

TEACHING LEFT-HAND TECHNIQUES



“The time has come to stop the fruitless search for the ONE element to solve everything, and to come to the recognition that the technique of violin playing, and even more, the ART of violin playing, is the sum of a greater number of specific factors.”

Carl Flesch (1873-1944)

TEACHING LEFT-HAND TECHNIQUES

Left-hand techniques refer to all the techniques we teach students after establishing a proper left-hand shape. Developing a wide range of these techniques for artistic playing takes years to fully master. This underscores the importance of introducing the foundational elements—including shifting, vibrato, and intonation—from the very beginning of instruction.

To succeed in this complex and long-term endeavor, it is crucial to continuously refine foundational skills of string playing while advancing through the teaching of left-hand techniques using a "spiral curriculum" approach. In this approach, techniques are initially introduced in simplified forms and revisited over months and years, gradually increasing in complexity and sophistication.

This teaching manual includes explanations and exercises intended to teach a variety of left-hand techniques, drawing from a wide range of historical and modern teaching methods. These exercises are suitable for both individual lessons and group class settings.

What to teach?

- Proper placement and shape of the left-hand fingers on the string
- Contact between left-hand and instrument's neck
- Left-hand elevation
- Finger actions/movements
- Finger pressure
- Finger patterns/tonal patterns
- Scales
- Left elbow movements
- Shifting
- Positions
- Vibrato
- Double stops and chords (as related to left hand)
- Harmonics
- Ornaments

"When the fingers of the left hand are well balanced, all four fingers can reach their respective notes without undue effort." (Rolland)

- Left-hand pizzicato
- Intonation

Objectives

- Healthy foundations (posture/stance, instrument hold, left-hand setup) are prerequisites for development of left-hand techniques. The function of the left hand and fingers is to play the pitches and create tone colors and not to hold the instrument.
- Proper placement and shape of left-hand fingers on the string must be carefully established and continuously monitored.
- Instrument's neck shall not lean into the wedge between the first finger and the thumb.
- "Left-Hand Frame", that is the "octave space" between the 1st and 4th fingers, is among the most important prerequisites for the success in all left-hand techniques, including intonation.
- Base knuckles of left-hand fingers, left hand, wrist, and forearm shall form a straight line.
- Left elbow shall move between the strings to the left or right. It shall also move between positions.

In his seminal treatise *The Art of Playing on the Violin* (1751), Francesco Geminiani proposed practicing the left hand without the bow. This 'disagreeable' exercise remains in use and is considered one of the most beneficial pedagogical practices.

Pedagogy for teaching proper placement and shape of the left-hand fingers on the string

Rolland's steps for establishing the sensation for "double contact" and proper left-hand fingers placement on the strings (applicable when teaching beginning students and when remediating intermediate and advanced students):

- Steps of practicing left-hand finger placement on pencil:
 - Markers of the left-hand ("Magic X" and "Magic Dot")
 - Pencil against the "Magic X" placed at the base of the index finger
 - Place all four curved fingers on the pencil and pull the first finger back
 - Let fingers *cling* on the pencil so that fingers develop curved shape and gain the strength.
 - Practice often, for instance in the car to school or in front of the TV
- Steps for practicing left-hand fingers on string:
 - Instrument in playing position
 - Place "Magic X" on the left side of fingerboard and move hand back and forth between the first and middle position several times.
 - Place all four fingers on one string (second string is good to start with) and pull back first finger.
 - Let fingers *cling* to the string and then move fingers to different string.
 - Index finger contact point: the base of index finger touches instruments neck for additional support (violins and violas)
 - Thumb is placed in between the first and second finger on the opposite side.
- Steps for learning the correct placement and angle of the first finger:
 - Draw a "Smiley Face" on the first fingernail (or use the sticker with "smiley face")
 - Place first finger on first "Signal Dot" on finger's left side.

- Student should be able to see “Smiley Face” with no obstruction.
- Press and release string many times while tapping with the thumb to release the squeezing and moving it back and forth.
- Steps for learning correct placement of the third finger:
 - Position the first finger as instructed above.
 - Place the tip of the third finger on third “Signal Dot”.
 - Press and release many times while tapping with the thumb to release the squeezing and moving it back and forth.
- Steps for learning correct placement of the fourth finger:
 - Position the first and third fingers on the string as instructed above.
 - Place the tip of curved fourth finger about inch away from third finger. (There is no “Signal Dot” for fourth finger, unless teacher uses one)
 - Press and release many times while tapping with the thumb to release the squeezing and moving it back and forth.
- Steps for learning the correct placement of the second finger:
 - Position the first and the third fingers as instructed above.
 - Place second finger next to the third (“high two”) and press and release many times and while tapping with the thumb to release the squeezing and moving it back and forth.
 - Repeat the steps with the second finger being placed next to the first finger (“low two”).

Colourstrings approach three sequential steps for teaching proper placement of the left-hand fingers:

- Pluck (numbered fingering)-touch (harmonics pressure/weight)-stop (stopping the string by sinking into the string while never pressing into the string too much)

IMPORTANT: Teach students “Finger-Bow-Then we Go” sequence from the beginning of the instruction.

Exercises for further refinement of the left thumb and left-hand fingers placement:

Samuel Applebaum suggestions for proper placement of the left thumb relative to the position and the instrument:

- In first position thumb is positioned across first finger (violin), in between first and second finger (viola), across second finger (cello and double bass)
- In second position thumb is positioned right across the second finger (like in first position).
- In third position thumb might be placed slightly under the neck.
- In fourth position thumb is in the curve of the beginning of instrument’s neck (saddle).
- In fifth position thumb is at right angle with the neck.
- In higher positions thumb is less on the neck (depend on the size of the thumb and the hand)

Paul Rolland steps for development of the left thumb flexibility and mobility:

- Place the left thumb on instrument’s neck in proper place and shape.

- Move it along the neck while other fingers are still (in one place).
- Move other fingers while thumb is still.
- Tap with thumb in various places on the neck while other fingers are staying in one position.

Paul Rolland proposed three levels/elevations of left hand on the instrument's neck:

- Low level/elevation (used when playing on higher strings)
- Average level/elevation (used when playing on middle strings and/or in between strings)
- High level/elevation (used when playing on lower strings)

Pedagogy for teaching finger actions/movements

There are **three** types of left-hand finger movements/actions that are used in playing string instruments:

- **Vertical:** This is an “up-down-release” action utilized in playing diatonic scales, arpeggios, trills, and fast scale-like passages. The movement/action starts in the base knuckle of each finger.
- **Horizontal:** This is an “along the string” action executed by moving the finger(s) along the string. Examples include chromatic scales/passages and extensions.
- **Lateral:** This is a “sideways” action in which the finger moves from one string to another. Examples include string crossings in perfect fifths and other intervals and passages that involve playing over several strings.

Exercises for teaching vertical finger movements by rote (applicable when teaching beginning students):

- **Samuel Applebaum** tapping fingers exercise on collar bone for strengthening left-hand fingers (applicable when teaching beginners and intermediate string students):
 - Place left-hand fingers on the right collar bone.
 - Fingers must be and remain round. (“Cupcake Shape”)
 - Lift up finger backward as much as possible and in one motion “drop” it onto the collar bone and immediately lift finger up to original backward position.
 - Motion needs to start in the base of the first knuckle.
 - Lifting and dropping motion needs to be executed in one continuous sequence like “action-reaction” (image of “bouncing ball”).
 - Repeat this motion with each finger 4-6 times.
 - Listen for the strong sound.
 - This exercise can be transferred on instrument's body and/or string. (Rolland)
- **Samuel Applebaum** tapping fingers exercise on string for development of sense of space between fingers (applicable when teaching beginning and intermediate string students):
 - Place first finger in D string, on pitch E.
 - With second finger tap four times: E-F natural; E-F sharp; then E- G natural (minor third)
 - Repeat with each two consecutive fingers: minor second, major second, and minor third

- Movement of the finger is always initiated in the base of first knuckle.
- **Samuel Applebaum** exercises for development of finger independency (applicable when teaching intermediate and advanced students):
 - Fingers placed in Geminiani chord.
 - Thumb not clinging.
 - While keeping other fingers down lift up first finger eight times.
 - Repeat with each finger while keeping other fingers down.
 - After student becomes comfortable with this exercise, start practicing alternating fingers first as “first-second”, “second-third”, “third-fourth” while keeping other fingers down and then as “first-third” and “second-fourth” sequence.
- ***Fingers Hopping Never Stopping*** chant for development of fingers’ strength and for the feel for vertical finger movements:
 - (a) Students form the “link” or “letter O” between the tip of the finger and the fleshy part of left thumb.
 - (b) Fingers must be round. (“Cupcake Shape”)
 - (c) While saying the chant (see below) students move finger backward as much as possible and then in one motion “drop & “lift” the tip of the finger on fleshy part of the thumb. This motion is supposed to be like “action-reaction” sequence and not like “drop-and-up” (not like two separate motions); image that works well is “like touching the hot stove” (Dorothy DeLay used the same Drop-Lift sequence in setting up left-hand fingers)
 - (d) This “drop & lift” to be repeated 16 times (for the duration of the chant) with each finger. It can be practiced with fingers of just left hand or both hands.

Fingers Hopping

*Fingers hopping never stopping,
keep those fingers hopping, hopping.
Fiddle fingers must be round,
keep those little hammers pound.*

Exercises for teaching horizontal finger movements by rote:

- **Paul Rolland** exercise for teaching horizontal finger movements (applicable when teaching beginning students):
 - Place a sheet of tissue paper on fingerboard and strings.
 - Slide each of the left-hand fingers on tissue paper to develop the understanding of horizontal movements of left-hand fingers

Louis Kiezman exercises for teaching horizontal finger movements by rote (applicable when teaching intermediate and advanced students):

- With finger movement only: Place left-hand in playing position. Without pressing into the string move each finger along the string as far as it can go in one position. Wrist remains still.

- With wrist movement: Place left-hand in playing position. Without pressing into the string move each finger along the string as far as it can go in one position. Wrist moves along.

Exercises for teaching lateral finger movements by rote:

- “Hopping Fingers”:
 - (a) While maintaining “left-hand frame” student “hops” with one finger from one string to another adjacent string four times.
 - (b) Repeat with each finger and on all strings.
 - (c) After student becomes comfortable with “hopping” from one string to another adjacent, practice same exercise while skipping strings. Notice elbow movements that go with larger lateral movements.

There are four types of fingerings used in string playing: (a) half and whole steps, (b) chromatic, (c) substitution, and (d) extensions and contractions. As student progresses into a more advanced repertoire and they gain musical maturity substitution and extensions/contractions types of fingering become more important.

Pedagogy for teaching finger pressure

Simon Fischer exercise for teaching left-hand fingers pressure:

- Place finger on the string (start with third finger on second string; no bow) and press with “50 pounds weight” → “25 pounds weight” → “5 pounds weight” (beginners/intermediate)
- Repeat with each finger (no bow)
- Repeat the same exercise with the bow playing four repeated notes in staccato (intermediate/advanced)

Colourstrings approach’s strategy for teaching left-hand fingers pressure:

- *Colourstrings* uses natural harmonics (and numbered left-hand pizzicato) as the basis for left-hand techniques
- Place the finger on the top of the string with “harmonic” weight/pressure.
- Play two quarter notes while saying “noise-noise.”
- Then, sing the finger into the string (still not full weight) and say “magic-magic.”
- Repeat the above steps with each finger.
- Practice on different strings.

Pedagogy for teaching left-elbow movements

Exercises for teaching proper placement of the left elbow under the instrument:

Louis Kievman silent exercise for positioning left elbow (applicable when teaching beginning and intermediate string students):

- With the instrument in playing position tap four times first finger on lowest string and then immediately repeat on highest string.
- Repeat with each finger.
- Make sure that elbow is moving in accordance with each string.

- Eventually do only two tapings on each string and then only one.

Kievman developed efficient sequence/exercises for learning left-elbow movements by playing “scales in broken octaves” manner.

Simon Fischer silent exercise for positioning left elbow (applicable when teaching intermediate and advanced string students):

- Rest the scroll of the instrument on a shelf/wall (or teacher/another student supports the scroll)
- Place any finger (good to start with third finger on second string) on any string and “hang” the arm from the fingerboard down. Make finger stiff and strong (retain its round shape), while the rest of the hand feels loose.
- Repeat on all strings and with all fingers

Pedagogy for teaching finger patterns/tonal patterns

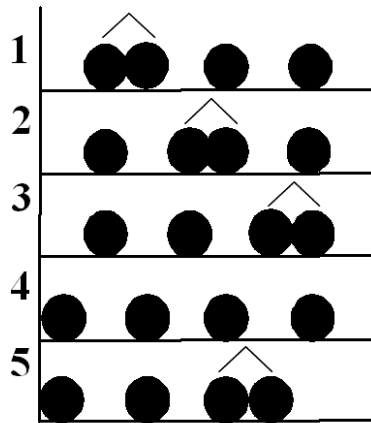
Term “finger patterns” refers to half- and whole-steps spacing between adjacent fingers. Knowing in what finger pattern we are playing is the first step towards playing scales and pieces in tune. Generally speaking, there are five finger patterns (see below). On lower string instruments, appropriate term for describing the spacing of the half- and whole-steps is “tonal patterns.”

Suggestion: Teach George Bornoff’s Five Finger Patterns with Suzuki’s Var. A rhythm. That is more interesting and engaging way for students to learn and practice finger/tonal patterns.

Exercise for teaching finger patterns (applicable when teaching beginning students):

- (a) “**Finger Patterns Game**” (no instrument/bow)
- (b) ”Hot Cross Buns” (with three finger patterns)→Bornoff finger/tonal patterns (with Var. A rhythm)→One octave scales explained in terms for finger patterns→Two octave scales scale explained in terms for finger patterns

Fun way to introduce finger patterns to young students is through Hot Cross Buns sequence: Happy Bunny-Sad Bunny- & Exotic Bunny



Pedagogy for teaching scales:

- Types of scale: diatonic scales (major and minor), chromatic scales, whole-tone scales, modes
- Whole and half step organization in major scales >natural minor>melodic minor (through experience and through theory)
- Range of scales: one/two/three octaves
- Arpeggios & broken thirds
- Scales in double stops
- Fingerings (ascending vs. descending part of the scale; chromatic scales fingerings; blocked vs. independent fingerings)
- Strategies for teaching scales: (a) traditional way (set of seven notes), (b) connecting two tetrachords (Casals, Fischer), and (c) by adding one new pitch at the time and transposition (*Colourstrings* approach)
- Considerations: starting with “open strings scales” vs. “circle of fifths scales” & intonation as applied to scales

Pedagogy for teaching shifting movements

Types of shifting: (a) same finger shifts, (b) *Classical shifts* (shift starts with “old finger”), (c) *Romantic shifts* (shift starts with “new finger”), (d) *Combination shifts* (shift starts with “old finger” but ends with “new finger”) and (e) *Exchange shifts* (shifts in which the fingers “cross over” during the shift (e.g., shifting from 2nd to 1st fingers in ascending shifting or 1st to 2nd fingers in descending shifting)

Main principles of shifting technique:

- Shifting motion consists of four sub-sequent steps:
 - “Audiate the arriving note”: Hear and sing arriving pitch before moving hand/arm is a necessary, yet often neglected, step in teaching shifting.
 - “Lift”: Lift/release the weight/pressure of the left finger from the string before starting shifting movement. Left-thumb must be light and free.
 - “Prepare”: Make a slight preparatory movement either with hand (on violin) or whole arm (viola and cello). This preparatory movement is particularly important

on viola and lower strings, in large shifts, and when shifting from higher to lower positions.

- “Glide”: With no weight/pressure of the finger on the string (this step is executed with “harmonic/feather like weight”) transfer the entire hand, including thumb, to next position

Considerations related to pedagogy of shifting:

- **Speed of shifting:** “One of the secrets of greater accuracy [in shifting] is to shift fast *somewhere just below the arrival note*, and then to continue more slowly into the arrival note itself.” Simon Fischer, *Basics*
- **Intermediate finger:** In early stages of learning, it is important to teach students about “transposing,” “intermediate,” and/or “ghost notes” that lead/guide the hand when moving from one position to another.
- **Releasing the pressure of left-hand thumb:** move left hand/arm between low, middle, and high positions while plucking strings with left-hand fingers using numbered fingers in various tempos but always in legato movement (*Colourstrings*)

Kurt Sashmannshaus exercise for teaching lifting/relaxing the weight/pressure of the finger before shifting movement (applicable when teaching beginning and intermediate string students):

- Place the hand in third position.
- “Lift” the weight of each finger while keeping other fingers down. Repeat eight time. This will look like a pulsating motion.
- Repeat in first position.

Simon Fischer exercise for teaching the “prepare” stage of shifting sequence (applicable when teaching advanced string students):

- Place left hand in Geminiani Chord position.
- While following “lift→“prepare→“shift” sequence move Geminiani chord all way up to seventh position, position by position.
- Notice that in each position hand has its own shape and that spaces between fingers are getting smaller.

Paul Rolland exercises for teaching the “glide” stage of shifting sequence (applicable when teaching beginning and intermediate string students):

- “Shuttles” exercise:
 - Place left-hand fingers “light as a feather” in between two middle strings (image of “rail-rode trucks”)
 - Move fingers up and down the fingerboard with the thumb moving simultaneously with fingers. Fingers must remain “light as a feather.”
 - Notice the elbow position changes as hand moves up and down the fingerboard
- “Flutes” exercise:
 - Place only third or only fourth finger of left-hand “light as a feather” on one of the two upper strings.
 - Move finger up and down the fingerboard while thumb moving simultaneously with fingers. Fingers must remain “light as a feather.”

- Notice the elbow position changes as hand moves up and down the fingerboard
- Practice with no bow and with bow:
- “Ghosts” exercise:
 - Same as above just place finger on one of the two lower strings.

Exercises for teaching shifting by rote:

Beginning Level	Intermediate Level	Advanced Level
“Shuttles” “Plucking in three positions” “Grasshopper” “Persian Song” “Twinkle Theme with Harmonics” (in D major)	“Matching Harmonics” (two positions) “Matching Harmonics” (three positions) “Shifting ‘Clair de Lune’” up on one string “Transposing ‘Clair de Lune’” (or any other short song) diagonally	Playing one octave scales on one string with one finger Playing familiar folk songs on one string.

Details related to teaching positions:

- Shortcut to reading music in positions applicable to upper strings: Fingerings in 5th position correspond to fingerings in 1st position; fingerings in 6th position correspond to 2nd position and fingerings in 7th position correspond to 3rd position (just on a lower adjacent string).
- After first position, most pedagogues recognize the benefits of teaching the third, then second position. Other pedagogues suggest introducing students to all positions as early as possible.
- Spacing between fingers decreases as we go to higher positions.

Pedagogy for teaching vibrato

There are three types of vibratos: fingertip joint, hand (wrist joint), and arm vibrato. These three types of vibratos are rarely used in isolation. In addition to types of vibratos, there are three qualities of vibrato: speed, width, and regularity. Seasoned players have a command over both, types and qualities of vibratos. Fingertip joint vibrato is less applicable on cello and double bass.

When teaching vibrato, we teach:

- “Vibrato movements” or “vibrato reflex” rather than vibrato itself.
- Silent vibrato pre-exercises
- Exercises for developing various speeds and qualities of vibrato, as well as exercises for developing continuous vibrato
- Exercises for remediating vibrato

Three stages of teaching vibrato movements/vibrato reflexes:

1. “No bow and no instrument stage”

- **Fingertip vibrato** pre-exercises: These exercises aim at the development of fingertip joint flexibility and it shall be introduced to students in early stages of learning their instruments as a “fun” pre-exercise.
 - Finger-tips *Calisthenics*:
 - Student makes “Link” or “Letter O” between the tip of each left –hand finger and fleshy part of thumb.
 - While saying the chant (see below) student flattens and then curves the first knuckle of each finger sixteen times.
 -

Fingers Dropping

*Fingers dropping, never stopping
keep those fingers dropping, dropping.
Fiddle fingers must be soft
keep those little fingers drop.*

- Finger-tip *Jelly-Belly* exercise:
 - Student places left-hand thumb on the side of the first crease of the finger.
 - With a minimal side-pressure student “stabilizes” upper part of the finger.
 - With the right-hand pointer student moves the first knuckle (tip of the finger) of each finger.
 - Tip of the finger will move like *jelly-belly*.

Simon Fischer silent exercises for development of left-hand fingers flexibility:

- “Heavy and light”
- “Curve in and out”
- “Pull in and out”
- “Large circles”

- **Hand vibrato** pre-exercises
 - *Dinner Rhythms* hand exercises:
 - Student holds left hand/arm in “pretended” playing position.
 - Student places right-hand over the wrist and lower part of the left-hand.
 - Student moves right-hand (not right wrist) back and forth in the rhythm of *Dinner Rhythm* in 4/4 meter:
 - *Di-nner, di-nner* for quarter notes
 - *Pi-zza, pi-zza* for eight notes
 - *Straw-berry, blue-berry* for triplets
 - *Watermelon* for sixteen notes
 - For cello and double bass, the hand motion is “rolling” rather than back and forth.

- **Arm vibrato** pre-exercises:
 - *See-Saw* arm exercise:
 - Student hold left arm in “pretended” playing position.
 - Student places right-hand pointer in inner part of elbow area.
 - While saying the chant (see below) student moves arm with *accelerando* and *ritardando* speed changes while moving the whole arm from pretended low- to high- positions.

See-Saw

See-saw up and down

Check your elbow, check your thumb.

2. “No bow and yes instrument stage”: Same steps as above just all movements transferred onto the instrument. For “hand vibrato” left hand is placed in third position (fourth position for cellos). Left hand fingers touch string with “feather/harmonic” light touch. Wrist remains connected with the instrument throughout the “hand vibrato” rhythms.
3. “Yes bow and yes instrument stage”: Same steps as in stage two just now we use the bow. The “hand vibrato” rhythms are called Rivarde Exercise. In advanced stage of practicing vibrato movements, we use dotted rhythms and metronome.

Mimi Zweig and Rebecca Henry arm vibrato-coordination pre-exercise (applicable when teaching beginning string students):

- Both arms/hands are in ‘pretended’ playing position
 - (a) Bilateral motions: Student places left-arm/hand in “pretended” high position and right-hand in “pretended” frog area. Arms move in opposite directions. Practice in varied speeds as explained in previous exercise.
 - (b) Unilateral motions: Student places left-arm/hand in “pretended” high position and right-hand in “pretended” “tip” area. Arms move in same direction. Practice in varied speeds as explained in previous exercise.
 - (c) Left-hand/arm goes up and down the pretended fingerboard fast while right-hand/arm moves slowly, like in a “slow bow.”
 - (d) Left-hand/arm goes up and down the pretended fingerboard slowly while right-hand/arm moves in “tremolo” motion.

Vibrato remedies:

- To speed up slow vibrato, practice quarter notes with whole bow in martelé while fitting in as many vibrato oscillations as possible
- To slow down rapid vibrato, practice long tones with the instrument’s scroll resting on the wall.
- To work on continuous vibrato, practice scales with overlapped bowing, practice finger pattern five, and/or a diminished chord on one string also with overlapped bowing.

Vibrato Prayer

Grant me that I vibrate:
All 1st and 4th fingers,
The first short note after a long
note,
The last note before a shift,
The first note after a shift,
When crossing a string,
and in diminuendo.

AMEN.

By Igor Ozim

Pedagogy for teaching double stops by rote

- When teaching double stops, we need to take in consideration both, the right- and left-hand aspects of the technique.
 - For right hand: Practice *Open Strings Cycle* in double stops (Bornoff)
 - For left hand: Practice Twinkles (or any song/scale) with adjacent string.
 - Suggested order of learning double stops from the left-hand aspect of the technique: Unison→Octaves→Perfect fourths→Thirds→Sixths
 - It is always good idea to practice double stops with “Lower-upper-together” or “Upper-lower-together” strategy

Pedagogy for teaching chords by rote

- When teaching chords, we need to take in consideration both, the right- and left-hand aspects of the technique.
 - For left hand: Practice chords without the bow to feel and remember the placement of each finger before including the bow.
 - Three note chords and four note chords

Common ornaments:

- Grace notes
- Appoggiaturas
- Trills
- Mordents
- Turns

Explain ornaments in terms of starting and ending notes.

Pedagogy for teaching harmonics by rote

- Start as early as possible because playing harmonics is excellent pedagogical tool for shaping left-hand, for teaching the light “feather/harmonic” left-hand finger touch, for playing in tune, and preparing left hand for vibrato.
- Sequence for rote teaching: “Ghosts” & “Shuttles” (Rolland)→Persian Song (Rolland) (harmonic-open string-harmonic-open string-etc.)→Twinkle Harmonics (on two/three/ four strings)→Twinkle with Natural Harmonics (*Colourstrings*)→Matching harmonics on each string and in middle and high positions

Pedagogy for teaching left-hand pizzicato by rote

- Start as early as possible because left-hand pizzicato is an efficient way for strengthening left-hand fingers.
- Sequence for rote teaching: “Each and Every Ant” (Rolland/Zweig)→Plucking in low-middle-high positions→”Grasshopper”(from *Artistry in Strings*)→Kievman exercise for left-hand pizzicato→playing one/two octave scales with left-hand pizzicato

Pedagogy for teaching intonation

Pedagogical Approaches to Teaching Intonation	Tuning Systems	Tartini/Combination Tones
<p>“Pure Intonation”/ “Sympathetic Vibrations”: Checking pitches with open strings (first mentioned by Quantz and first codified by Ševčík)</p> <p>“Visual Intonation”: Visualize spaces between fingers (Bronstein)</p> <p>“Spatial Intonation”: Know the half- and whole-steps between fingers (Bornoff)</p> <p>“Aural Intonation”: Hear the pitches in your head. Then sing and/or mime the finger placement (Kievman, Havas)</p>	<p>“Equal Temperament Tuning”: Octave divided in 12 equal half steps (used on keyboard instruments)</p> <p>“Just Tuning”: Based on the natural harmonic overtone series (used in tuning chords)</p> <p>“Pythagorean Tuning”: Based on stacking up perfect fifths (used in tuning music with expressive qualities)</p> <p>“Expressive Intonation”: Similar to Pythagorean Tuning (<u>leading tones</u>)</p>	<p><i>Tartini Tones</i> are of the most enduring intonation and tuning practices for string instruments. Way back in 1700’s, Leopold Mozart noticed that when strings are well tuned and are in good condition, if one plays minor third as double stops, and if one listens carefully, one will hear “third tone” (either a major third or tenth below the pitch)</p>

Two approaches to teaching intonation useful in group and school orchestra settings: *spatial* and *aural*.

- Exercises for teaching intonation through spatial approach:
 - Learning fingering patterns through *Fingering Patterns Game*
 - Learning fingering on right forearm:

- Student places right hand on left shoulder.
 - Student places left-hand fingers on top of the right forearm and practices fingering of the passage with correct spacing between fingers.
- Tapping fingers before playing the note
 - Student makes several tapping motions before sounding the note.
 - Useful strategy with leaps on one string (“measuring the space”) and when shifting
- Exercises for teaching/practicing intonation through aural approach:
 - Student sings the passage that has troubling pitches.
 - Student sings and then *audiates* (not singing, but imagining the sound in their heads while “singing inside the head”) the troubling pitches.
 - Student audiates the entire passage.
 - Finding the note (Kievman): Student plays any note on any string. Student audiates and finds that same note on other strings in various positions.
- Exercises that combine spatial and aural approaches: *Miming exercises* for internalizing both, the pitch and playing movements before start producing the sounds (Havas)
 - Student find the pulse by clapping (in circular motions) while also moving the knees.
 - Teacher/students decide on what kind of pulse they will “find”: regular (e.g., 4/4), micro (e.g., 4/8) or macro beat (e.g., 4/2); clapping motions are always circular.
 - Sing the absolute names of the notes while clapping and moving knees with “inner pulse”
 - Student mimes left hand:
 - Left-hand fingers are pressing into left palm or into right forearm (or press into some soft item).
 - Student mimes bowing:
 - First just for directions of the bow
 - Level of the strings while singing names of the strings
 - Bow choreography
 - Sing on *la* while right arm acts like a beautiful ballerina
- Student mimes both hands while singing
- Student plays on instrument while singing

Selected Reading List

Jensen, Hans Jergen, and Gregory Kalinovsky. *ViolinMind: Intonation and Technique*. Chicago, IL: Ovation Limited, Ltd., 2019.

Ricci, Rugerio. *Ricci on Glissando: The Short Cut to Violin Technique*. Bloomington, IN: University Press, 2007.