Although we may have already an intuitive idea of a force as a push or a pull, like that exerted by our muscles... Newton's laws allow us to refine our understanding of forces." [1]

"We all have a fairly deep intuitive understanding of what forces are and what effect they have on objects. We are constantly using our muscles to exert forces: we pull up on a coffee cup to get it to our mouths, we push against a car stuck in a ditch in order to get it moving and we exert a force to stop a basketball as we catch it." [2]

"The concept of force can be traced back to our muscular sensation." [3]

Deficiencies:
We perceive the actuation of our muscles as an effort. We do not perceive it as a specific sensory perception but as an act of volition. But for which physical quantity can this effort be considered a measure? On the one hand a force is acting as long as the muscle is tended. On the other the muscular activity needs energy. ATP is transformed into ADP, regardless of whether our muscles move something (deliver mechanical work) or not (i.e. only produce heat). Thus, our muscular sensation points to a force (a momentum current) just as much as to an energy current, i.e. to the physical quantity power. Since in the teaching of physics the concepts force and power are often confounded, we believe that it is not wise to appeal to the muscular sensation when introducing the concept of force.

Origin:
There is reason to suspect that the muscular sensation is put forward because one might take the muscles for the cause or the causer of the force. Let us consider an example: Who or what is the cause of the force in the string in Fig. 1a? Our immediate feeling may be that it should be the spring. And in Fig. 1b? Shouldn't is be the manikin with its muscles? This feeling brings us to say: "The spring pulls", or "The manikin pulls". We do not say: "The string pulls", or "The wall pulls". But something must be wrong with these statements. We consider Fig. 1c. Here, which of the two springs would be responsible for the force, which one would be the cause of the force? And which one of the two manikins in Fig. 1d? Finally, we can also consider the string to be a spring with a very great spring constant. Thus, our procedure to find the cause of the force does not work. So the question is: But can it be that our feeling has cheated us? Isn't there really nothing that distinguishes the spring or the manikin from the rest of the arrangement? Yes, there is. Both, the spring and the manikin can act as a source of mechanical energy. And therefore they appear to our feeling as the origin, the responsible, the causer of what we observe. Actually, they must not deliver mechanical energy, they only must be able to deliver it. Thus, if we make them responsible for the force, we miss the target.
Disposal:

Actually, we are perfectly able to perceive forces that act on our body. Nature has equipped us with special sensory organs for the purpose. In our skin we have sensors for compressive, tensional and shear stress, which are as reliable for the measurement of forces as other sensors in our body are reliable for the „measurement“ of other physical quantities: temperature, light intensity and sound intensity. In this way we can feel forces, regardless of whether our muscles are active or not. We can even get a rather good idea of the unit of force: A slight pressure on our skin with one finger, or also a 100-g-weight placed on our arm corresponds to one Newton.


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