Introduction

In just a generation or two, smoking has gone from being glamorous and cool to being an activity that is discouraged and a known danger to human health. It not only affects your breathing, but many aspects of your health. We know that smoking has been implicated in several types of cancers and now there's increasing evidence that smoking can affect the body's make up in many ways and its ability to heal itself.

One area that would seem an unlikely target for the effects of smoking is your spine and yet, research is showing that there is a connection between smoking cigarettes and the frequency of lower back pain in adults and as early as the teen-age years.

According to the latest numbers available (2007), if you are a smoker, you are 2.7 times more likely to develop lower back pain than if you didn’t smoke.

Anatomy

What parts make up the spine?

Your spine is a complicated piece of human architecture. For medical purposes, your back is divided into different sections: the cervical spine is the upper most part of your spine and includes your neck, the thoracic spine is the middle part of the spine, and the lumbar spine is the lower part, just above the sacral area and the coccyx, or tailbone. The term lumbar spine pain is the same thing as lower back pain.

The lumbar spine has a tremendous load on it. It bears the weight of your upper body, plus it must deal with your twists, turns, and bends all day long, every day. If you pick up and lift something, the lumbar spine bears the weight of your upper body as you bend down and get back up, plus the weight of the object you are lifting.

Bones

Vertebrae, small bones that lie one on top of the other, make up the bony part of your spine. Between the vertebrae is gel-like cushioning that acts like a shock absorber. These are the discs or intervertebral discs.

The vertebrae can become injured through trauma or degenerative disease. They can break or chip, causing pain.

The discs can also become damaged through trauma. Imagine your spine as a pile of buttons, one on top of the other, with a thread running through them to keep them in line. If you pull the upper part of the pile forward, the buttons will arc forward. The edges of the buttons that are in the closing part of the arc will close down upon one another and the parts of the buttons on the outside of the arc will open up, making space between them.

If these buttons were your vertebrae, the gel between the vertebrae could push out from between the bones and become trapped, pressing on the nerves, causing pain. This is what happens when you have a herniated disc, also called a ruptured disc, slipped disc, or bulging disc.

Nerves

Nerves, which run from your brain down the spine, run through the spinal cord, a bony ring that goes down the back of the spinal column. The nerves then branch off each vertebra, to the left and right.

Soft Tissue

Soft tissue in the body is anything that helps build up the foundation of the body that isn’t bone. This means the ligaments (strong, fibrous tissue that connect bones and joints), tendons (strong tissue that connects muscle to bone), muscle, and others. The back also is made up of these soft tissues.
Low back pain

Low back pain is one of the most common complaints of chronic pain in the Western world and the incidence is rising. Lower back pain can result from injuries (e.g., falls, lifting heavy objects) or spinal problems (e.g., osteoarthritis). As well, some people are at higher risk of developing a back injury or lower back pain. Some people who are at higher risk of developing lower back pain are those who:

- do heavy lifting or bending
- sit for long periods of time, such as truck drivers
- have bad posture
- are pregnant
- are overweight
- don’t exercise
- have degenerative disorders like arthritis or osteoporosis

Researchers say we should add smoking to the list of risk factors.

Does smoking affect the back?

In 1999, researchers in Montreal, Canada, reported on a study of over 1000 adolescents with adolescent idiopathic scoliosis, or curvature of the spine. The researchers wanted to learn if being a smoker had any bearing on complaints of lower back pain. The adolescents completed a questionnaire about their smoking history – how much they smoked and how long they have been smoking – and if they had back pain. Their answers were compared to a control group of over 1500 adolescents who did not have scoliosis.

The researchers found that women who smoked complained more often about back pain, but the men who smoked and didn't have scoliosis did not have more complaints of back pain.

More research has gone into the effects of smoking and back pain. In 2001 at an annual meeting of orthopedic surgeons, researchers reported the findings of another study, this time with adults, associating smoking with lower back pain. The findings were very similar to the 1999 study.

The researchers followed over 1000 doctors who graduated from Johns Hopkins University between 1948 and 1964, giving the researchers a picture with up to a 50-year window when looking at the older doctors. These researchers also found that smokers complained of back pain more often than did non-smokers. Also like the other study, the number of cigarettes smoked also had an effect: the more smoked, the higher the incidence of back pain.

This year, the results of yet another study assessing cigarette smoking and lower back pain among adolescents, came up with the same conclusions: regular smoking in the teen years resulted in a higher rate of complaints of lower back pain, particularly among girls.

How does smoking affect the back?

It’s not completely understood how cigarette smoking affects the back; it’s not as obvious as how it would affect your breathing. One theory is that nicotine causes vasoconstriction, or narrowing of the blood vessels, that provide nutrition to the discs' cells. If the nutrients can't reach the cells, this leads to malnutrition of the disc and they can become damaged more easily. Malnourished tissues also can't heal themselves as quickly or as well as healthier, nourished cells. Nicotine is also known to thicken the walls of the blood vessels. This has the same effect of narrowing the blood vessels, slowing down blood flow.
One of the by-products of cigarettes is carbon monoxide, an extremely poisonous gas. Carbon monoxide is also blamed for the increase in lower back pain. When you smoke, the carbon monoxide attaches itself to your hemoglobin, the part of your blood cells that carry oxygen to the tissues throughout your body. This burden on the hemoglobin takes up space, keeping much-needed oxygen from reaching the discs in your back. Like vasoconstriction, this causes malnutrition to the cells.

Researchers are also finding that it's not just the blood flow that is affected by cigarette smoking. When studying the effects of cigarette smoke on animals, the researchers have found changes in spinal tissue itself.

For example, in one study with rats, researchers noticed that rats that were exposed to cigarette smoke for two to seven weeks showed degeneration, or breakdown, in the spinal discs. Some of the degeneration was damage that couldn't be reversed, although some areas of damage were reversible. In another study involving rabbits, researchers found that the growth in the disc tissue was affected by nicotine.

Although these are animal studies and what is found in animals doesn't necessarily transfer over to humans, these types of findings do give the researchers a good idea of what could be happening in the human spine when someone smokes.

**Could the pain be causing the smoking?**

While there are studies that show smokers tend to have higher reports of lower back pain, there are researchers who question if, perhaps, some of the smokers smoke because of back pain – a sort of chicken-and-the-egg type of question: which comes first, the back pain or the smoking? As well, there are questions of lifestyle, particularly among adolescent girls, and why someone chooses to start smoking to begin with.

Some theories include that smokers may be prone to making unhealthy lifestyle choices along with smoking, such as inactivity, lack of proper rest, and poor nutrition. There could also be a psychological component with smoking being used to help with anxiety or stress. According to the authors of the study published this year, researchers in Hungary found that girls had more lower back pain than did boys and that smoking was "associated with psychosomatic symptoms (including lower back pain) in girls."

**Men versus Women**

Most studies investigating the relationship between lower back pain and smoking have found that girls and women tended to have more back pain than did boys and men. While it is true that many physical disorders and diseases are more prevalent among women than men, some researchers are questioning if the higher incidence of back pain in women is actually as it appears or if there may be other factors involved. For example, there is a tendency for young girls to report back pain more often than boys who may just "grin and bear" the pain. There is also the possibility that the lower back pain complained about by the girls may be related more to puberty than to anything else.

Researchers in all the studies pointed out as well that their results depended on self-reporting of both smoking and lower back pain. This means that reports of smoking frequency and length of time (since what age) depend on the accuracy of the questionnaires. It is always possible that the people who responded did not accurately report their cigarette use, particularly the boys.

**Continuing Research Needed**

As researchers continue to determine how smoking affects the human body, one thing has become clear: smoking is a risk factor for back pain and a risk factor for increasing pain.
if someone's spine is already damaged or has a defect, as shown with the teens with scoliosis.

**So, then how do you stop smoking?**

Most people who have tried to quit smoking can tell you that it's not easy. Some people succeed the first time they try to quit, but that's not the norm. In fact, smokers usually try at least three or four times over a period of seven to 10 years before they successfully become nonsmokers.

We've all heard about people who quit "cold turkey." For some people, that's the most successful way to do it. They choose a quit date and then simply stop smoking. If they experience side effects from withdrawal, they must be tough enough to withstand the temptation. If they can and are successful, then that's what counts. But, not everyone who tries to quit cold turkey is successful and not everyone wants to try quitting that way. So, if that's the case, what are the options? Luckily, there are a few different methods you can try. But remember – not everyone succeeds the first time and if you begin smoking again, it's important to think of it as a setback, not a failure. It may take several tries, it may take different methods, but if you keep trying, chances are, you will eventually stop smoking.

**Group therapy and support groups:** When you participate in group therapy, you learn from the leader of the group how to manage your cravings and withdrawal effects, but you also get support from those around you who are trying to quit too. You can get and share practical ideas and help each other through the tough times. Sometimes, someone who is trying to quit smoking doesn't have the support at home. Perhaps his or her partner continues to smoke or they live alone and don't have someone to lean on when the going gets tough. By having group therapy and a support group, this can help.

**Individual therapy:** Depending on why you smoke, individual therapy with a counselor or psychologist may help you quit. They may teach you certain behavioral skills to avoid falling back into the trap of smoking and how to cope if times get tough.

**Hypnosis:** Some people swear by hypnosis to help change habits while others have no success with it. The goal of hypnosis is to help you change your behavior.

**Acupuncture:** Like hypnosis, acupuncture can be very successful for some or not helpful at all for others.

**Nicotine replacement therapy:** Nicotine replacement therapy provides your body with the nicotine it craves, but without the cigarettes. The difference is that when you smoke, your body gets a high level of nicotine over a short period. With nicotine replacement therapy, your body gets a low, constant dose of nicotine, which helps reduce the severity or periods of withdrawal symptoms. To use nicotine replacement therapy, you must stop smoking while you are using the products. This is important because if you continue to smoke, you will be getting much more nicotine delivered to your body through both the cigarettes and the replacement therapy.

You can receive nicotine replacement therapy a few different ways:

**Patch:** The nicotine patch gives you a constant, 24-hour-a-day dose of nicotine for as long as you wear the patch and change it regularly as prescribed.

**Gum:** Nicotine gum is popular with some who want to quit smoking because it gives them something to do (chew) and provides your body with the higher, quicker bursts of nicotine that are more similar to smoking a cigarette. There are also lozenges now available that do the same thing.

**Nasal spray** is a relative newcomer to the nicotine replacement team as is the inhaler. The nasal spray is like the gum. It gives the higher, sudden dose of nicotine, while the
inhaler allows you to take puffs of medication that has nicotine through the mouth.

Medications: For some people, replacement therapy isn't effective so they may respond to some medications that seem to be quite effective at helping people stop smoking. The most well known one now is called Zyban or Wellbutrin. It's an antidepressant (bupropion) that if taken for between seven and 12 weeks, can help many people stop smoking.

The medications are supposed to help manage the cravings and symptoms of withdrawal. Unlike nicotine replacement, you can continue smoking when you first start taking the medication because it takes a while to build up in your body and become effective.