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The Relationship between Muscles, Back Pain and Exercise — An Interview with Norman J. Marcus, MD, DABPM



My Pain

The Relationship between Muscles, Back Pain and Exercise — An Interview with Norman J. Marcus, MD, DABPM



My Treatment

Norman Marcus, MD, DABPM, is a board certified physician and researcher who has established national pain medicine models for more than two decades and has dedicated his practice, [the Norman Marcus Pain Institute](#), to the elimination of pain. He is a past president of the American Academy of Pain Medicine and the author of Freedom from Pain.



Pain Care Provider Directory

The most common pain problem for which medical advice is sought is back pain. Dr. Marcus believes that muscles are actually the most common reason for pains in the back but says a thorough examination of muscles is rarely, if ever, done. Dr. Marcus has enhanced the techniques to evaluate and treat muscle and ligament pain taught to him by the late Hans Kraus MD, father of sports medicine, physician to President John F. Kennedy for his back pain, and former colleague of Dr Marcus.



My Journey



My Community

What was Dr. Kraus' theory behind muscle pain treatment and the series of exercises he developed?

Dr. Kraus, who originally was an orthopedic surgeon, actually established the first multidisciplinary pain center in the world in the late 1950s and early 1960s, which very few people know. It was at the Columbia University School of Medicine in the department of orthopedic surgery. There were psychiatrists, social workers, psychologists, physical therapists, physiatrists, and orthopedic surgeons researching at back pain and trying to understand it.



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They found that about 80% of patients presented with nothing that could be demonstrated on an x-ray or physical exam that suggested there was something significant pathologically, so they tried to understand it from the perspective of conditioning since that was Dr. Kraus background. They studied about 3,700 patients for 4.5 years and created a test — called the Kraus-Weber test — and an exercise program to go along with the test to deal with what they thought were the types of functional muscle pain that exist.

They broke it down into four types of muscle pain:

- Tension
- Deficiency, which is defined as weakness and stiffness
- Spasm
- Trigger points

They created the Kraus-Weber test to assess the acceptable minimum for trunk muscle strength and flexibility, which in and of itself, was a very unique concept. They were saying that, in order for a person to function in a relatively normal way, they needed to pass these six test items, which are:

- Touching the floor or your toes with your legs straight and feet together
- Sitting up with legs extended
- Sitting up with knees bent
- Lying on your tummy and lifting up your legs to test your back muscle extensors
- Lying on your tummy and lifting your head and chest to test your upper back extensors
- Straight leg raises to 75 degrees

In looking at those 3,700 patients who had pain but no significant pathology, almost all of them failed the test. Test failure was to fail on any one of the six items.

The group at Columbia then put together an exercise program that was specifically created to address the failures on the test. It came down to 21 exercises for the low back. It started with many more, but they eliminated a number of exercises because they would sometimes cause discomfort for the patient. This work was all predicated on being able to do something simple and not pain producing — not requiring any sort of technology with the least amount of resistance for the patient, meaning most exercises are done on your back to avoid gravity.

After 4.5 years, the group at Columbia came up with the 21 exercises, which then intrigued the people at the YMCA, who created a program to deliver these specific exercises called "The Y's Way to a Healthy Back." They delivered it to 300,000 patients with an 80% success rate. The patients in that group who had previously had back surgery had an 82% success rate. The way it was done at the Y originally was twice a week for six weeks. The Y taught the program in levels — level 1, level 2, and level 3.

They also looked at neck and shoulder pain and upper back pain, which also is a major problem. We often overlook the muscles there as well. They came up with eight upper quadrant exercises.

A big part of the exercises is relaxing — relaxing has to do with getting rid of tension. That's incorporated into both upper and lower body exercises. The whole sequence is relax, limber, stretch, and strengthen.

The problem in a lot of exercise programs that don't have that sequence is that if you try to strengthen a stiff muscle it gets stiffer. That's why a lot of people who start out with exercises actually get worse. The whole exercise program is based on that premise —

- relax,
- limber, which is movement in the range of comfort,
- stretching after relaxing and limbering.
- and then strengthening.

If you stretch before relaxing and limbering, what you're doing is going against a stiff or tense muscle. You're not getting a full, true stretch. If you release the muscle as much as possible prior to the stretch, you'll get a much better stretch.

For whom are these exercises designed?

These exercises are designed for people with low back pain and neck pain. Even if you have an x-ray or MRI diagnosis, that doesn't mean that's the cause of your pain. If you haven't considered muscles, you don't know where the pain is coming from.

We know that if you take 100 people off the street, 40% of them may have a herniated disc with no pain at all. Why does it mean that just because you have a herniated disc, that's where my pain's coming from? It doesn't make sense if we ignore the muscles in the physical exam.

What about people who have been in pain longer? In some of your literature, you mention a muscle softening technique — how does it help people who have been in pain longer?

Let me give you a really important example. Dr. Kraus was involved at the White House on two occasions. The first occasion was when Eisenhower was president. Dr. Kraus went to Europe and gave the Kraus-Weber test to children in Italy, Austria, Switzerland, and England. He found that 96% of European kids passed the test. Then he came back and gave it to the same age children in the United States and only 50% passed. Dr. Kraus showed it to Eisenhower, who became very alarmed and started the President's Council on Physical Fitness based on Kraus' findings.

The next time he came to the White House was when Kennedy was president. At that time, Dr. Janet Travell was treating President Kennedy for back pain. Dr. Travell was injecting President Kennedy six times a day. Some of his other physicians weren't pleased with how she was approaching his treatment. One of them, his endocrinologist Eugene Cohen, said he'd like his colleague Dr. Kraus to come in. Dr. Travell was asked to step down as President Kennedy's treating doctor. She retained a title, but Dr. Kraus took over and stopped injecting him because it wasn't appropriate. President Kennedy had a lot of weakness and stiffness that had been overlooked. Dr. Kraus started Kennedy on the exercises. President Kennedy got much better, and only then

could Dr. Kraus see the distinction between the muscles that remained that were trigger point muscles and the other ones that had been helped with the exercises.

The problem that you have is that you can see all chronic muscle pain or even acute muscle pain as trigger points when you don't have the concept of tension, weakness, stiffness and spasm — those causes would not be well treated by injecting.

I spent 10 hours every Tuesday with Dr. Kraus for five years. He had as much of an impact on my life as Morrie from Tuesdays with Morrie had on Mitch Albom. It was a life altering interaction because he showed me that things I thought were chronic pain and untreatable were not — that they were undiagnosed muscle pain.

The way we identified the muscles causing the pain was through palpation and through using a pressure odometer to see if one muscle was much more sensitive to pressure than the same muscle on the other side. We were right a lot of the time but sometimes we were wrong.

Eventually, I discovered that if I used an electrical device to stimulate muscles that I got a much more accurate assessment of which muscle was actually causing the pain. So that's what we're doing now — we're electrically stimulating the muscles to identify the primary source of trigger point pain. It's very hard to know if the pain of which the patient complains and that you're palpating is primary or secondary, meaning referred pain. With the electrical device, I'm able to do that.

Why do you think this hasn't been widely known or that these exercises aren't the first line of treatment?

Because everyone believes that it was Dr. Travell and her technique that was successful in treating President Kennedy, and therefore everyone is doing that. That's the community standard, but the standard that they're basing their treatments on failed. It's a failed standard. What was successful is ignored.

What should people know about the exercises?

The important thing about these exercises is that they need to be done exactly as instructed. It should take about 28 to 30 minutes to do all 21 exercises. If you're doing it much faster, then you're not doing it correctly — the letting go in between each movement is just as important as the movement itself.

What's wonderful about these exercises is that they can be done at home on your own without any equipment and that they were made especially for patients who have back pain.

If you look at the world literature on back pain and exercises, there are seven exercises in the world literature — six of them have nothing to do with muscles as the primary source of the pain. The only one that say muscles are indeed a primary source and a major source of chronic pain such as upper and lower back and neck and shoulder pain are Dr. Kraus' exercises.

We pay lip service to this by saying the number one diagnosis of low back pain is non-specific back pain. Doctor's are saying it's probably soft tissue, but it stops there. What I'm attempting to do is put some science into this concept and saying, if physicians truly believe that soft tissue is the cause of most back pain, why don't we have some sort of rigorous algorithm that patients can participate in based on the 300,000 people who learned these exercises?

Is there any other information you'd like to share about the exercises before people begin?

Before you start the test or perform the exercises, inform your physician in case he or she does not want you to do these activities. Also, do not perform these exercises if you have any of the following symptoms:

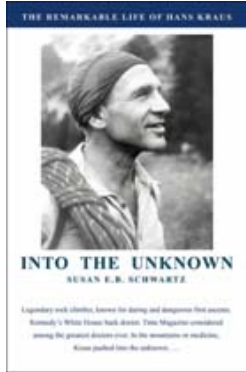
- Dramatic change in the intensity, quality, or distribution of the pain
- Redness, swelling, or heat in the painful area
- Fever
- Loss of sensation and/or weakness accompanying the pain
- Recent problems with bladder or bowel function

These symptoms are possible indicators of serious back problems, including infection, serious disc herniation, or related conditions that should be dealt with immediately.

- [The Kraus-Weber Test \(PDF\)](#)
- [Low Back - Level One \(PDF\)](#)
- [Low Back - Level Two \(PDF\)](#)
- [Low Back - Level Three \(PDF\)](#)
- [Upper Body Exercises \(PDF\)](#)

In the YMCA program, participants moved on to the next level every two weeks. If you can complete the level one series of exercises comfortably, you can move on to the next level. If you go on to the next level and have some discomfort, try performing only one repetition and then slowly increase the number of repetitions.

Editor's note —



Dr. Kraus was also one of the greatest mountain climbers of the century and is the subject of a fascinating biography, *Into the Unknown*, available on www.amazon.com or www.barnesandnoble.com.

Dr. Marcus' book, *Freedom from Pain*, also is available on the Amazon and Barnes and Noble sites.

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