THE MOST COMMON INHIBITORS OF MUSCLE TONE

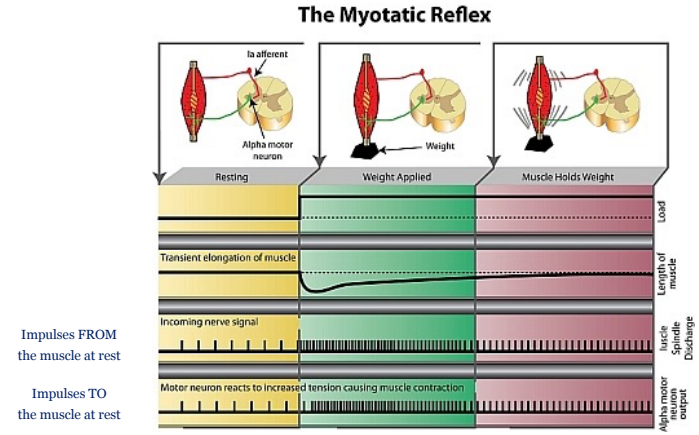
with Simon King

1

The Myotatic Reflex Is the Knee-jerk Reflex

It's our injury prevention system

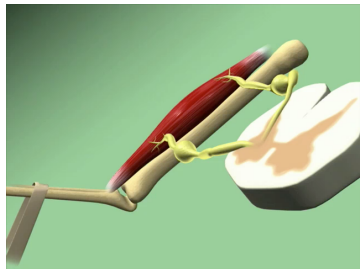
2



3

MUSCLE TONE

*Every muscle in your body has **RESTING MUSCLE TONE** all the time, except when you're asleep.*
This tone starts as a continuous output from special muscle cells called spindle cells. The output gets faster if there is increased tension on the muscle



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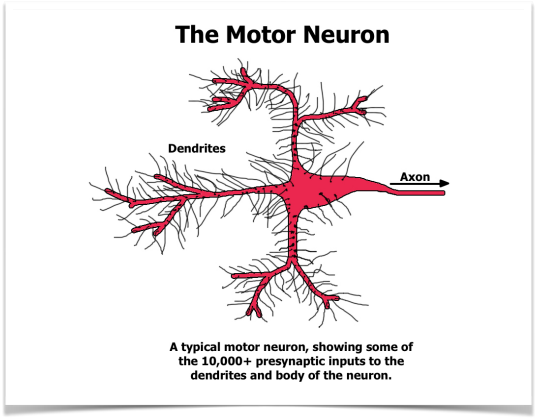
The Alpha Motor Neuron

- *10,000 pre-synaptic inputs*



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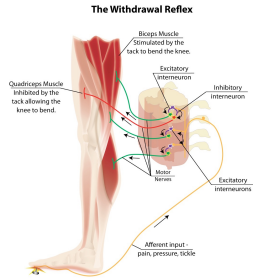
The Withdrawal Reflex

The withdrawal reflex causes facilitation of some muscles and inhibition of others. This can and does override the normal myotatic reflex.



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THE STRONGER YOU ARE, THE LONGER YOU LIVE

- Association between muscular strength and mortality in men: prospective cohort study BMJ July 2008 Jonatan R Ruiz et al
- The study consisted of 8762 men aged 20 to 82 years who were free of known CVD and cancer. All participants underwent a medical examination and completed muscular-strength and CRF testing between 1980 and 1989. Mortality surveillance was completed December 31, 2003.
- Results During an average follow-up of 18.9 years, 503 deaths occurred (145 cardiovascular disease, 199 cancer). Age adjusted death rates per 10 000 person years across incremental thirds of muscular strength were 38.9, 25.9, and 26.6 for all causes; 12.1, 7.6, and 6.6 for cardiovascular disease; and 6.1, 4.9, and 4.2 for cancer (all P<0.01 for linear trend).
- "Men with low muscular strength had a 60% higher risk of CVD and a higher mortality rate," stated Dr. Ruiz.
- Conclusion Muscular strength is inversely and independently associated with death from all causes and cancer in men, even after adjusting for cardiorespiratory fitness and other potential confounders.

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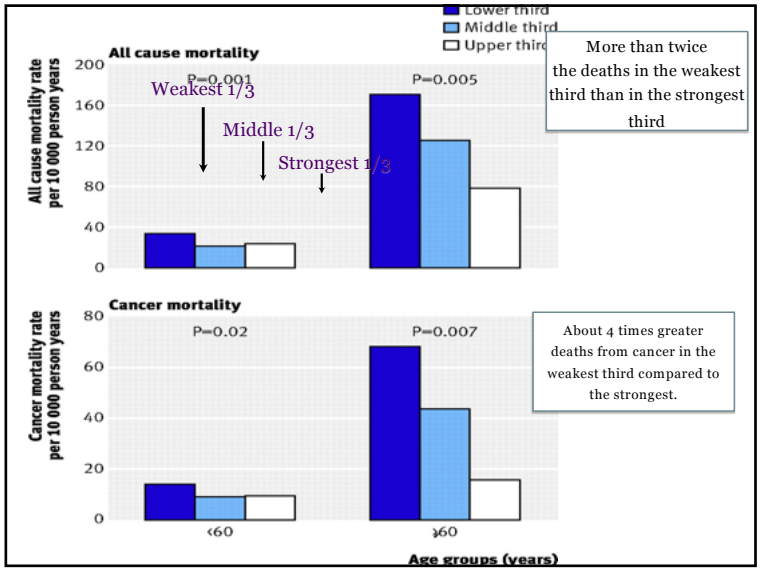

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List of over 60 studies linking muscle weakness to mortality and morbidity

http://afferentinput.org/mortality

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Kidney Function

- Static muscular contraction in anesthetized animals has been firmly established to reflexly increase arterial pressure... To provide this evidence, we recorded renal sympathetic nerve activity in chloralose-anesthetized cats while contracting the triceps surae muscles. We found that static contraction tripled renal nerve activity within three seconds of its onset, an increase that was abolished by cutting the L6 and S2 dorsal roots... In addition, intermittent tetanic contractions synchronized renal nerve discharge so that a burst of activity was evoked by each contraction. A similarly synchronized renal nerve discharge was evoked in paralyzed cats by electrical stimulation of the tibial nerve at five times motor threshold, a current intensity that activates group *III* afferents. We conclude that, in anesthetized animal preparations, mechanoreceptors with group *III* afferents contribute to the reflex stimulation of renal sympathetic outflow evoked by muscular contraction.
- Victor RG; Rotto DM; Pryor SL; Kaufman MP Circ Res, 64(3):592-9 1989 Mar

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- Static muscle contraction reflexly increases adrenal sympathetic nerve activity in rats.

- Little is known about the mechanisms responsible for activation of sympathoadrenal function during exercise. We hypothesized that sympathoadrenal discharge is activated at the onset of exercise by a reflex arising in the contracting muscle. Adrenal sympathetic nerve activity (SNA) was recorded during 1 min stimulation of the tibial nerve at two times motor threshold, before and during neuromuscular blockade, in 12 alpha-chloralose-anesthetized rats. In conclusion, static muscle contraction reflexly increases SNA to the adrenal gland, providing a mechanism for sympathoadrenal activation at the onset of exercise. **Vissing J; Wilson LB; Mitchell JH; Victor RG Am J Physiol 1991 Nov;261(5 Pt 2):R1307-12**

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VIDEOS

Videos of the effectiveness of treatment can be found on the APM recording page

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Live Seminars (coming again sometime)

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