front of you so their particular needs can be addressed.

Strategies When Setting Up a Group of Kids...

Although working with a group of beginners provides some challenges, it is possible to use information about body types to select the best shoulder rest and help prevent muscle tension. Many teachers feel uncomfortable asking a beginning student to buy a \$40 shoulder rest immediately. Perhaps the student will dislike playing in a short time, or that amount of money is simply too expensive for the family. If these are concerns, simply fill the space with the appropriate amount of spongy material. Before I set-up my students, I have them stand in front of me and go through the following routine:

- Move your torso so that your belly button slides back and forth above your left foot.
- Then, move your torso back and forth above your right foot.
- Move your torso above both feet and stop in the middle.
- Then, lift your shoulders to your ears and drop them.

Do this a few times so the shoulders are consistently falling into the same place. These movements prevent children from trying so hard to relax that they are tense instead. You can gauge how much space needs to be filled and determine if there is a natural tendency for either shoulder to be raised. Once the students have settled into a relaxed posture, you can take their instrument by the scroll, place the chinrest at the student's jaw, and see how much space needs to be filled between the instrument and collarbone. While you are setting up students you should be asking yourself the following questions:

- What is the shoulder shape? (sloped, parallel to the floor) In addition to determining how much space needs to be filled (sloped needs more) this also determines the width of the shoulder rest needed.
- What is the neck length? (from the collarbone to the jaw) If the neck is long, then you may have to look into building up the chinrest for more stability.¹
- What is the chin shape? What is the jaw shape? (pointy chin, broad jaw, very little jaw). These two questions are related, but the answers produce different set-up needs. Chin and jaw shape will determine the depth of the cup of the chinrest. Some players prefer to have a chinrest that "hooks" under the jaw. They are usually the players who have a more

Figure 1
Bon Musica shoulder rest, model 1



Figure 2
Bon Musica shoulder rest, model 2



Figure 3
Viva shoulder rest, model 3



Figure 4
Wolf shoulder rest, model 4



Figure 5
Tense muscles - front view



Figure 6
Tense muscles - back view



Figure 7
Tense muscles - side view



pronounced jaw. Other players prefer to have a chinrest which is flat for their jaw to rest on.

- Is there a pre-existing tendency for either shoulder to be raised? If the left shoulder has a natural tendency to be higher, you have less space to fill.

Verification

To help verify a set-up, there are a few simple questions to ask yourself. Did you check the front, back, and side views? Often we forget to check the side and back of our students when they are holding the instrument. Is there any obvious tension? Is the student complaining of fatigue? If students are using unnecessary muscles, they will likely wear out faster. Can their head move freely while in playing position? Is their nose parallel to the floor? Is the corner of their jaw perpendicular to the floor? If their nose is pointing up, there might be too much filler between their collarbone and jaw. If the nose is pointing down, more space should be filled. Similar adjustments apply if the jaw is not perpendicular to the floor.


Conclusion

There are many options for filling in the space between the shoulder and jaw, ranging from soft craft sponges from the dollar store to hand carved shoulder rests. Each body will need something slightly different but with a little ingenuity you should be able to find the appropriate set-up for each of your students. A focus on the jaw, neck, and shoulder shapes will help you determine how much space needs to be filled. The more awareness you have of the three extreme body shapes, the easier it is to find a shoulder rest that will make playing more comfortable for your students.

Thanks to the models: Beth Rosbach, Erika Selk, Heather Plattenberger, and Carey Harwood.




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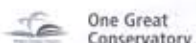
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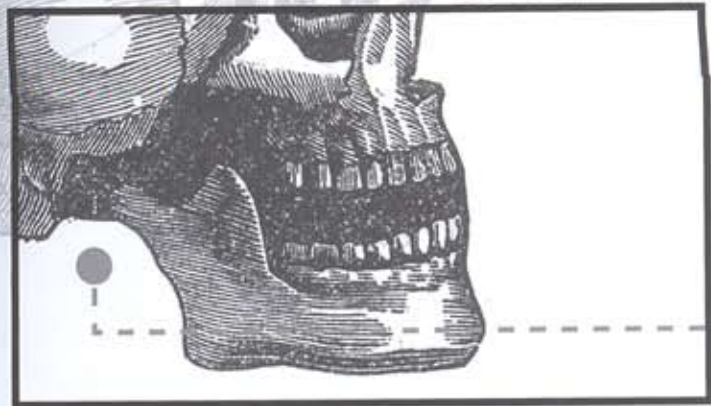


One Great Conservatory

Chinrest Choice

Based on Jaw Type

by Lynne Denig and Gary Frisch



Background

Gary Frisch, of Gary Frisch Violins in Falls Church, Virginia, and Lynne Denig, studio teacher in Fairfax, Virginia teamed violin-making skills and teaching knowledge to find what constitutes a "perfect chinrest." They began their research in the fall of 2005 by observing three studios of about 50 violin students, taking photos and measurements, and trying out a series of chinrests on these students to chronicle what kind of chinrest fit whom, and how quickly technique might change, once a student is fitted with an appropriate chinrest. Their initial findings were presented at the 2006 ASTA conference in Kansas City, Missouri. The second stage of their findings were presented at the 2006 VMEA conference in Hot Springs, Virginia. Another presentation will be held at the 2007 ASTA conference in Detroit at the pre-conference session on musician health.

Introduction

Just as we try to choose shoes that fit our feet and clothes that fit our bodies, violinists' should also attempt to find a chinrest that fits their jaw line. Comfortable, whether in apparel or in a chinrest, means that both should fit us.

Too often, instruments are sold or rented to our students with one of two types of chinrests: a Kaufman or a Guarneri — two very reasonable chinrests, but these two chinrests, as research has shown, are designed for very few people. Despite the fact that these two chinrests are currently "in fashion," particularly in the Northern Virginia area where the research is taking place, initial results show that they are not a good fit for many violinists. The reasons for this, as well as options for other chinrests and how and why they were fitted, are below.

Problems Caused by an Ill-fitting Chinrest

To continue the analogy of clothing: One also knows that if a shoe does not conform to the shape of the foot, that pressure points cause discomfort leading to blisters, bunions, and eventually to the person changing his gait to avoid pain.

The same holds true for chinrests but with different specific outcomes. People who have ill-fitting chinrests are prone to sore spots on their necks due in part to a bacterium build up² on the chinrests and to constant pressure of one small part of the chinrest on one small part of the neck.

An ill-fitting chinrest will also cause a player to turn the head in order to get comfortable or to secure the violin. A typical deformation of head position is seen in students who look right and tilt the head to the left in order for their jaw bone to secure the violin. Once the body is out of design function, i.e., how we would normally stand or hold our heads without the instrument, neckaches, headaches, and eventual aches elsewhere in the body can appear as the body attempts to compensate for the new head position. These physical tendencies result in the student adjusting technique in order to secure the instrument and in order to minimize discomfort.

Other signs of an ill-fitting chinrest include a sagging instrument, a head that is strangely positioned, or a student playing on the crossover piece of an across-the-tailpiece chinrest, which is something often seen with players using the Guarneri chinrest. See *photo one* below as an example of a student playing on the cross-over piece of a Guarneri chinrest. Photos two and three show students whose chinrest choice causes the instrument to sag and the head to reposition itself.



Photo one - Playing on the Guarneri cross-over piece



Photo two - A sagging instrument



Photo three - Head tilted left and turned right

Readers will see that in the research below that the Guarneri chinrest was not used as an option for fitting students with new chinrests. The reason that the Guarneri was not used was that the contour does not suit most jaws. This fact was seen in initial observations in the number of students who did not use the Guarneri's plate but placed their chin on the cross-over piece on the tailpiece. The cross-over piece, then, functions as the ridge found on the other Hill and European models that were used in the fitting process.

The problem with students playing on the cross-over piece is that they are essentially approaching instrument hold as if they needed an across-the-tailpiece chinrest³, a set up best used by people with either narrow shoulders, short arms, or both. The researchers found only 10 percent of students needed an across-the-tailpiece chinrest. When one considers that 47 percent of the students in the study used a Guarneri, this meant that more than 37 percent of the students were already playing on a chinrest not suitable to their body type.⁴

The physical response to the Guarneri chinrest if the jaw is in the cup is this: As the player adds head weight, especially in shifting down, the violin squirts out from underneath the jaw eliciting a feeling of insecurity. The head then clenches harder or the left shoulder is thrown up underneath the instrument in an attempt to gain security thereby overworking neck and shoulder muscles. The clever student knows that the most secure and effortless place on this chinrest is on the cross-over piece, hence, a student's desire to play on this part of a Guarneri chinrest. One can say conclusively that none of the students fully used the cup or plate side of the Guarneri. This latter fact indicates that the chinrest is not a good choice for most students.

Part of the problem with the structure of the Guarneri is

that, in its modern incarnation, its plate curves gradually up from the player's neck. This was not the case with original models. See photos four and five to see the difference between an original version and a new commercial version of the Guarneri chinrest. Also note, the variations in shape. Both of these chinrests are called Guarneri!



Photo four - Original model Guarneri



Photo five - Commercial model Guarneri

Teachers will also want to know that with all the other versions of the Hill chinrests in addition to the Guarneri, contemporary manufacturers have not been faithful in recreating the forms from the original. This means that the same model will come with slightly different contours depending on the company that crafted them. While they might be very disappointed to hear this, these variations can be beneficial when considering that no one jaw is exactly the same. Once a model is identified that fits the contour of one's jaw, one might want to try different models of the same chinrest to find the shape that fits better than another. Keep in mind that depending on mail order for chinrests can be as tricky as ordering clothing from a catalog. One should expect variations in shape even within the same model.

Jaw Shape and Chinrest Fit

How well a chinrest fits depends also on the jaw shape of each person. The researchers found that there are basically three shapes of jaws, but with many variations even within each category. The three categories that the researchers divided jaw shape into were: bony (*photo six*), or possessing mostly straight lines and very little padding on the jaw bone; in-between (*photo seven*), or a jaw line that was not clearly one or the other; and fleshy (*photo eight*), or a jawbone that was particularly well padded. Apparently, like fingerprints, no two jaws are exactly the same, and often, a jaw shape in one category will have mild characteristics of another. A well-fitting chinrest, then, is only well-fitting if it caters to the characteristics of the jaw that uses it.



Photo six - Bony jaw

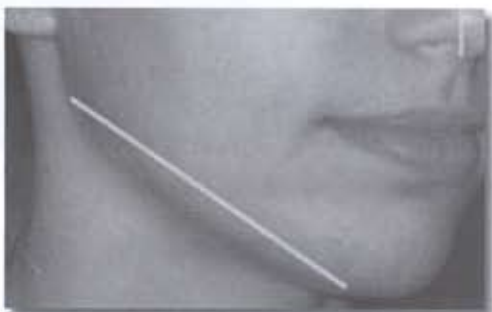


Photo seven - In-between jaw



Photo eight - Fleshy jaw

Choosing Chinrests for the Study

Because the researchers knew that each student played with a different kind of shoulder pad, or in some cases, none at all, and because of physical variables that various shoulder pads cause depending on their type and placement on the instrument and where they are placed on the body, the researchers decided to fit each student with a chinrest that met the needs of height, rather than with use of a shoulder pad. The needs of height were met through what they called a lift. The next step, then, was to create a series of lifts, a process that, due to space considerations, will also be described in a future article. *Photo nine* below shows the lifts, however.

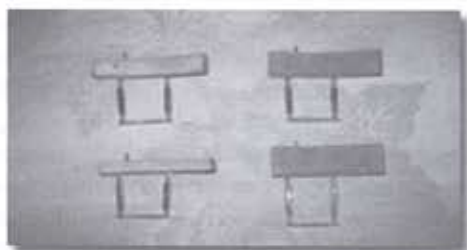


Photo nine - Lifts- 10, 15, 20, 25 mm

Before meeting the students, eight chinrests were identified that conformed to Paul Rolland's description of chinrests that would serve players well. On page 62 of Rolland and Marla Mutschler's book *The Teaching of Action in String Playing* (Illinois String Research Associates, 1974) Rolland and Mutschler write about what Rolland referred to as a cantilever approach to holding up the instrument:

Skin irritations result when the jawbone presses on a high ridge. Therefore, the chinrest should have a low point [under the ear]. The high ridge on the right side of the rest fits inside the jawbone, which pulls it toward the neck for a secure hold.

A downward slope of the chinrest directs the chin pressure toward the back of the rest (toward the player's neck) to provide good leverage.

A chinrest that rises in the direction of the scroll should be avoided.

The player with a large and fleshy jaw should use a broad, flat chinrest. Its large contact surface enables this player to support the instrument mainly through friction with the chinrest.

The player with a long neck requires a high chinrest.

The eight chinrests conforming to Rolland's description above that were used in the fitting sessions were from the Hill family of chinrests and other European-style models. These included the following chinrests that are placed on the left side of the tailpiece's: Kreisler, Turner, Gordon, Brandt, and Donaldson among the Hill chinrests, and Strobel, Hamburg, and Teka Hi among the other European-style chinrests. These chinrests, without their hardware, became known as "toppers." The toppers could be used interchangeably with the lifts so that a separate whole chinrest would not have to be taken off each time a new model of chinrest was tried. Lifts were crafted in increments of five millimeters beginning with 10 millimeters and ending with 25 millimeters. The five millimeters lift, not pictured below, is merely a wedge of cork that is fitted underneath a standard chinrest, something that original hardware on any chinrest will tolerate. Lifts higher than five millimeters also used violin hardware, but the hardware was set lower on the lift to accommodate the extra height of the lift. *Photos 10* and *11* show the toppers.



Photo 10



Photo 11

The Fitting Process

Because the fitting process took place in the lessons of the students involved in this portion of the research, the process was streamlined as much as possible so that no more than 20 minutes were taken out of any one lesson.

On the basis of Rolland's descriptions of what kind of chinrest was good for different types of jaws, chinrests were classified and physically arranged into two categories: those probably used by fleshy-jawed students (see photo 10) and those probably used by bony-jawed students (see photo 11). The hypothesis was that the flatter models of chinrests would be better for the fleshier-jawed students because of the longer and lower ridge, and all other players would take chinrests with more of a trough in their centers and a shorter, less broad ridge on the right side of the chinrest. The chinrests' shape then seems to be a reverse image of the student's jaw shape.

Lynne assembled the toppers, lifts, a chinrest key, a tape measure in millimeters for more definitive measurements, a note pad, and a digital camera before meeting the students. She noted which chinrest and shoulder pad the students were using before the fitting and noted how well the present set up served the student. Then, she took photos of the students, including head shots.⁶ Students' necks and instruments were measured to see which size lift they would be able to use, a process that will, again, be described in a future article. Then, taking observations and measurements into consideration, Lynne selected a chinrest that she thought the student might be able to use on the basis of being fleshy-jawed or bony-jawed. Lynne's assumptions about what students needed were substantiated or corrected by going through the lifts and toppers with each student.

The Importance of Posture in the Fitting Process

An important part of the fitting process was ruling out variables of placement based on teachers' or students' preconceived ideas of what is correct. These ideas were often dependent on having the student mimic what the teacher did, an approach that is much like asking students to wear a clothing style the same as the teacher. While most teachers recognize that students come in various sizes, it was observed that many teachers feel unsure exactly how to position instruments based on the physical structure of a student.

Having a process of positioning the instrument according to physical structure is an integral part of good chinrest choice because any capriciousness in placement or posture necessitates a different chinrest shape and even a different chinrest height. A placement process, then, allowed the researchers to find a chinrest on the basis of neck length and jaw shape that did not vary by any positioning vagaries.

The instrument positioning process below circumvented a

student's preconceived ideas of where the instrument should be. This process is based on the flexibility of the left arm and the length of the fourth finger. The position arrived at also allows the student to have just one "native" place for his instrument as opposed to at least two — one for lower positions and one for higher. Teachers observe the latter phenomenon when a student shifts to the G string and the student has to reposition his instrument at that point, which is a process that looks as if a student is giving the instrument a toss over the left shoulder. The positioning process:⁷

1. Have the student march in place lifting the knees. This positions the feet under the hip bones and does not overtax any one muscle group in contrast to spreading the feet which can promote locked knees and add extra pressure in the lumbar area of the spine.
2. Turn the toes out slightly to add stability needed when the bow arm swings right and left.
3. Unlock the knees.
4. Stand tall over the hip bones.
5. Have light arms, but heavy shoulders.
6. Place the instrument in solo rest position (as opposed to orchestral rest position on the knee. One can also say "guitar position" to avoid ambiguity).
7. Point the scroll to where the wall and ceiling join to avoid any undue wrist strain in the procedure. (Light, somewhat passive movements are key to good placement. Pain or strain indicates overdoing the reaching. A gentle stretch is acceptable).
8. Place the tip of the left thumb in the curve of the neck in roughly fourth position.
9. Reach comfortably up and over the G string side of the instrument. (The teacher can assist the student in this process.)
10. Wrap the tips of first, second, and third fingers easily and lightly under the fingerboard on the G string side.
11. "Glue" the thumb and pinky to their spots at this point in the process.
12. Allow the player's right hand to drift down and grasp the instrument.
13. Keeping the left hand "glued" in place, position the instrument on the collarbone.
14. To keep the instrument stabilized and over the left collarbone, look slightly left over the fingerboard. The head rotating slightly left and not leaning left is well within design function of the head and neck muscles. Note: Head positioning is also not a static posture. Depending on what part of the bow one is playing in, the head looks left or right — left at the tip and right at the frog.
15. Place the jaw lightly on the chinrest.
16. Release the left hand to the lower positions.
17. Manually move the left elbow left and right to release the shoulder joint and to prevent any hugging of the instrument. (Lynne says, "It's nice to love the instrument, but not *that* much.")

This positioning represents the student's best place for the instrument. Just as we all are made differently, the violin position reached will be slightly different for each person, some higher on the shoulder and some lower depending on left arm flexibility and pinky length.

After going through the positioning process, a process that

takes no more than one minute in practice, Lynne noted immediate reactions to each chinrest. The reactions ranged from squinting eyes or negative comments in the case of a chinrest that did not fit, to eyes widening remarkably in affirmation of the comfort and fit. Comments included: "Where can I get this chinrest," and "How soon can I get this chinrest?"

After all the students were fitted, Lynne charted each student's jaw type noting the chinrest that worked best. In the first photo below, readers will notice that lines were drawn on the photo to ascertain jaw angle's affect on chinrest choice. Because no correlation was found between jaw angle and the type of chinrest, but instead in jaw contour, students of the last teacher were not measured in this way. Some photos, then, do not have lines with angles marked. Overall results are noted below in Table 1.

Table 1- Chinrest fitting results

Bony	Chinrest type preferred
Jon	Teka Hi
Remy	Teka Hi
Will	Teka Hi
Hannah	Brandt
Katie S.	Brandt
Kevin	Hamburg
Haleigh	Hamburg
Kelly	Donaldson
Karen	Donaldson
Eugine	Could not be fitted (across the tailpiece chinrest needed)
Christine	Dresden
Monica	Turner

In-between

Matthew	Hamburg
Jennifer	Hamburg
Julia	Hamburg
Enrico	Donaldson
Marty	Donaldson
Vy	Donaldson
Tong	Teka
Nick	Gordon
Anna	Brandt

Fleshy

Katie	Gordon
Tyler	Gordon
Kelsey	Gordon
Rishi	Gordon
Greg	Gordon
Alex	Kreisler
Ellen	Kreisler
Nathan	Kreisler
Nava	Kreisler
Rebecca	Brandt (but wishes for a Morawetz)
Peter	Brandt
Jose	Brandt
Ngan	Brandt

Ariel	Teka Hi
Richard	Teka Hi or Strobel
Yewon	Teka Hi
Jake C.	Donaldson
Jackie	Donaldson
Gretchen	Donaldson
Annie	Hamburg
David L.	Hamburg
Morgan	Turner
Jonathan	Kaufman



Photo 12 - Sample jaw line that preferred a Teka chinrest



Photo 13 - Sample jaw line that preferred a Brandt chinrest



Photo 14 - Sample jaw line that preferred a Hamburg chinrest



Photo 15 - Sample jaw line that preferred a Donaldson chinrest

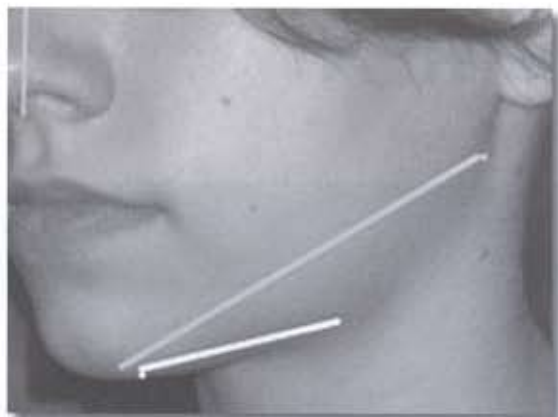


Photo 16 - Sample jaw line that preferred a Gordon chinrest



Photo 17 - Sample jaw line that preferred a Kreisler chinrest

Conclusions

This initial stage of research on jaw type and suitable chinrests yielded these conclusions and observations:

1. Just as each body type needs clothing that fits, violinists also need a chinrest that conforms to the neck length and to the shape of the jaw.
2. Like clothing fashions, some chinrest fashions suit one body type but not another. Such is the case with the fashionable Guarneri chinrest that fits few people.
3. More than 47 percent of the violinists in Northern Virginia use the Guarneri chinrest, and usually use it improperly, placing their chin on the cross-over piece rather than on the plate of the chinrest, effectively making the Guarneri an across-the-tailpiece chinrest.
4. Only 10 percent of the violinists in the study showed a need for an across-the-tailpiece chinrest, pointing to the possibility that more than one-third of violinists playing today who use a Guarneri chinrest are playing on a chinrest not suited to them.
5. Some physical and technical changes are immediate with the change in chinrest, such as the level of the strings to the ground (See photo 18).
6. The chinrest fitting system described above makes finding a well-fitting chinrest less hit or miss.
7. Differences in ease and comfort are often immediate.
8. The researchers can sometimes pinpoint what kind of chinrest will suit a particular jaw, especially when the jaw line is extremely bony or fleshy.
9. Round, fleshy jaws are the only ones to like the Gordon and

Kreisler chinrests, which have a very flat plate and a low, long ridge. This finding was also predicted in Paul Rolland and Marla Mutschler's book. (See number two under *Choosing Chinrests for the Study*).

10. Long, thin faces, even with a certain amount of fleshiness, seem to prefer a Teka Hi chinrest. This also supports Rolland's suggestion in his book. (See number four under *Choosing Chinrests for the Study*).
11. Teachers whose students are fitted with a chinrest appropriate to the shape of the student's jaw and the height of their neck do have to remind them about certain aspects of posture such as head positioning, but they should not need to deal with drooping instruments or with instruments that are tilted down too far on the E-string side.
12. The descriptions of jaws are more subjective than the researchers would like.

At this stage of research, the researchers **cannot** conclusively say:

1. Why one chinrest like the Brandt fits many kinds of jaws, except to say that the Brandt might be one of the more generically good chinrests around.
2. That each student will stay with the chinrest that he initially chose. Pre-existing physical issues and the newness of the newly-fitted chinrest can also shade negatively or positively the chinrest chosen. Time with the chinrest, then, is needed in order to see just how good the fit is for the student.
3. Which physical changes and consequent technical changes will come about because of the different chinrest.



Photo 18- Violin strings angled 10 degrees to the floor



Photo 19- Violin strings level to the floor after replacing the old chinrest with a lift and better-fitting chinrest in June 2006. This change in positioning was immediate.

1. Details of this article are most likely applicable to violinists, but until research has actually been done on violinists, the researchers chose to make definitive statements only about violinists. Research will also be extended in the near future to fractional-size violinists.
2. Chinrests should either be cleaned regularly with a weak solution of Murphy's Oil Soap, or the violinist should place a handkerchief over the chinrest and change it regularly in order to avoid neck infections.
3. An across-the-tailpiece chinrest is one whose plate sits on top of the chinrest. A Guarneri chinrest, then, does not qualify for this class of chinrest because its plate sits fully at the

left of the tailpiece. Most students, however, place their jaws on the cross-over piece, making this chinrest function, in effect, as an across-the-tailpiece chinrest.

- The figure of 47 percent use of Guarneri chinrests in the general population is probably too little when one considers that one of the teachers in the study stayed away almost entirely from the Guarneri model skewing the average to a more moderate figure. This fact would also indicate that more than 37 percent of students in the general population are fitted incorrectly when using a Guarneri chinrest.
- The researchers considered using chinrests placed over the tailpiece but did not use them in the present research because so few students were suited to this kind of chinrest. Also, as originally constructed for the research, the original across-the-tailpiece lifts used to elevate the chinrest tops were cumbersome to use, taking up an exorbitant amount of time to change on students' instruments. In the end, the researchers chose to rule out this variable in the research at this point, recognizing a need to continue research with across-the-tailpiece models at a later date.
- The reason that photos were taken is that the eye is often fooled by light, shadow, movement, and color. A still photograph that is printed out in black and white showed the researchers many details that they did not pick up in the lessons. Also, angles could more accurately be measured, and the photos served as reminders of what had been seen.
- This process is not entirely original. It comes mostly from Paul Rolland and Marla Mutschler's book *The Teaching of Action in String Playing*, p. 61. Modifications are from Lynne Denig's teaching experience.



Lynne Denig teaches a private studio of 25 violin and viola students in Fairfax, Virginia. She serves as the Certificate Program for Strings chair for Virginia, is chair of the VASTA Fairfax recital series, and serves on VASTA's Special Events Committee and Bylaws Committee. Nationally, she has been a presenter at ASTA conventions and pre-conference sessions since 2003, and serves on ASTA's Committee on Studio Instruction (COSI). She is founder and board president emeritus of the Youth Orchestras of Fairfax (www.tyof.org) and VASTA's music mentor program, "Future Teachers Today." She was given VASTA's Outstanding and Distinguished Service Award for service to the chapter in May 2006.



Gary Frisch, president-elect of the Virginia String Teachers Association (VASTA) is a violinmaker and dealer. He owns and operates a shop located in Falls Church, Virginia, Gary Frisch Violins. Gary trained in violin making under Deena Spear. Over the past year and a half, Gary has teamed up with Lynne Denig to develop a diagnostic approach for assessing the appropriate chinrest heights and contours for students. He presented at the ASTA National Convention in 2006. As chair of VASTA's Special Events Committee, he is developing ongoing programs statewide that will benefit all members and their students.

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