

Good String Crosses Gone Bad

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Note: This tech tip applies to the RIGHT HAND.

When playing a piece with *i*, *m*, and *a*, and changing from string to string, we experience what I call "good" string crosses and "bad" string crosses. For example, using *m* to play the first string E and then *i* to play the second string B is a "good" string cross—it feels natural. But using *i* to play the first string E and *m* to play the second string B is a "bad" string cross—it feels awkward:

Example #1

The diagram shows a musical staff with a treble clef and a key signature of one sharp (F#). It is divided into two sections by a double bar line. The first section, labeled "Good String Crosses", contains four notes: E4 (first string, finger *m*), B4 (second string, finger *i*), E4 (first string, finger *m*), and B4 (second string, finger *i*). The second section, labeled "Bad String Crosses", contains four notes: E4 (first string, finger *i*), B4 (second string, finger *m*), E4 (first string, finger *i*), and B4 (second string, finger *m*). The notes are written on a five-line staff with a 8 below the first line.

You can detect the same feeling of right and wrong with *m* and *a*:

Example #2

The diagram shows a musical staff with a treble clef and a key signature of one sharp (F#). It is divided into two sections by a double bar line. The first section, labeled "Good String Crosses", contains four notes: E4 (first string, finger *a*), B4 (second string, finger *m*), E4 (first string, finger *a*), and B4 (second string, finger *m*). The second section, labeled "Bad String Crosses", contains four notes: E4 (first string, finger *m*), B4 (second string, finger *a*), E4 (first string, finger *m*), and B4 (second string, finger *a*). The notes are written on a five-line staff with a 8 below the first line.

And even with *a* and *i*:

Example #3



To feel the difference more dramatically, try playing on the first and third strings:

Example #4

Example #4 provides three examples of string crossing on a single staff in G-clef, 8/8 time, comparing 'Good' and 'Bad' techniques. Each example consists of two measures separated by a double bar line.

- Example 1:** 'Good String Crosses' shows a sequence: m (third string), i (second string), m (third string), and i (second string). 'Bad String Crosses' shows: i (second string), m (third string), i (second string), and m (third string).
- Example 2:** 'Good String Crosses' shows: a (first string), m (third string), a (first string), and m (third string). 'Bad String Crosses' shows: m (third string), a (first string), m (third string), and a (first string).
- Example 3:** 'Good String Crosses' shows: a (first string), i (second string), a (first string), and i (second string). 'Bad String Crosses' shows: i (second string), a (first string), i (second string), and a (first string).

Most normal arpeggio patterns use "good" string crosses:

Example #5

The image displays five musical examples, each comparing 'Good String Crosses' and 'Bad String Crosses' for a specific sequence of fingerings. Each example is presented on a single staff with a treble clef and a key signature of one sharp (F#). The examples are separated by double bar lines.

- Example 1:**
 - Good String Crosses:** p (1st string, 1st fret), i (2nd string, 1st fret), m (3rd string, 1st fret), i (2nd string, 1st fret), m (3rd string, 1st fret), l (4th string, 1st fret).
 - Bad String Crosses:** p (1st string, 1st fret), m (3rd string, 1st fret), i (2nd string, 1st fret), m (3rd string, 1st fret), l (4th string, 1st fret), m (3rd string, 1st fret).
- Example 2:**
 - Good String Crosses:** p (1st string, 1st fret), m (3rd string, 1st fret), a (4th string, 1st fret), m (3rd string, 1st fret), a (4th string, 1st fret), m (3rd string, 1st fret).
 - Bad String Crosses:** p (1st string, 1st fret), a (4th string, 1st fret), m (3rd string, 1st fret), a (4th string, 1st fret), m (3rd string, 1st fret), a (4th string, 1st fret).
- Example 3:**
 - Good String Crosses:** p (1st string, 1st fret), m (3rd string, 1st fret), i (2nd string, 1st fret), m (3rd string, 1st fret), i (2nd string, 1st fret), m (3rd string, 1st fret).
 - Bad String Crosses:** p (1st string, 1st fret), l (4th string, 1st fret), m (3rd string, 1st fret), i (2nd string, 1st fret), m (3rd string, 1st fret), i (2nd string, 1st fret).
- Example 4:**
 - Good String Crosses:** p (1st string, 1st fret), a (4th string, 1st fret), m (3rd string, 1st fret), a (4th string, 1st fret), m (3rd string, 1st fret), a (4th string, 1st fret).
 - Bad String Crosses:** p (1st string, 1st fret), m (3rd string, 1st fret), a (4th string, 1st fret), m (3rd string, 1st fret), a (4th string, 1st fret), m (3rd string, 1st fret).
- Example 5:**
 - Good String Crosses:** p (1st string, 1st fret), i (2nd string, 1st fret), m (3rd string, 1st fret), a (4th string, 1st fret), m (3rd string, 1st fret), i (2nd string, 1st fret).
 - Bad String Crosses:** p (1st string, 1st fret), a (4th string, 1st fret), m (3rd string, 1st fret), i (2nd string, 1st fret), m (3rd string, 1st fret), a (4th string, 1st fret).

So, when fingering pieces, it only makes sense to use as many good string crosses as possible for ease of playing and security.

There are three ways to "set up" good string crosses:

1. Make a conscious choice as to which finger plays the first note of a passage
2. Change the left-hand fingering
3. Insert left-hand slurs

The first method is to simply decide which finger to use first to produce the desired good string cross. In the following example, playing the very first open E on the first string with *i* produces two bad string crosses in the next measure:

Example #6 *Bourree* from Lute Suite #1 (J.S. Bach)

Musical notation for Example #6, showing the first two measures of the *Bourree* from Lute Suite #1. The notation is in treble clef with a key signature of one sharp (F#). The first measure contains a half note G4 (open string) and a half note A4 (first finger). The second measure contains a half note B4 (second finger) and a half note C#5 (first finger). The third measure contains a half note D5 (third finger) and a half note E5 (first finger). The fourth measure contains a half note F#5 (first finger) and a half note G5 (first finger). The fifth measure contains a half note A5 (first finger) and a half note B5 (first finger). The sixth measure contains a half note C#6 (first finger) and a half note D6 (first finger). The seventh measure contains a half note E6 (first finger) and a half note F#6 (first finger). The eighth measure contains a half note G6 (first finger) and a half note A6 (first finger). The notation is annotated with 'Bad String Crosses' pointing to the second and third measures, indicating that the string crosses are poor due to the fingering choices.

But making the choice to play the very first open E with *m* instead of *i* produces good string crosses in the second measure:

Example #7 *Bourree* from Lute Suite #1 (J.S. Bach)

Musical notation for Example #7, showing the first two measures of the *Bourree* from Lute Suite #1. The notation is in treble clef with a key signature of one sharp (F#). The first measure contains a half note G4 (open string) and a half note A4 (first finger). The second measure contains a half note B4 (second finger) and a half note C#5 (first finger). The third measure contains a half note D5 (third finger) and a half note E5 (first finger). The fourth measure contains a half note F#5 (first finger) and a half note G5 (first finger). The fifth measure contains a half note A5 (first finger) and a half note B5 (first finger). The sixth measure contains a half note C#6 (first finger) and a half note D6 (first finger). The seventh measure contains a half note E6 (first finger) and a half note F#6 (first finger). The eighth measure contains a half note G6 (first finger) and a half note A6 (first finger). The notation is annotated with 'Good String Crosses' pointing to the second and third measures, indicating that the string crosses are good due to the fingering choices.

The second method, changing the left-hand fingering, can be as simple as changing a note from being on an open string to a fretted note on another string. Line one of Example #8 below shows the "incorrect" fingering from Example #6 that produced bad string crosses. But line two shows that simply changing the open E's to E's fretted on the second string (but retaining the same right-hand fingering we had before) now results in good string crossings:

Example #8 *Bourree from Lute Suite #1 (J.S. Bach)*

The image displays two musical staves for a piece titled "Bourree from Lute Suite #1 (J.S. Bach)". Both staves are in G major (one sharp) and common time (C). The first staff, labeled "Bad String Crosses", shows a sequence of notes with right-hand fingering (i, m, i, m, i, m) and left-hand fingering (2, 1, 2, 1, 2, 1). Arrows point to the string crossings between the first and second measures, and between the third and fourth measures, indicating "Bad String Crosses". The second staff, labeled "Good String Crosses", shows the same right-hand fingering but with a change in left-hand fingering. The first measure now has a circled "2" under the first E note, with an arrow pointing to it from the text "Change from open to 2nd string". The subsequent measures have circled "1" and "2" under the notes, with arrows pointing to them from the text "Good String Crosses".

Sometimes avoiding bad string crosses can involve extensive left-hand re-fingering:

Example #9 *Concierto de Aranjuez*, 1st movement (Joaquin Rodrigo)

This musical notation for Example #9 illustrates the concept of string crosses. It features two measures of music in G major, 6/8 time. The first measure shows a sequence of notes with fingerings *i*, *m*, *i*, *m*, *i*, *m*. Below the staff, the left-hand fingering is indicated as ④, ③, —, ②, —, ①. The second measure shows a similar sequence but with a 'Bad String Cross' indicated by an arrow pointing to the second measure. The left-hand fingering for the second measure is ②. The third measure shows a 'Good String Cross' with the left-hand fingering ④, ③, —, ②, —, ①. The fourth measure shows a 'Good String Cross' with the left-hand fingering ④, ③, —, ②, —, ①. The text 'Left-hand fingering changed' is written below the staff.

Usually, altering the fingering of one note here or there will have no negative or even noticeable effects to you or the listener. But with extensive refingerings, that may not be the case. You must then decide whether it is better to change the fingering to produce good string crosses and thus make the right-hand execution more dependable, or to retain the left-hand fingering and simply learn to execute the bad string crosses.

The third method to fix bad string crosses is to insert slurs at strategic points:

Example #10 *Concierto de Aranjuez*, 1st movement (Joaquin Rodrigo)

This musical notation for Example #10 illustrates the use of slurs to fix bad string crosses. It features two measures of music in G major, 6/8 time. The first measure shows a sequence of notes with fingerings *i*, *m*, *i*, *m*, *i*, *m*. Below the staff, the left-hand fingering is indicated as ⑤, ④, —, ③, —, ②. The second measure shows a 'Bad String Cross' indicated by an arrow pointing to the second measure. The left-hand fingering for the second measure is ②. The third measure shows a 'Good String Cross' with the left-hand fingering ⑤, ④, —, ③, —, ②. The fourth measure shows a 'Good String Cross' with the left-hand fingering ⑤, ④, —, ③, —, ②. The text 'Same left-hand fingering but with added slurs' is written above the staff.

One must be careful adding slurs—although they can fix a bad string cross, they may introduce unintended consequences such as unevenness, accents on the wrong beats, difficulties for the left hand, or other inappropriate musical effects.

To some guitarists, repeating a finger is preferable to strictly alternating the fingers if the alternation produces a bad string cross:

Example #11 *Bourree* from Lute Suite #1 (J.S. Bach)

Repeat *m* to produce good string cross

The diagram shows a musical staff with a treble clef and a key signature of one sharp (F#). The notes are: G4 (fingering 0), A4 (fingering 1), B4 (fingering 2), C#5 (fingering 1), D5 (fingering 4), E5 (fingering 3), F#5 (fingering 4), G5 (fingering 1). The string cross is indicated by a bracket connecting the 2nd and 4th strings. The diagram also shows the left hand fingering: 2, 1, 0, 1, 0.

However, one must be careful where the finger repetition is placed. If the notes being played are fast, repeating a finger might be a bad idea. It would be like running at a fast even pace and then deciding to repeat a foot:

Example #12 *Bourree* from Lute Suite #1 (J.S. Bach)

Repeating *m* to avoid bad string cross here

The diagram shows a musical staff with a treble clef and a key signature of one sharp (F#). The notes are: G4 (fingering 0), A4 (fingering 1), B4 (fingering 2), C#5 (fingering 1), D5 (fingering 0), E5 (fingering 3), F#5 (fingering 1), G5 (fingering 0). The string cross is indicated by a bracket connecting the 2nd and 4th strings. The diagram also shows the left hand fingering: 2, 1, 0, 1, 0.

We can mollify the negative effects of unavoidable bad string crosses by choosing where we place the bad cross in the passage. Rather than place the bad cross between two fast notes, place it between two longer notes where it is less likely to cause problems for the right hand:

Example #13 *Bourree* from Lute Suite #1 (J.S. Bach)

Bad string cross placed on long note to aid in execution

The musical notation for Example #13 shows a single staff in treble clef with a key signature of one sharp (F#) and a common time signature (C). The piece is in 8/8 time. The right hand (RH) part is shown with fingerings (i, m, i, m, i, m) and a circled '3' above the first measure. The left hand (LH) part is shown with fingerings (3, 1, 2, 1, 3, 1) and a circled '3' above the first measure. A bad string cross is indicated by an arrow pointing to a long note on the RH staff.

When a bad string cross cannot be eliminated, just knowing where it is in the passage will usually enable you to anticipate and play it with no problem. Others will require specific attention in your practice sessions. Practicing the right hand alone is very helpful:

Example #14 *Bourree* from Lute Suite #1 (J.S. Bach)

The musical notation for Example #14 shows a single staff in treble clef with a key signature of one sharp (F#) and a common time signature (C). The piece is in 8/8 time. The right hand (RH) part is shown with fingerings (i, m, i, m, i, m) and a circled '3' above the first measure. The left hand (LH) part is shown with fingerings (2, 1, 0, 1, 0, 0) and a circled '3' above the first measure.

Practicing the above two measures right hand alone

Bad String Crosses

The image shows a musical staff with a treble clef, a key signature of one sharp (F#), and a common time signature (C). The staff contains two measures of music. The first measure has a whole note chord with fingers *i* and *m*. The second measure has a whole note chord with fingers *i* and *m*, followed by a whole note chord with fingers *m* and *i*, and then a whole note chord with fingers *i* and *m*. Two arrows point to the second and third chords, labeled "Bad String Crosses". Below the staff, there are four groups of notes, each with a double bar line above it, indicating a specific fingering or technique for the right hand.

Finally, I must point out that although we can eliminate a lot of bad string crosses with all these techniques, we must face the fact that in real life we cannot get rid of all of them. It is kind of like trying to rid your yard of weeds or crabgrass. You will just have to deal with them!