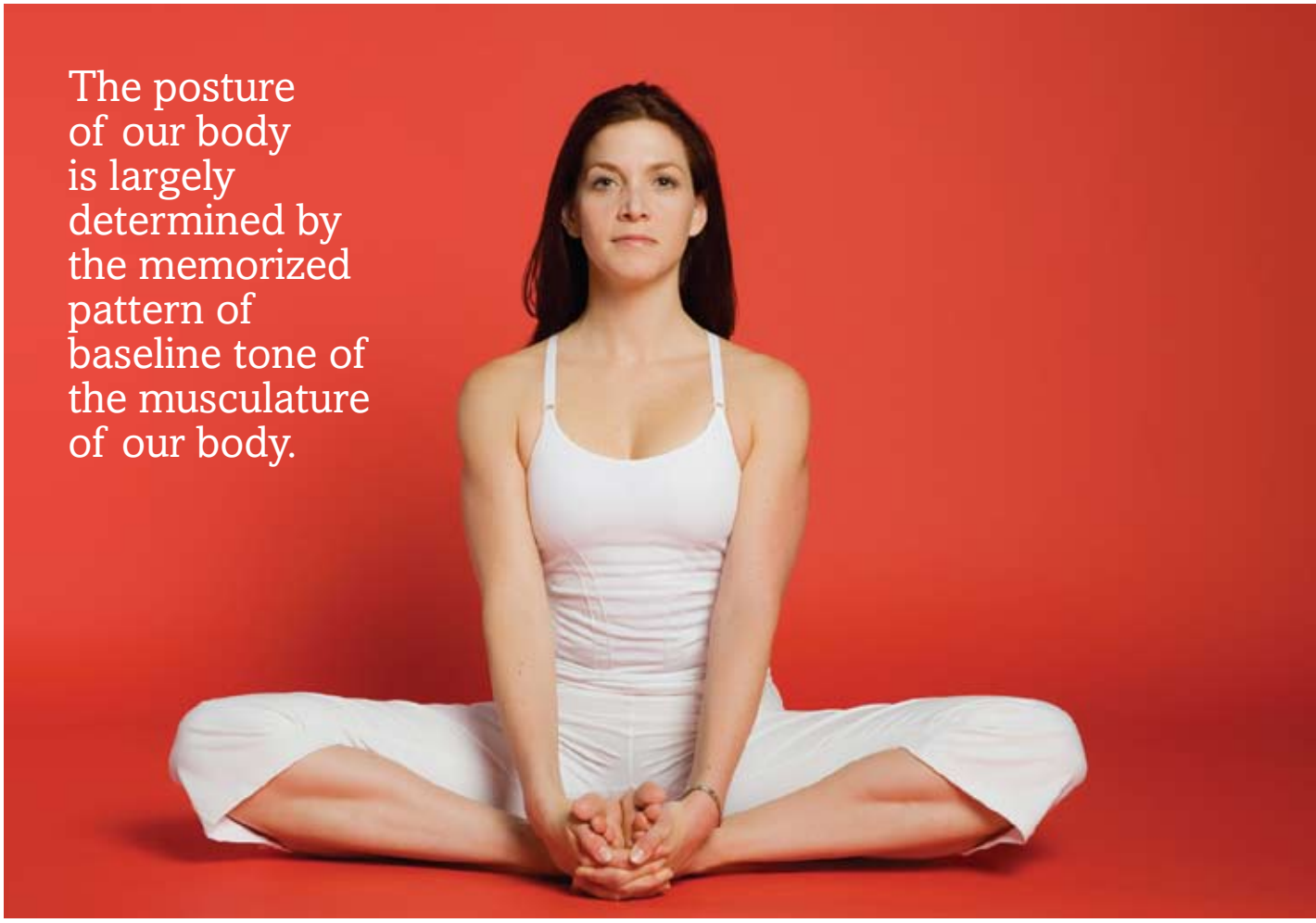

what is muscle memory?

The concept of muscle memory is vitally important in the world of massage and bodywork. Yet, there seems to be some controversy about what it is and how it works. To better understand this idea and its application to clinical work, let's explore the concept of muscle memory.

Practiced Repeatedly

Simply put, muscle memory describes the idea that the musculature of the body contracts in patterns, for both posture and motion of the body. And these patterns are memorized on some level, working without our conscious control. Hence, the term muscle memory.

There is little controversy surrounding the idea of memorized patterns of muscle contraction for movement. By practicing certain activities such as walking, swinging a tennis racquet, playing a piece of music on the piano, or driving a car while drinking a cappuccino and adjusting the radio dial, we learn to execute these complex and coordinated activities with little or no input from the part of the brain that controls voluntary, willed muscle contractions—the cerebral primary motor cortex.

Instead, once a movement pattern has been initially learned in the cerebral motor cortex, it is transferred to the basal ganglia, located deeper within the brain. Consequently, it's possible for people to execute complex coordinated movement patterns while paying little or no attention, perhaps even thinking of something else entirely. Thinking in these terms, the concept of muscle memory as it relates to movement seems fairly straightforward: memorized movement patterns are stored in and released from the basal ganglia of the brain.

The Controversy

More controversial and more relevant to the world of

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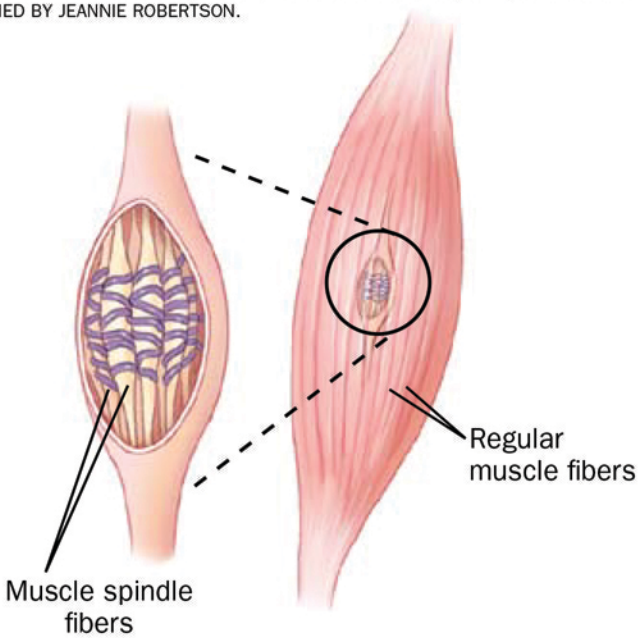
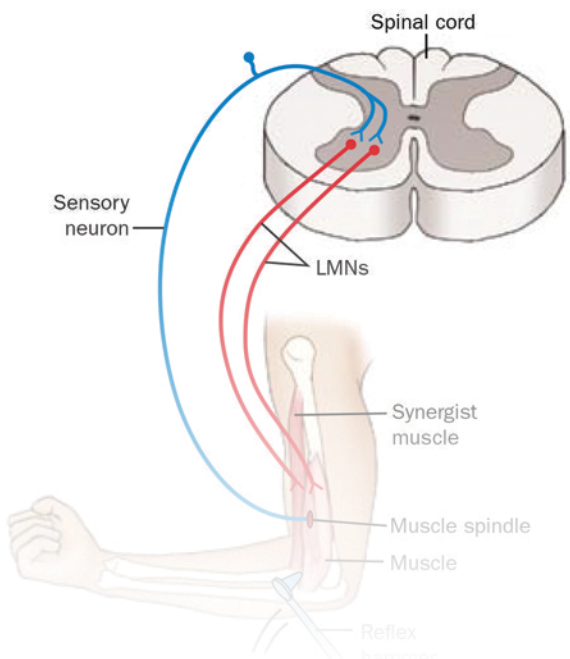


Figure 1. Muscle spindle fibers are a specialized type of muscle cell. They are located within a muscle and lie parallel to the regular muscle fibers.



massage and bodywork, however, is how the concept of muscle memory relates to posture. The posture of our body is largely determined by the memorized pattern of baseline tone of the musculature of our body. By exerting pull upon the bones and joints, resting baseline muscle tone determines the position, or posture, of our body. Indeed, when clients visit a massage therapist, the usual complaint is that their resting baseline tone of musculature is too tight. Musculoskeletally, the most common goal of massage therapy is to change the muscle memory of baseline resting tone of the tight muscles of our clients.

So, let's explore the idea of muscle memory in this context. The first misconception is the belief that postural muscle memory resides in muscle tissue itself. The muscular system is an amazingly complex and awe-inspiring system of the body, but it does not hold the key to its own memory. Certainly, adhesions present within musculature and its fascia can determine its ability to stretch, affecting its degree of passive tension and, in turn, the body's posture. But when we refer to actual muscle tone—or muscle contraction—the memory resides somewhere else.*

This idea can be easily understood by considering a person who has suffered a traumatic injury that severs the lower motor neurons (LMNs) that synapse with and control a muscle. In these cases, the muscle will become flaccidly paralyzed and have no ability to contract, unless electrical stimulation is applied from the outside. If the memory for the muscle contraction were actually within the muscle, however, it would be able to contract regardless of nerve function.

The Grand Master

If not in the muscle itself, where does muscle memory for baseline resting tone reside? Similar to the muscle memory for movement patterns, muscle memory for baseline resting tone resides in the nervous system, the grand master of all muscular function. However, this muscle memory isn't stored in the basal ganglia, but in