Chinrest Choice
Based on Jaw Type

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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 bacteria build up 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
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.

Readers will see 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 chinrest, 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.

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 squints 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 the shape and chinrest fit.

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 fleshly (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.
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 flexible jaw should use a broad, flat chinrest. Its large contact surface enables the 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 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: Kreisler, Turner, Gordon, Brandt, and Donaldson among the Hill chinrests, and Strobel, Hamburg, and Teko 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 wholly 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.
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 used by fleshy-jawed students (see photo 10), and those probably used by bony-jawed students (see photo 11). The hypothesis was that the fatter models of chinrests would be better for the fleshy-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, lifters, 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 setup served the student. Then, she took photos of the students, including head shots. 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:

1. Have the student march in place lifting the knees. This positions the feet under the hip bones and does not overstress 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 overriding 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. "Glide" 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 angles’ 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

<table>
<thead>
<tr>
<th>Name</th>
<th>Chinrest Type Preferred</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bony</td>
<td>Teka Hi</td>
</tr>
<tr>
<td>Jon</td>
<td>Teka Hi</td>
</tr>
<tr>
<td>Remy</td>
<td>Teka Hi</td>
</tr>
<tr>
<td>Will</td>
<td>Brandt</td>
</tr>
<tr>
<td>Hannah</td>
<td>Hamburg</td>
</tr>
<tr>
<td>Katie S.</td>
<td>Brandt</td>
</tr>
<tr>
<td>Kevin</td>
<td>Donaldson</td>
</tr>
<tr>
<td>Haleigh</td>
<td>Hamburg</td>
</tr>
<tr>
<td>Kelly</td>
<td>Donaldson</td>
</tr>
<tr>
<td>Karen</td>
<td>Donaldson</td>
</tr>
<tr>
<td>Eugene</td>
<td>Could not be fitted (across the tailpiece chinrest needed)</td>
</tr>
<tr>
<td>Christine</td>
<td>Dresden</td>
</tr>
<tr>
<td>Monica</td>
<td>Turner</td>
</tr>
</tbody>
</table>

**In-between**

<table>
<thead>
<tr>
<th>Name</th>
<th>Chinrest Type Preferred</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matthew</td>
<td>Hamburg</td>
</tr>
<tr>
<td>Jennifer</td>
<td>Hamburg</td>
</tr>
<tr>
<td>Julia</td>
<td>Hamburg</td>
</tr>
<tr>
<td>Enrico</td>
<td>Donaldson</td>
</tr>
<tr>
<td>Marty</td>
<td>Donaldson</td>
</tr>
<tr>
<td>Vy</td>
<td>Donaldson</td>
</tr>
<tr>
<td>Tong</td>
<td>Teka</td>
</tr>
<tr>
<td>Nick</td>
<td>Gordon</td>
</tr>
<tr>
<td>Anna</td>
<td>Brandt</td>
</tr>
</tbody>
</table>

**Fleshy**

<table>
<thead>
<tr>
<th>Name</th>
<th>Chinrest Type Preferred</th>
</tr>
</thead>
<tbody>
<tr>
<td>Katie</td>
<td>Gordon</td>
</tr>
<tr>
<td>Tyler</td>
<td>Gordon</td>
</tr>
<tr>
<td>Kelsey</td>
<td>Gordon</td>
</tr>
<tr>
<td>Rishi</td>
<td>Gordon</td>
</tr>
<tr>
<td>Greg</td>
<td>Gordon</td>
</tr>
<tr>
<td>Alex</td>
<td>Kreisler</td>
</tr>
<tr>
<td>Ellen</td>
<td>Kreisler</td>
</tr>
<tr>
<td>Nathan</td>
<td>Kreisler</td>
</tr>
<tr>
<td>Nava</td>
<td>Kreisler</td>
</tr>
<tr>
<td>Rebecca</td>
<td>Brandt (but wishes for a Morawetz)</td>
</tr>
<tr>
<td>Peter</td>
<td>Brandt</td>
</tr>
<tr>
<td>Jose</td>
<td>Brandt</td>
</tr>
<tr>
<td>Ngan</td>
<td>Brandt</td>
</tr>
</tbody>
</table>

Ariel

Richard

Yewon

Jake C.

Jackie

Gretchen

Annie

David L.

Morgan

Jonathan

Teka Hi

Teka Hi or Strobel

Teka Hi

Donaldson

Donaldson

Donaldson

Hamburg

Hamburg

Turner

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 chin

*Photo 15 - Sample jaw line that preferred a Donaldson chin*
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 Guarnieri chinrest that fits few people.
3. More than 47 percent of the violinists in Northern Virginia use the Guarnieri 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 Guarnieri 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 Guarnieri 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 Muthchler's book. (See number two under Choosing Chinrests for the Study).
10. Long, thin faces, even with a certain amount of flesheness, 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 generally 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 have a negative 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: Viola 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 mostly applicable to violins but until research has actually been done on violas, the researchers chose to make definitive statements only about violins. Research will also be extended in the near future to fractional-size violins.
2. Chinrests should either be cleaned regularly with a weak solution of Murphy's Oil Soap or the violinist should place a handful of flour 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 Guarnieri chinrest, then, does not qualify for this class of chinrest because it 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.

4. 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 slowing the average to a more moderate figure. This fact would also indicate that more than 37 percent of students in the general population are forced incorrectly when using a Guarneri chinrest.

5. 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 lift 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 make this variable in the research at this point, recognizing a need to continue research with across-the-tailpiece models at a later date.

6. 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 that 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.

7. This process is not entirely original. It comes mostly from Paul Rolland and Marli Munchler’s book The Teaching of Action in String Playing, p. 61. Modifications are from Lynn Deleg’s teaching experience.

Lynne Deleg 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.yoxf.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 viola maker 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 Deleg 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.