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Primary Causes of Back Pain

### INS AND OUTS OF BACK PAIN

In the United States, back pain is reported to occur at least once in 85% of adults under the age of 50. Nearly all of them will have at least 1 recurrence. It is a second most common illness related reason given for a missed workday and the most common cause of disability. Work-related back injury is a #1 occupation hazard. Lets us talk about the ins and outs of back pain.

You are listening to ReachMD XM-157, the channel for medical professionals. Welcome to The Clinician's Round Table.

I am Dr. Leslie Lundt, your host, and with me today is Dr. Stuart McGill. Dr. McGill is a Professor of Spine Biomechanics in the chair of the Department of Kinesiology at University of Waterloo in Canada. He has been the author of over 200 scientific journal papers that address the issues of low back function, injury prevention, and rehab and performance training. Collectively, this work has received numerous scientific awards. He sits on the editorial words of the journal, Spine, Clinical Biomechanics, and Journal of Applied Biomechanics.

**DR. LESLIE LUNDT:**

Welcome to ReachMD, Dr. McGill.

**DR. STUART MCGILL:**

Hi there Dr. Leslie! Thanks for having me.

**DR. LESLIE LUNDT:**

It is a pleasure to have you on the program today. I am interested in what you see as the primary causes of back pain?

**DR. STUART MCGILL:**

I was listening to your intro and the introduction you described was one of recurrent acute episodes, which is kind of interesting. There really is several causes of back trouble and it depends on what sector of the population that we are talking about, but when you describe back pain as being episodic and happening once in a while to 85% of our population, really I think we are talking about there are 20 to

maybe 60-year-olds which are our working force and probably discogenic back pain, the etiology for those folks will be prolonged and cumulative flexion, bending of the spine that will be the #1 cause. What I mean by that, is when you sit, as much as you try and sit upright, your spine flexes, the lumbosacral disk, the very lowest one will be bending substantially much more than the others when you sit and those cumulative stresses create hydraulic forces that cause disk bulges. We have tracked and measured these as they progress through the annulus and interestingly enough we have never been able to create disk damage from sitting, but you create it from repeated flexion and then it is exacerbated by sitting. I do not know if you want me to get into the specific etiology of what bending might be. You have heard when you bend, you should bend the knees and keep the back straight and I am afraid that really does not address the issue. The issue is don't bend your spine. Now, you can stoop over, you can imagine the golfers' lift where you lean on your putter and bend from one hip cantilever the other leg out behind you and pick up golf ball. If you can imagine the golfers' lift, there is an example that does not incorporate any spine bending, so it is very conserving of the disk, it protects the disk and yet you are not bending the knees at all, but you are keeping that back with a natural curve with a lordotic curve as we call it. So, the most popular description that a family doc might give a patient to avoid discogenic back trouble is not really getting at the true mechanical etiology. You might think of people in the morning now say well, I just bent over to tie up my shoe and threw my back out. Again, it was not a heavy load, but they bent their spine early in the morning and created the hydraulic stresses where the nucleus created the bulge posteriorly and pressed on the nerve root and they have got the acute attack again that will last for a few days and then will be quite fine for several months. You might find this interesting. We did a study of folks who chrome car bumpers, so they lift 70 or 80-pound car bumpers. Out of the 70 some odd men, 27 of them had recurrent back episodes. So, every year, they would fall into the category you described. They would have a week or 2 off work, very nasty acute back episode yet for the rest of year, you would not know they had a back problem. We spent about 6 hours quantifying and measuring each one when they were perfectly normal and yet we found quite profound differences between the 2 groups. We measured back strength, we measured psychosocial profiles, endurance, the way they activated their muscles to create stable spines, doing different activities, sitting and lifting, and what not, but if I was to ask you, do you think the ones who had every year a chronic attack, you think they would have weaker backs or stronger backs.

**DR. LESLIE LUNDT:**

I would guess because you are asking me that question, stronger backs.

**DR. STUART MCGILL:**

Well, yes. Most physicians say, oh! no they have weaker backs. We better send them to physical therapy or Pilates and build their back strength, that would be prophylactic and of course that is dead wrong. The ones who had the recurrent acute attacks, actually had stronger backs and the reason for that is with all of these sophisticated tests that we did, we had 1 little thing where we took a coin, a dollar coin, and we just knocked it on the floor. They did not know this was part of the study, but of course, it was. Those who had recurrent episodes each year bent down and picked up the coin in a way that created much higher load on their own back. The ones who never had back troubles, but did exactly the same work, did not have a stronger back, but they did not use their back quite so much. So, as many musculoskeletal syndromes in the body are people wear out not the weaklings, but the joints that they overuse because of the way that they choose to move. So, those with recurrent acute attacks use their backs more; hence, their backs were actually stronger. What was interesting though was they tended to have what we call tighter hips, less hip mobility, so maybe they had to use their backs a bit more because their hips were a little tighter. Anyway, there is probably an explanation for the majority of bad backs in this flexion intolerant discogenic type of pain that most family docs are dealing with in their working population, but of course, as the patients age, they will be getting more into the arthritic stenotic facet type extension intolerant syndromes which require quite a different approach.

If you are just joining us, you are listening to the Clinician's Round Table on ReachMD XM-157, the channel for medical professionals. I am Dr. Leslie Lundt, your host, and with me today is Dr. Stuart McGill. As a consultant, he has provided expertise on assessment and reduction of the risk of low back injury to various governmental agencies, corporations, legal firms, and professional and international athletes and teams from many countries. We are discussing the causes of back pain.

**DR. LESLIE LUNDT:**

Dr. McGill, what about psychosocial issues. Of course, as a psychiatrist, I am especially interested in that, but it seems like we tend to place a lot of attribution on psychosocial problems when we are talking about back pain.

**DR. STUART MCGILL:**

Yeah, here is where you may find me very controversial. I do not think they are as significant as is currently thought right now for several reasons and the reasons are these. When I look at the studies that are quoted as justifying psychosocial issues as causing back troubles, I know those studies and I do not know of 1 that made reasonable measures of the mechanical demands on the person's back. The only way you can damage back tissue physically is through mechanical overload. Now, I know pain behavior and all these sorts of things are important, but they do not cause the back trouble. There is probably 3 good studies that have made fairly substantial and robust measures of psychosocial variables and biomechanical loads on different workers and all 3 of those studies show that it was the mechanical factors that dominated and of course psychosocial factors come in secondarily, but you know having said that if you are a good clinician and can take a person's pain away, it is amazing how the psychosocial issues resolve once the patient is sleeping well, once again they get their mental toughness back again, a lot of those things resolve, but where I get probably slightly militant is when I am asked for opinions and thoughts for various, well we will just call them litigious situations where people are being denied pensions and losing their compensation because the physicians tried their therapy on them, the therapy did not work, and then they blamed the patient. Oh! there could not be anything wrong with my therapy; therefore it must be the patient's head and I have seen far too many tragic cases where this has occurred even leading to suicide and really the cause of it was just a poor choice of therapy, an inappropriate therapy completely had they chosen another therapy, they probably could have dealt with the true cause and the psychosocial issue was actually iatrogenic.

**DR. LESLIE LUNDT:**

Do you think we rely too much on imaging studies?

**DR. STUART MCGILL:**

Absolutely, absolutely. For too many physicians today have lost their physical assessment skills because they rely on the pictures that they see of MR and CT images, etc., and when I watch some of my colleagues' practice, the first thing they do is put the patient's pictures upon the view box and start to declare what is wrong with the patient and I would challenge them to turn that completely around. Perform their extensive evaluation of the patient and then look at the images only at the very end to confirm or refute the hypothesis that they generated from their assessment and we have all had to deal with patients who have gone in for surgery because the surgeon saw, lets say a prolapsed disk at L4 and yet when you tested them, that really was not the cause of their pain. The pain might have been at L1 or L2, so that surgery had a zero chance for success. But, when this concordance between the findings of the physical exam and the medical images, now we have much favorable chance for success in surgery and it is really the surgeons I think who rely mostly on various medical images anyway, but I think that is again a fairly strong opinion on current practice and reliance on these things.

**DR. LESLIE LUNDT:**

Well thank you so much for being on our show today.

**DR. STUART MCGILL:**

You welcome.

We have been discussing back pain and what the primary causes are with our guest today, Dr. Stuart McGill. I am Dr. Leslie Lundt. You are listening to ReachMD XM-157, the channel for medical professionals. For a complete program guide and downloadable podcasts, visit our website at [www.reachmd.com](http://www.reachmd.com). For comment and questions, give us a call toll free at 888-MDX-M157.

Thank you for listening.

This is Dr. Roger McIntyre from the University of Toronto and you are listening to ReachMD XM satellite radio 157.

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I am Dr. Bill Lutenzorb, join me this week with my guest Dr. Thomas Schaving, distinguished professor of economics at Texas ANM University. We will be discussing medicare, how can we continue to pay for it and what can be done to control the costs.

This is Dr. Jennifer Shu, this week we will be speaking with Dr. Eastie Broads, chief of a division of child neurology at Nationwide Children's Hospital. We will be talking about the management of stroke in infants and children.

I am Dr. Sherman Ho inviting you to tune in this week to the breakthroughs in Sports Medicine and my guest will be Dr. Riley Williams, associate professor of surgery at Lyle Medical College and head team physician for the New York Red Bulls professional soccer team. We will be discussing the treatment and prevention of injuries for elite soccer players.

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