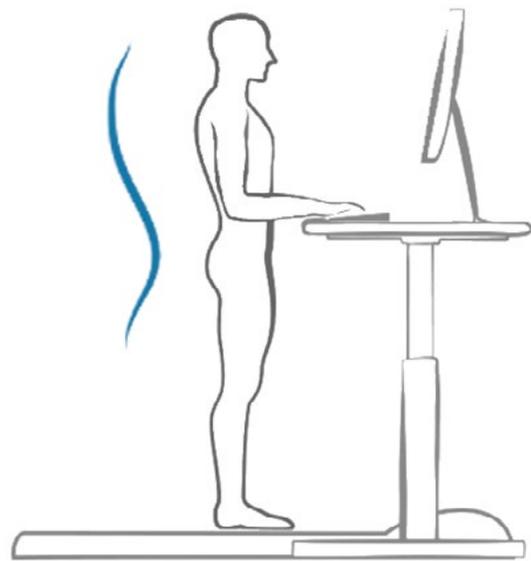


Cracking the Code on Low Back Pain

Erasing Discomfort and Expense with Proven Practices

Low back pain (LBP) is more than just a nagging ache. It's a full-blown epidemic, on the rise in prevalence and responsible for more global disability than any other condition. LBP is exceptionally common, believed to affect roughly 80% of the developed world at some point in their lifetimes. According to the American College of Rheumatology, 650 million individuals deal with LBP at any given moment. At best, this is both expensive and frustrating. At worst, incapacitating.



Hope exists, however, in the form of conservative, achievable methodologies. Simple actions that when embraced by patients and companies alike, can provide immediate relief to both joints and budgets. Read on to discover these powerful remedies.

Cracking the Code on Low Back Pain



Dr. Radha Raman has refused to take her pain sitting down.

The owner of Oak Street Medical in New Orleans, Dr. Raman's focus is typically dedicated to her patients, providing help for those suffering from diabetes and hypertension to the common flu. She wasn't expecting to suddenly be the one requiring care.

"I had to sit and study a lot," she says, referring to her time spent in medical school. "Sedentary lifestyles have been proven over and over to detrimental to your health. Besides causing weight gain, sedentary lifestyles increase incidences of diabetes, high blood pressure and high cholesterol."

A lesser-known impact of inactivity was what ultimately stopped her in her tracks.

"I have a lumbar disc herniation, caused by too much sitting."

The damage to her spine caused intense, recurring pain in her low back; an agony that is unfortunately understood by millions.

Low back pain (LBP) is exceptionally common, believed to affect roughly 80% of the developed world's population at some point in their lifetimes. According to the American College of Rheumatology, at any given moment it is believed that 9-12%, or 650 million individuals globally, are dealing with LBP, with 23.2% of people reporting pain at some point over any one-month period.

The school of medicine at North Carolina University states that onset of painful symptoms typically begins as early as twenty years old, and commonly occurs prior to the age of forty. As common as it is unbiased, LBP impacts men and women alike, with slight statistical prevalence being shifted towards women, specifically those who are pregnant.

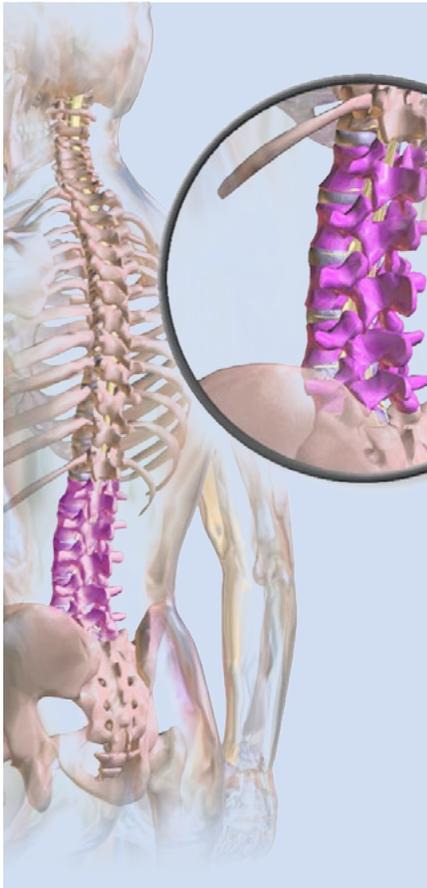
The cause of low back pain seems to be fundamentally linked to either acute trauma, or as in the case of Dr. Raman, health and lifestyle. The National Institute of Health states that when occurring due to trauma, it's common that a strain or sprain has occurred to either muscular or skeletal tissue around the spinal column or low back. This is commonly seen as slipped or bulging discs, pinched nerves, or damage to the tissues that support the spine due to improper lifting of an external load, an unexpected jolt from missing a stair, or injury-causing impact.



Dr. Radha Raman

PREVALANCE

- *Low Back Pain Impacts Nearly 80% of the Developed World.*¹
- *Almost 650 Million (9-12%) People Experience LBP at Any Given Time.*
- *23.2% Report Having LBP at Some Point Over any One-Month Period.*²
- *Pain typically begins between 20 and 40 years of age.*³
- *Most common among individuals 40-80 years old.*
- *Higher prevalence found in women.*
- *Current smokers are more likely to have LBP than former smokers.*⁴
- *Former smokers are more likely to have LBP than those who have never smoked.*
- *Recurrence of acute LBP ranges between 25-33% within 12 months of traditional treatment.*⁵



IMPACT

- *Workers Miss 30 Million Days of Work Each Year to Low Back Pain.*
- *LBP is the Most Expensive Cause of Disability, in Terms of Workers' Compensation and Medical Expenses.*
- *\$28 Billion is Lost Annually in the United States Due to the Associated Costs of Low Back Pain.*⁶
- *Average annual productivity losses per worker due to chronic backache were \$1,230 for male workers and \$773 per female worker.*
- *It is also the most frequent reason for work-related disability in those younger than 45 years.*⁷
- *Living in constant pain leads nearly a third of people with chronic pain to become clinically depressed.*⁸

When cause is linked to lifestyle, similar damage to tissue is thought to occur less exclusively from an external force, but rather from chronic conditions such as prolonged sedentariness, poor posture, obesity, weak and deconditioned core musculature, poor nutrition, or current or former habitual tobacco use. Painful symptoms per incident range from a few days of discomfort in mild instances, to long-term chronic occurrences, affecting daily living for at least 3 months.

According to *Spine*, a journal dedicated to orthopedic research, the consequences of LBP impact more than just those who experience the pain firsthand. Found to be the most-frequent reason for work-related disability in those younger than 45 years old, LBP is the most expensive cause of disability related to work in terms of Workers' Compensation and associated medical expenses. Associated cost per-employee is believed to be \$1,858 for male workers and \$1,167 per female worker, adjusted for current inflation. The cost of each occurrence, however, is more profound than just accumulated healthcare expenditures and immediate physician charges. Days spent in discomfort for patients double as lost efficiency for employers. Medical Care discovered that between 1996 and 2001, American employees were found to have missed 149 million days of work due to low back discomfort, ultimately impacting profitability. All things considered, LBP is believed to annually equate to an aggregate cost of approximately \$28 billion in the United States alone.

With recurrence found to be between 25-33% of patients a year following initial treatment, the success of traditional remedies is not a guarantee. Also considering that prescribed, prolonged-use medications carry potentially adverse side effects, addictive properties, and represent continued expense, alternative remedies are frequently investigated. With inactivity being a common cause of LBP to begin with, it isn't surprising that activity-based methods are commonly suggested for prevention and treatment of LBP, both at home and in the office.

"It's [about] how we take care of ourselves," says Ronald J. Wisneski, MD, an orthopedic surgeon and specialist in spinal disorders and spine surgery at Geisinger Medical Center in Danville, Pa. "If you have pain, sometimes you develop a 'disease of disuse'. Our bodies are meant to be used."

Academic results support Wisneski's beliefs. Clinical Studies from La Trobe University noted impressive reductions in discomfort when regular bouts of gentle walking were utilized as an intervention for LBP. Similar results from the University of Tel Aviv concluded that walking produced improvements in both long-term pain reduction and enhanced range of motion at one, six, and 12-month intervals.

Ted Forcum, director of the Back in Motion Sports Injury Clinic in Beaverton, Oregon, believes walking is holistically beneficial, primarily due to its strengthening of muscles in the feet, legs, hips, and torso.

"Walking increases the stability of the spine and conditions the muscles that keep the body in the upright position," he says. "Walking, along with regular stretching, allows greater range of motion, helps prevent awkward movements, and susceptibility of future injury." He goes on to say that walking strengthens bones through enhancing bone density and can help aid in reducing osteoarthritis pain. As a final recommendation, he touts the weight-

loss power of walking and its potential impact on reduced back pain. "Any regular exercise routine helps maintain a healthy weight, especially as one ages and metabolism slows," he says.

It's for this very reason that Dr. Raman began her investigation into fixing her pain naturally through movement. "Sitting and long periods of time in a stationary position causes a lot of pain," she says. "So, I was thinking of a way to spend more of my day in motion. I did an internet search and found treadmill desks."

First brought to popularity by Mayo Clinic physician Dr. James Levine, the treadmill desk has experienced stunning growth in popularity since 2010. Commonly categorized with other active workstation implements such as bike desks, treadmill desks are intended to allow professionals to gently walk while they remain productive in the workplace.

The treadmill itself works like a treadmill in the traditional sense, slowly increasing pace to desired speed. It is recommended that new users should begin conservatively, gently approaching the American Heart Association recommendation of 10,000 steps a day, ideally in palatable, 90-minute intervals. Brief breaks or alternate movement is suggested. The idea is to stay active, be comfortable, and improve health without breaking a sweat.

And the impact of treadmill desks on low back pain? In the case of Dr. Raman, it's been revolutionary.

"It has decreased my back pain by 80-90%," she remarks. "I've also noticed some weight loss. I'm on it every day at work. I feel more relaxed at the end of the day and am sleeping better. The fact that it can go as slow as 0.4 mph is extremely helpful. I'm [getting] least 7000 steps a day. I'm also meeting the new guideline of limiting yourself to 2 hours of sitting a day."

As far as her quality of work, recent research from the Mayo Clinic would suggest that it has actually increased since she began walking while working.

Studied radiologists were found to be roughly 10 percent more accurate when diagnosing patients on a walking workstation – up from 88 percent to 99 percent – than when they are stationary. This is further reinforced by research published in *Computers in Human Behavior* in 2015, which concluded that "These findings suggest that the treadmill desk, in addition to having health benefits for workers, can also be beneficial for businesses by enhancing workforce performance". Researchers from the University of Montreal determined that cognitive functions were enhanced in walking office workers, relative to their stationary coworkers.

Recent longitudinal surveys completed by LifeSpan, a global leader in active workstations, polled the experiences and sentiments of treadmill desk users who had been walking and working for at least two years. Respondents, all of which are employed in the higher education sector, were asked at 12 and 24-month intervals whether or not they had experienced benefits associated with their treadmill desk use. Within the first 12 month period, 89 percent of users recognized health improvements associated with use, specifically citing reduced joint pain, increased energy levels, and healthy weight loss. 24 months post-installation, the proportion of users citing benefits jumped to 95 percent, with respondents additionally mentioning improved blood health, specifically cholesterol, glucose, and triglyceride values.

CAUSES

- Sprains and strains of muscular or skeletal tissue, however, is commonly attributed.
- Obesity, stress, poor physical condition and poor posture contribute to low back pain.⁹

TREATMENT

- Multiple Studies Have Shown Notable Reductions in Pain With Walking as an Intervention.¹⁰
- Those Who Include Walking Throughout Their Day Are Less Likely to Experience LBP in the Future.¹¹
- Implementing active workstations into offices and classrooms may help to decrease sedentariness without impairing task performance.¹²
- Range of motion and pain improvements have been found to continue at one, six, and 12 month intervals, with 78% of walking participants were satisfied with results.¹³
- Walking has a statistically significant, large effect on the symptoms of depression in some populations.¹⁴
- It's suggested that walking also increases the health and capability of spinal discs.¹⁵
- 48% of randomly-selected higher education professionals cited treadmill-desk use in the workplace to be responsible for reduction in all-cause joint pain, including LBP.¹⁶
- Doctors on a walking workstation are roughly 10 percent more accurate at diagnosing patients -- up from 88 percent to 99 percent -- than when they are stationary.¹⁷



The composite benefits of improved health and enhanced workplace productivity have made treadmill desks an alluring inclusion to many corporations big and small, with adopters including Google, Motorola, Cummins, Salesforce, and others. From corporate wellness inclusions to carriers of culture, the desks have had profound impact on the health and philosophy of their respective atmospheres.

Elon Musk's Solar City began implementing active desks in 2014. According to Carlos Ramirez, the company's VP of environmental health and safety, the movement started with literal movement. "All reports have been outstanding," he says. Our employees love the opportunity to work and move as their bodies were designed to. Employees that can walk for just five minutes at a time feel empowered by choosing to walk and work during conference calls, or grinding out e-mail responses. They love the opportunity"

As it relates to improved health, Dr. Raman feels as though she's not only assuaged her back pain, but has taken the next step in her wellness. So much so that she's suggesting treadmill desks for professional patients.

"I've told many patients that they need to sit less, and have even filled out paperwork so my patient's employers will accommodate [treadmill desks]," she says. "Hopefully it won't take too long for employers and insurance companies to see the many health benefits of increasing activity in the workplace."

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LifeSpan is committed to enhancing wellness and quality of life through relevant, research-based thought leadership. As the originator of active workstations, Workplace is bringing activity back to the office, making productive wellness achievable. LifeSpan under-desk treadmills and bikes blend professionalism with functionality to ensure zero disruption and limitless value. Through dedication to single professionals, teams, and entire enterprises as a whole, Workplace is helping companies progress as they work, one step at a time.

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