

# Forearm rotation

- The vertical movement of the upper arm is the main part of the arm used to cross from one string to another, but the hand and forearm can also take part. Forearm rotation is the same movement as turning a door handle. It is generally used with a small amount of hand movement.
- *Hand movements.* Position your right arm in front of you as if playing on the A string, with a right-angle at the elbow. Moving from the wrist, slightly lower the hand below the level of the forearm, to create a 'high wrist'; slightly raise the hand above the level of the forearm to create a 'low wrist'.  
Crossing to a higher string = higher wrist. Crossing to a lower string = lower wrist. These hand movements may be obvious, or so slight as to be almost invisible.
- Another movement used in conjunction with forearm rotation is *upper arm rotation*. (Position your arm in front of you as before. Raise your hand/forearm above the level of your elbow: the upper arm rotates clockwise.)
- A small amount of forearm rotation replaces a large amount of vertical upper arm movement. The string crossing is then a much smaller operation than when using the upper arm alone.

In a fluent bow arm, there is an almost-invisible degree of forearm rotation even when simply bowing up and down on one string. All string crossings, anywhere in the bow, should include some forearm rotation.

Forearm rotation is also an essential element of beginning and ending notes, as shown in the examples below.

To choreograph these movements into a passage, exaggerate them by using almost no upper arm movement to cross strings. In Example 1, 'high', 'low' and 'straight' refer to the wrist as described above.

Ex. 1

Partita no. 3 in E, BWV1006, Bach  
Preludio, bar 38

The musical notation for Example 1 consists of three staves. The first staff (measures 574-576) shows a sequence of sixteenth-note patterns with a '4' above the first and fifth measures. The second staff (measures 575-576) shows a sequence of notes with annotations: 'Straight' above the first measure, 'Low' above the second, 'Straight' above the third, 'High' above the fourth, and 'Straight' above the fifth. The third staff (measures 575-576) shows a sequence of notes with annotations: 'High' above the first measure, 'Straight' above the second, 'High' above the third, 'Straight' above the fourth, and 'Low' above the fifth.

Passages that contain continual, rapid string crossings are often easier and more efficient when played with very little upper arm movement, although the impulse still comes from the upper arm.

Practise the passage with the upper arm immobilized by resting the elbow against the wall. Notice the up and down movement of the forearm, which is actually a rotation of the upper arm.

Ex. 2

Violin Concerto no. 22 in A minor, Viotti  
First movement, Letter B

The musical notation for Example 2 shows a single staff of music starting at measure 256. It features a sequence of notes with annotations: 'High' above the first measure, 'Straight' above the second, 'High' above the third, 'Straight' above the fourth, and 'Low' above the fifth. The music is marked with a forte 'f' dynamic and the tempo 'largamente'.

## Beginning and ending notes

Attacking the string from the air, the angle of the attack needs to be curved into the string like a plane approaching a runway.

Beginning down-bow at the heel on the E string, either *dolce* or with attack, the bow begins to approach the string as if about to play an imaginary 'B string'; then the forearm rotates anticlockwise, and the bow finally arrives on the true E string level after it has begun to play the string:

Ex. 3

Romanze in F, op. 50, Beethoven

Forearm rotation is an almost-invisible, but major part, of lifted bowings. Practising by exaggeration, rotate clockwise a little on each up-bow spiccato, anticlockwise on each down-bow spiccato (the principal movement still being from the upper arm):

Ex. 4

Scherzo (FAE Sonata) Wo02, Brahms

In Example 5, the crotchet at the beginning of the first bar begins partly with anticlockwise rotation. In the second bar, the last crotchet ends (i.e. be taken off the string) partly with clockwise rotation.

Ex. 5

Sonata in A, Franck

Sul G

## Two exercises for forearm rotation

### Exercise 1

- 1 Begin with the bow sitting on the D string, stationary, at the heel.
- 2 Then turn the hand clockwise, turning the bow round to the right until it is upside-down, the hair above the wood of the bow.
- 3 Return to the string and repeat several times.

### Exercise 2

Position the right elbow level with the middle strings.

Play at the extreme heel without moving the elbow

- 1 At the extreme heel, play a short up-bow on the E string. Stop.
- 2 Move the bow to the G string, using only the hand (forearm) to change levels. Stop.
- 3 Play a short down-bow on the G string. Stop.
- 4 Return to the E string, using only the forearm. Stop.
- 5 Move the bow to the G string, and so on several times.