
BASICS

Muscles

MUSCLES CAN ONLY CONTRACT

An essential thing to know about muscles is that they can only contract. They cannot lengthen by themselves.

There are always at least two sets of opposing muscles that move a joint or limb one way or the other. To close your arm at the elbow, the muscles on the inside of the arm contract, causing the forearm to move towards the upper arm. While these muscles contract, the muscles on the outside of the arm *are stretched*, but they cannot themselves 'push out'.

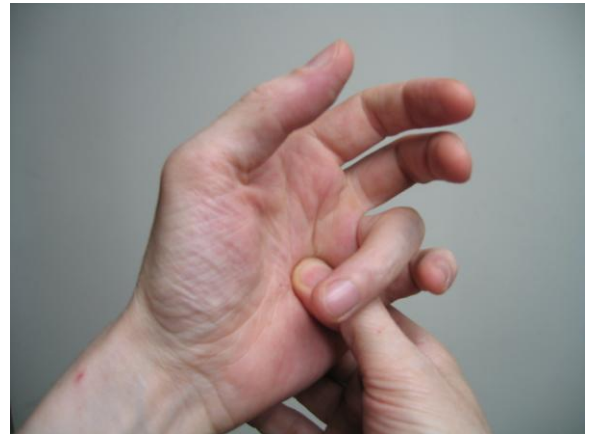
The muscles that contract are 'active'; the opposing set of muscles is 'passive'. To move the hand away from the shoulder again, the opposite occurs: the muscles on the outside of the arm contract while those on the inside are passive.

The contraction of the muscles is one of the reasons why all of our attention needs to be on constant 'lengthening and widening', and on avoiding 'pulling down' and 'pulling in'.

Feel the muscles on either side of your hand that move the third finger (Example 1). Move the finger up and down, as though tapping the finger on the string. You should be able to feel the muscle in the palm of your hand, under your thumb, alternating between contraction and release. If the muscle feels permanently contracted, it means that you are resisting a state of release that would produce an entirely new sensation of freedom in your left hand.



Example 1: Feel how the muscle is soft



Example 2: Feel the muscle contract

SQUEEZING THE ARM TO MAKE THE FINGERS MOVE

The muscles that actually move the fingers are not in the hand but in the forearm. If you press the muscles there, between the elbow and the wrist (which has the same effect as shortening the muscle), the fingers move on their own.

- Without the violin, hold the left arm in playing position (Example 3). The essential thing is to make sure that your hand and fingers are completely relaxed.
- With your right hand, put fingers one side of the arm, and the thumb the other, and press. Finding the muscle, experiment by pressing in different places until you can see the fingers moving downwards at the same moment that you press.

If your finger action is not entirely free, you may experience muscle fatigue, discomfort or pain in your forearm; but the problem will not be in the forearm, where the discomfort is, but in the finger action.

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The simple experience of seeing the fingers move on their own when you squeeze the muscles in the forearm, the extraordinary sensation of freedom in the fingers as they move on their own, and the realisation of how the arm and fingers work, often transforms the player's entire left hand functioning.

FINDING THE MIDDLE POINT

Hold your arm out with your hand flopped at the wrist (Example 4). The fingers will fall into a certain shape and position. This is the position of the finger when the muscle on top of the finger, stretching across the knuckle to the back of the hand, and the muscle underneath the finger, stretching across the knuckle to the palm of the hand, balance each other so that neither is in a state of 'work'.

Using your other hand to move it, push a finger down (Example 5) and then suddenly release it without using any muscle in the finger itself. The finger will spring back to exactly the same position that it was in before (Example 4). It will not stay pushed down when you take the pressing finger away, because the muscle on top of the finger, having been stretched, wants to spring back to its state of least effort.

Similarly if you lift a finger (Example 6) using your other hand to do it, and then suddenly let go, the finger will spring back again to the position shown in Example 4. It will not stay up, since the muscle underneath the finger has been stretched and wants to spring back to its state of least effort.



Example 3: Squeezing the arm to make the fingers move on their own



Example 4: Flop the hand from the wrist, each finger at the middle point



Example 5: Push the finger down and then let it spring back up to the middle point



Example 6: Lift the finger and then let it drop back to the middle point

You can find the same 'middle point' in the muscles on either side of each lever in the arms, hands and fingers. For example each finger, when not being used or on its way to a string, ideally is in this neutral state of inaction; depending on where you are in the bow, the muscles in the bow arm often do not need to be active before beginning a bow stroke. Having this point of balance as the starting point, before any movement one way or the other, and returning to it afterwards, is the key to freedom and ease in violin playing.