

## The Finger Matrix Exercise

Successfully navigating the fingerboard requires a clear knowledge of the notes within each position and the deft ability to relate those positions to one another. Within the left arm there are generally two types of intonation challenges: structural intonation (the finger spacing within one position) and transpositional intonation (the spacing between positions). Through a distillation of exercises found in cello treatises, I developed an exercise system called the Finger Matrix. These neck position exercises are valuable for all levels of cellists - from students newly introduced to the instrument to advanced cellists fine tuning their left hands. These exercises can easily be adapted to any stringed instrument.

### Rules for the Finger Matrix

- Play the Matrix on all strings.
- These exercises can be played vertically down the columns (remain in one position per column).
- These exercises can be played horizontally across a row (ascend in position as you move to the right).
- Sing the note names while playing to solidify the fingerboard “geography.”
- Check all notes that can be tuned to an open string.
- Use a variety of bow strokes and slurring combinations.
- Use a variety of rhythms.
- Practice in extended positions.
- Play these exercises in retrograde.
- Change the finger number order to include all possible permutations.
- Modify these exercises for the upper register of the instrument.
- Distill difficult passages from the repertoire into these elemental units.

### Getting Started

Roman numerals refer to a position. Arabic numbers refer to the left hand finger number. The Cello Neck Positions “Geography” indicates the location of these positions.

### Cello Neck Positions “Geography”

String	C	G	D	A		
	C#	A $\flat$	E $\flat$	B $\flat$	$\frac{1}{2}$	1/2 Position
	D	A	E	B	I	First Position
	E $\flat$	B $\flat$	F	C	II	Second Position
	E	B	F#	C#	II $\frac{1}{2}$	Second $\frac{1}{2}$ Position
	F	C	G	D	III	Third Position
	F#	C#	A $\flat$	E $\flat$	III $\frac{1}{2}$	Third $\frac{1}{2}$ Position
	G	D	A	E	IV	Fourth Position

The position is determined by the placement of the first finger.

The cellist can focus on one or multiple columns or rows each week depending on their ability and needs. Start by playing straight down the first column (first position) checking fourth fingers to ensure the pitch matches with the lower adjacent string. In subsequent week more columns are added as the student develops a solid understanding of positions and accurate intonation. Once this has been achieved, move on to practicing the rows reading left to right. Ultimately the cellist should feel comfortable quantum leaping from any note collection on the Finger Matrix to any other collection.

### FINGER MATRIX EXERCISE

<b>I</b>	<b>II</b>	<b>II½</b>	<b>III</b>	<b>III½</b>	<b>IV (Position)</b>
1	1	1	1	1	1
12	12	12	12	12	12
13	13	13	13	13	13
14	14	14	14	14	14
123	123	123	123	123	123
1234	1234	1234	1234	1234	1234
2	2	2	2	2	2
21	21	21	21	21	21
23	23	23	23	23	23
24	24	24	24	24	24
213	213	213	213	213	213
2134	2134	2134	2134	2134	2134
3	3	3	3	3	3
31	31	31	31	31	31
32	32	32	32	32	32
34	34	34	34	34	34
312	312	312	312	312	312
3124	3124	3124	3124	3124	3124
4	4	4	4	4	4
41	41	41	41	41	41
42	42	42	42	42	42
43	43	43	43	43	43
412	412	412	412	412	412
4123	4123	4123	4123	4123	4123
4321	4321	4321	4321	4321	4321
321	321	321	321	321	321

At first glance these exercises may seem purely technical, but creativity lies in how we teach even the simplest exercise to instill broad thinking and musicality. Apply macroscopic left hand concepts such as hand form, fingers close to the string, percussive action, coordination, intonation, relaxation, shifting preparation, continuous vibrato, and many more. The repetitive nature of the Finger Matrix has obvious implications for improving left hand technique but also offers opportunities for focusing on tone quality, healthy resonance, and that ultimate ideal of beautiful playing.