

Understanding Rotation

Coordination of the larger parts of the playing mechanism with the smaller parts can be put into practice through the use of *rotation*. The alternating motion in rotation feels the same as the hand motion that is used to turn a key in a lock, turn a doorknob, or spin an imaginary ball in the air. At the piano, however, the back of the hand is level with the top of the forearm.

Rotation is often used for any repeated or alternating pattern or relationship that involves a back and forth motion one hand. Typically the notes go up-down-up, or down-up-down. Examples of these types of patterns include left hand Alberti bass figures, trills, and tremolos. Rotation can also be used for scales and other melodic patterns where—instead of alternating motion—the motion is continuous in one direction. This is sometimes referred to as *continuous* rotation.

Because the rotation occurs in relation to an axis (a straight line from the elbow to the palm), it is sometimes also referred to as *axial* rotation. When rotation occurs, the forearm provides a twisting, back and forth motion roughly from the elbow. The fingers do not remain passive. They are active in that there is a slight force through finger motion toward the note being played in connection with the rotation movement. This finger motion helps to meet and apply the force being transmitted to key via the rotated hand movement.

Think of the analogy of a baseball hitter. When a hitter learns to swing a bat, he or she finds a natural way to coordinate the movement of the wrists forward as the arms, shoulders, torso, and legs also swing forward or twist. A batter does not work to develop the strength of the wrists in order to apply a strong, powerful swing to the ball. Rather, the batter's coordination of the wrists with the larger, more powerful parts of the body supplies this power, particularly when the timing is correct.

Similarly, the fingers, which are active (but not overly active), must move in the same direction of the rotation wrist in order to provide a firm transfer of the wrist movement and weight as it directed toward the key. The force that the finger applies when the key is played must be released as the hand rotates away (to the next key) so that the key just played can return upward. If the fingers are inactive, the hand is floppy and the keys will remain down. In general, the fingers are not overly active, or inactive. With some patterns, the finger actions may be minimal while the forearm motions are more pronounced. With other patterns, the opposite may occur. Additionally, as any rotating pattern is played more quickly, the motions of the fingers and the forearm are smaller. You should experiment with various amounts of finger and forearm movement for any repeated figure.

In rotation, the hand assumes a position that forms a straight line between the forearm, and the mid-point between two fingers being rotated. In other words, if the rotating pattern involves 2 and 4, or 1 and 5, a straight line forms between the forearm and the third finger (3). If the notes in the rotating pattern change, the hand shifts slightly at the wrist so that the alignment remains straight between the forearm and mid-point of the next two fingers used in the rotation.

Do your best to keep the top of the hand level with the forearm. The elbow remains stationary. Avoid moving the hand vertically or horizontally (in relation to the forearm) within the same pattern. In other words, don't bend the wrist. When the notes that comprise the alternating pattern form an interval of an octave or less, the wrist does not move laterally. When the intervals are larger, however (such as a pattern consisting of two notes that are more than an octave apart), the wrist moves laterally (horizontally, or sideways) in combination with the rotated movement. This movement occurs with the aid of the forearm pivoting at the elbow joint in combination with the upper arm from the shoulder.

When you are playing two notes that are farther apart than you can reach comfortably, add lateral motion (sideways movement) of the forearm from the elbow. Continue the same rotating

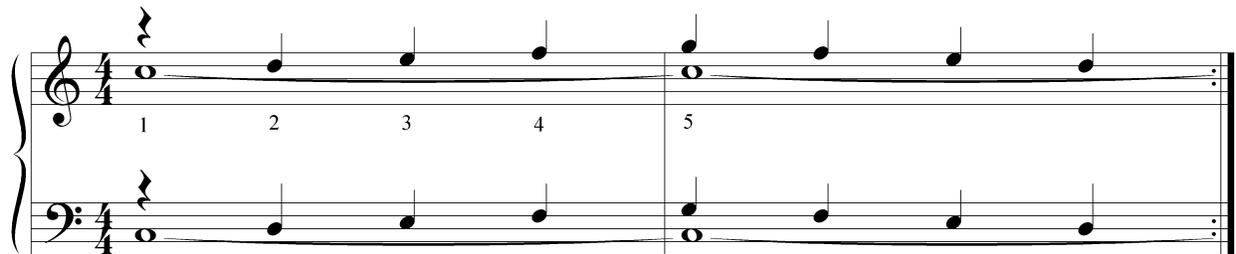
motion with the hand. Don't move the upper arm; rotation occurs between the elbow and hand. The upper arm does move when a pattern includes notes separated by two octaves or more.

The exercises below (along with the description above) should provide a clear understanding of rotation and enable you to practice the motion. After some time, you should also be able to apply the technique to appropriate passages in the literature. Although the exercises are easy to play, they should be played carefully and correctly in order to derive the maximum benefit. Follow the directions carefully. In the exercises, do only one hand at a time. After a comfortable level of coordination is accomplished, the hands can be played together. Always return, however, to hands separate practice of the exercises, particularly if you feel you are losing the feeling for the coordination involved.

Points to remember:

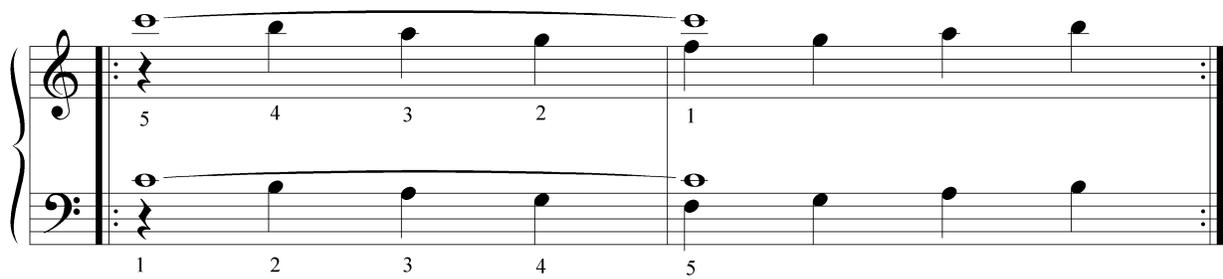
1. Keep your elbow steady; your upper arm does not move, but remains in one position;
2. Don't bend your wrist sideways or up and down;
3. Try to get the feeling that the hand and the forearm are one piece, not unlike an arm in a cast;
4. Although your hand moves with the forearm in the twisting motion, it remains inactive; it doesn't initiate any movement on its own;
5. The fingers are slightly active;
6. If you are uncertain what movement should feel like, hire a knowledgeable teacher to help you get the movement correct.

The purpose of the exercises below is to acquaint you with the coordination of the forearm and wrist with the fingers. The idea is to get a feeling for how the wrist, as it rotates, provides support and strength for finger movement.



Musical notation for Rotation Exercise #1, showing two staves (treble and bass clef) in 4/4 time. The exercise consists of two measures. The first measure contains four quarter notes: C4, D4, E4, and F4. The second measure contains four quarter notes: G4, A4, B4, and C5. The notes are numbered 1 through 5 below the staff.

Rotation Exercise #1:



Musical notation for Rotation Exercise #2, showing two staves (treble and bass clef) in 4/4 time. The exercise consists of two measures. The first measure contains four quarter notes: G4, F4, E4, and D4. The second measure contains four quarter notes: C4, B3, A3, and G3. The notes are numbered 5, 4, 3, 2, 1, 1, 2, 3, 4, 5 below the staff.

Rotation Exercise #2

Rotation Exercise #3

Musical notation for Rotation Exercise #3, featuring a treble and bass clef with fingerings. The exercise consists of three measures, each with a repeat sign. The treble clef part has fingerings: 1 2 1 3 1 4 1 5, 1 5 1 5 1 5 1 5, 1 5 1 5 1 4 1 3. The bass clef part has fingerings: 5 4 5 3 5 2 5 1, 5 1 5 1 5 1 5 1, 5 1 5 1 5 2 5 3.

Rotation Exercise #3

Rotation Exercise #4:

Musical notation for Rotation Exercise #4, featuring a treble and bass clef with fingerings. The exercise consists of three measures, each with a repeat sign. The treble clef part has fingerings: 5 4 5 3 5 2 5 1, 5 1 5 1 5 1 5 1, 5 1 5 1 5 2 5 3. The bass clef part has fingerings: 1 2 1 3 1 4 1 5, 1 5 1 5 1 5 1 5, 1 5 1 5 1 4 1 3.

Rotation Exercise #4:

Rotation Exercise #5

Musical notation for Rotation Exercise #5, featuring a treble and bass clef with fingerings. The exercise consists of three measures, each with a repeat sign. The treble clef part has fingerings: 5 4 5 3 5 2 5 1, 5 1 5 1 5 1 5 1, 5 1 5 1 5 2 5 3. The bass clef part has fingerings: 1 2 1 3 1 4 1 5, 1 5 1 5 1 5 1 5, 1 5 1 5 1 4 1 3.

Rotation Exercise #5

Rotation Exercise #6

Musical notation for Rotation Exercise #6, featuring a treble and bass clef with fingerings. The exercise consists of two measures, each with a repeat sign. The treble clef part has fingerings: 1 5 3 5 1 5 3 5, 1 5 3 5 1 5 2 5. The bass clef part has fingerings: 5 1 3 1 5 1 2 1, 5 1 3 1 5 1 3 1.

Rotation Exercise #6

Rotation Exercise #7

Rotation Exercise #7

Rotation Exercise #8

Rotation Exercise #8

Rotation Exercise #9

Rotation Exercise #9

Rotation Exercise #10

Rotation Exercise #10

Rotation Exercise #11

Rotation Exercise #12

Rotation Exercise #13

Rotation Exercise #14

When you play these exercises pay attention to the timing between the movement of the forearm and how it is coordinated with the finger that is playing. As you get better and better playing them, you'll notice that there is a naturally fluency in your playing and that the coordinated movement between the forearm and the activated playing finger becomes natural in both alternating

patterns (such as Alberti basses and tremolos) and continuous patterns (such as scales and arpeggios).