Chinrest Choice Based on Jaw Type  
By Gary Frisch and Lynne Denig

Background  
Gary Frisch, of Gary Frisch Violins in Falls Church, VA, and Lynne Denig, studio teacher in Fairfax, VA, teamed violin making skills and teaching knowledge to find what constitutes a perfect chinrest.

Their research began in the Fall of 2005 with 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, KA, and the second stage of their findings will be presented at the 2006 VMEA conference in Hot Springs, VA in November and 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, violinists¹ 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 two chinrests, as research has shown, that are designed for very few people. Despite the fact that these two chinrests are presently “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.

¹ Details of this article are most likely applicable to violists, but until research has actually been done on violists, the researchers chose to make definitive statements only about violinists. 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 Murphys Oil Soap, or the violinist should place a hanky over the chinrest and change it regularly in order to avoid neck infections.
An ill-fitting chinrest will also cause a player to turn her head out of design function 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, the following happens: neck aches, headaches, and eventual aches elsewhere in the body as the body tries 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.

Another sign of an ill-fitting chinrest is a sagging instrument, a head that is strangely positioned, or the student playing on the crossover piece of an across-the-tailpiece chinrest, something often seen with players using the Guarneri chinrest. See Photo 1 below as an example of a student playing on the cross-over piece of a Guarneri chinrest. Photos 2 and 3 show students whose chinrest choice causes the instrument to sag and the head to reposition itself.

Photo 1- Playing on the Guarneri cross-over piece

![Photo 1- Playing on the Guarneri cross-over piece](image)

Photo 2- A sagging instrument

Photo 3- Head tilted left and turned right

![Photo 2- A sagging instrument](image)

![Photo 3- Head tilted left and turned right](image)

Readers will see that in the research below that the Guarneri chinrest was not used as an option for fitting students. The reason that the Guarneri was not used was that the contour does not suit most jaws. This fact was seen 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 research.

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\(^3\), a set up best used by people with either narrow shoulders, short arms, or both. The researchers found only 10% of students needed an across-the-tailpiece chinrest. When one considers that 47% of the students in the study used a Guarneri, this meant that more than 37% 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 smart 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. Despite its present popularity, teachers should think carefully before encouraging students to use this chinrest.

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 4 and 5 to see the difference between an original version and a new commercial version of the Guarneri chinrest. Note, too, the variations in shape. Both of these chinrests are called Guarneri!

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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, in effect, an across-the-tailpiece chinrest.

4 The figure of 47% 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% of students in the general population are fitted incorrectly when using a Guarneri chinrest.
Teachers will also want to know that with all the other versions of the Hill chinrests in addition to the Guarneri, that 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 one might be very disappointed to hear this, these variations can be to one’s benefit when considering that no one jaw is exactly the same. But, 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. Therefore, 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 6), or possessing mostly straight lines and very little padding on the jaw bone; in-between (Photo 7), or a jaw line that was not clearly one or the other; and fleshy (Photo 8), 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 good-fitting chinrest, then, is only good-fitting if it caters to the characteristics of the jaw that uses it.

Photo 6- Bony jaw

Photo 7- In-between jaw

Photo 8- 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 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 9 below shows the lifts, however.

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 Mr. Rolland and Marla Mutschler’s book The Teaching of Action in String Playing, Illinois String Research Associates, 1974, Mr. Rolland and Dr. Mutschler write of what Mr. 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 Mr. 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

Photo 9- Lifts- 10, 15, 20, 25 mm
on the left side of the tailpiece: Kreisler, Turner, Gordon, Brandt, and Donaldson among the Hill chinrests, and the 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 5 mm beginning with 10 mm and ending with 25 mm. The 5 mm lift, not pictured below, is merely a wedge of boxwood and cork that is fitted underneath a standard chinrest, something that original hardware on any chinrest will tolerate. Wedges higher than 5 mm must be crafted with viola hardware in order to secure them to the instrument. Photos 10 and 11 show the toppers.

![Photo 10](image1)
“Toppers”- Lower left, clockwise: Kreisler, Strobel, Turner, Hamburg

![Photo 11](image2)
“Toppers”- Lower left, clockwise: Brandt, Gordon, Donaldson, Teka

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 Mr. Rolland’s descriptions of what kind of chinrest was good for different kinds 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.

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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 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.
Lynne assembled the toppers, lifts, a chinrest key, a tape measure in millimeters for more definitive measurements, a note pad, and digital camera before meeting the students, and then laid these items out so that they would be ready for the fittings as each student arrived at the studio for their lesson and the fitting.

Lynne’s next step was to note which chinrest and shoulder pad the students were using before the fitting and to note how well the present set up served the student. Then, photos were taken of the students that included head shots like those below. The next step was to measure the neck and instrument to see which size lift the student would be able to use, a process that will, again, be described in a future article. Then, taking observations and measurements into consideration, Lynne started with 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 how to rule out variables of placement based on preconceived ideas of either the teacher or the student. These ideas were often dependant on having the student mimic what the teacher did, an approach that is 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 teachers feel unsure exactly how to position instruments based on the physical structure of a student. In one case, the teacher had no approach to instrument positioning, a fact born out in the chaotic positioning of the students’ instruments.

The process below also circumvented a student’s preconceived ideas of where the instrument should be. These ideas were often just due to physical habit.

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. Variables of placement, then, allowed the researchers to find a chinrest on the basis of neck length and jaw shape that were not varied by any positioning vagaries.

The instrument positioning 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

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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 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.
reposition his instrument at that point. This process looks as if 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 overtax any one muscle group in contrast to spreading the feet which promotes locked knees and adds 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 gently 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 right hand to drift down to the player’s right hip and grasp the instrument.
13. While keeping the left hand “glued”, 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.
15. The jaw is placed 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 and not anyone else’s. 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

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7 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.
chinrest that did not fit, to eyes widening remarkably in affirmation of the comfort and fit. Comments were, ‘Where can I get this chinrest’ or ‘How soon can I get this chinrest?’

After all the students were fitted and Lynne returned home, she charted each student’s jaw type noting the chinrest that worked best for him. 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

<table>
<thead>
<tr>
<th>Bony</th>
<th>Chinrest type preferred</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jon</td>
<td>Teka Hi</td>
</tr>
<tr>
<td>Remy</td>
<td>Teka Hi</td>
</tr>
<tr>
<td>Will</td>
<td>Teka Hi</td>
</tr>
<tr>
<td>Hannah</td>
<td>Brandt</td>
</tr>
<tr>
<td>Katie S.</td>
<td>Brandt</td>
</tr>
<tr>
<td>Kevin</td>
<td>Hamburg</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>Eugine</td>
<td>Could not be fitted at the time (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>

<table>
<thead>
<tr>
<th>In-between</th>
<th></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>

<table>
<thead>
<tr>
<th>Fleshy</th>
<th></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>
</tbody>
</table>
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

Jaw lines that preferred a Teka chinrest

Photo 12

Photo 13

degrees from ear to point from

degrees

Photo 14
Jaw lines that preferred a Brandt chinrest

Photo 15

Photo 16

Photo 17

Jaw lines that preferred a Hamburg chinrest

Photo 18

Photo 19
Jaw lines that preferred a Donaldson chinrest

Photo 20

Photo 21

Jaw lines that preferred a Gordon chinrest

Photo 22

Photo 23

Photo 24
Jaw lines that preferred a Kreisler chinrest

Conclusions

This initial stage of research (less than one year) 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, too, some 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% of the population of violinists in Northern Virginia use the Guarneri chinrest, and usually use it improperly placing their chin on the crossover piece, not on the plate of the chinrest effectively making the Guarneri an across-the-tailpiece chinrest.
4. Only 10% of the violinists in the study showed a need for an across-the-tailpiece chinrest pointing to the possibility that more than 1/3 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 28).
6. The chinrest fitting system described above makes finding a good-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 one of the extremes; bony or fleshy.

9. Round, fleshy jaws are the only ones to like the Gordon and Kreisler chinrests, chinests that have a very flat plate and a low, long ridge. This finding was also predicted in Paul Rolland and Marla Mutschler’s book. (See #2 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 Mr. Rolland’s suggestion in his book. (See #4 under Choosing Chinrests for the Study).

11. 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 28- Violin strings angled 10 degrees to the floor

![Photo 28](image1.jpg)

Photo 29- 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.

![Photo 29](image2.jpg)

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