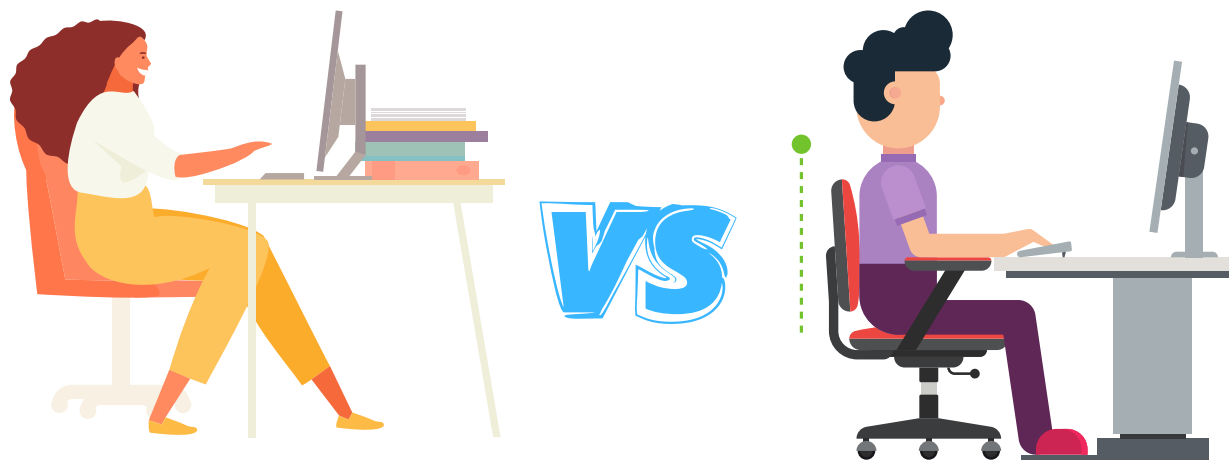


PHYSICAL THERAPY @ WORKDAY BLOG

EDUCATION | REHABILITATION | INJURY PREVENTION | NUTRITION



POSTURE, LIFTING, AND LOW BACK PAIN

INSIDE THIS ISSUE

PG. 2: LOW BACK PAIN AND POSTURE

PG. 3: THE POSTURE INDUSTRY AND WHAT THE EVIDENCE SAYS

PG. 4: DON'T THROW IT ALL OUT WITH THE BATH WATER JUST YET.

PG. 5: INFOGRAPHIC SUMMARY

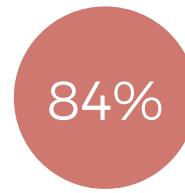
Workmates,

Hello! My name is Dr. Alex Kirbach and I am the doctor of physical therapy here at Cloud Care Operated by Premise Health. In this issue I will be addressing some common myths surrounding posture, lifting, and low back pain, I will be pulling back the curtain on the posture industry, and my top 7 pieces of advice regarding low back pain, posture, and lifting technique.

Get, Stay, and Be Well.

Low Back Pain Is Extremely Common

Low back pain (LBP) is one of the most common global health problems with some estimates as high as 84% of adults reporting at least one episode of low back pain at some point in their life [1,2]. Moreover, middle-aged individuals have the highest rate of low back pain and two in every three have a recurrence of LBP within a year [3,4].



Global lifetime prevalence of LBP [1,2]



Recurrence rate of LBP [3,4]

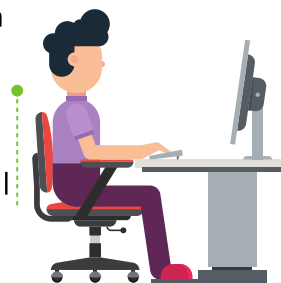
Low Back Pain and Posture

One long-standing belief regarding the cause of low back pain is that is due to sitting, standing, or bending "incorrectly". Potential influences driving these beliefs is that these postures and movements are very often provocative (aka painful) in people with low back pain.

So, what is this "ideal" posture?

"Natural" Sitting Posture

"Ideal" sitting posture is often described as having a slight lordotic (extended) posture in the low back. The thought is that this follows the natural curvature of the spine and from a biomechanical perspective, would theoretically place the least amount of stress on the tissues. Harmful stereotypes surrounding gender, dignity, respectability, attractiveness, and morality have also played a role in determining what "ideal" posture is and should not be ignored [5].



"Ideal" Sitting Posture. Does this person look comfortable and relaxed to you?

Lifting Posture and Low Back Pain

Recently there has been a strong push for workplace health and safety personnel, as well as healthcare professionals, to provide advice against lifting with increased flexion (bend) of the lumbar spine. The belief is that lifting with this "straight back" posture will reduce the risk of lifting-related LBP. Despite adopting these practices across numerous different occupations there has not been a reduction in occupational LBP [6]. Take some time and let that last sentence sink in.

Reviews of over 40 other research review papers are unable to provide a consensus on causality of sitting, standing, lifting, or awkward occupational postures and LBP [7,8]. While some studies show a positive association others do not. Furthermore, it is important to keep in mind that correlation does not equal causation.

Origin of Neutral Spine Lifting Posture

Did you know the evidence used to support the recommendation to lift with a straight back was based on cadaver studies?? Researchers found that the lumbar spine was more likely to "fail" when exposed to repeated flexion [6]. However, living human beings are not the same as cadavers.

Learn more about the posture industry on the next page

Low Back Pain Is Extremely Common

Low back pain (LBP) is one of the most common global health problems with some estimates as high as 84% of adults reporting at least one episode of low back pain at some point in their life [1,2]. Moreover, middle-aged individuals have the highest rate of low back pain and two in every three have a recurrence of LBP within a year [3,4].

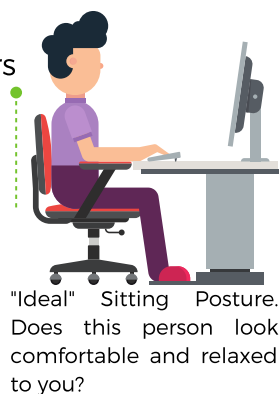
Low Back Pain and Posture

One long-standing belief regarding the cause of low back pain is that is due to sitting, standing, or bending "incorrectly". Potential influences driving these beliefs is that these postures and movements are very often provocative (aka painful) in people with low back pain.

So, what is this "ideal" posture and what are its origins?

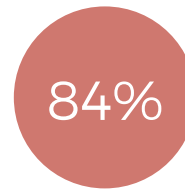
Origin of Neutral Spine Posture

Did you know the evidence used to support the recommendation to lift with a straight back was based on cadaver studies?? Researchers found that the lumbar spine was more likely to "fail" when exposed to repeated flexion [6]. This belief has even been carried over into recommendations for sitting posture.



However, living human beings are not the same as cadavers.

Learn more about the posture industry on the next page



Global lifetime prevalence of LBP [1,2]



Recurrence rate of LBP [3,4]

"Natural" Sitting Posture

"Ideal" sitting posture is often described as having a slight lordotic (extended) posture in the low back. The thought is that this follows the natural curvature of the spine and from a biomechanical perspective, would theoretically place the least amount of stress on the tissues. Harmful stereotypes surrounding gender, dignity, respectability, attractiveness, and morality have also played a role in determining what "ideal" posture is and should not be ignored [5].

Lifting Posture and Low Back Pain

Recently there has been a strong push for workplace health and safety personnel, as well as healthcare professionals, to provide advice against lifting with increased flexion (bend) of the lumbar spine. The belief is that lifting with this "straight back" posture will reduce the risk of lifting-related LBP. Despite adopting these practices across numerous different occupations there has not been a reduction in occupational LBP [6]. Take some time and let that last sentence sink in.

Reviews of over 40 other research review papers are unable to provide a consensus on causality of sitting, standing, lifting, or awkward occupational postures and LBP [7,8]. While some studies show a positive association others do not. Furthermore, it is important to keep in mind that correlation does not equal causation.

The Posture Industry

When talking about posture one cannot ignore the huge industry that has been built around this one belief. There is some serious money in the posture industry. In recent years there have been numerous products marketed to "fix" your posture such as posture shirts and wearable devices you can put on your back to tell you when you back flexes while you are sitting. However, independent research studies do not support these claims.

A small study of 24 university student found that use of a posture corrective shirt did not in fact alter forward head and rounded shoulders [9]. A 2019 literature review further questions the benefits of posture-correcting shirts, finding available evidence to be mostly of poor to fair quality and that pain-free individuals were used in the studies [10].

When it comes to wearable devices and posture there are issues surrounding validation of the devices to ensure they are accurately measuring what they claim to measure, high risk of bias, and low study quality [11-13]. Furthermore, when changes in neck or spine angles are detectable it is often <6 degrees of difference and not significant changes in pain have been report [11-13]. Due to the poor quality of these studies a 2021 scoping review of the literature, rated the quality of the evidence as "limited" or "very limited" which means strong recommendations for use of these devices cannot be made, regardless of the reported outcomes [13].

FACT: No study to date has been found to reduce neck or low back pain using posture-corrective shirts or wearable devices

What Does The Evidence Say Regarding Posture and Low Back Pain?

Over the years there has been literally hundreds of research articles published regarding low back pain. Despite all these publications there are still many questions regarding low back pain that we simply have no good answer for. Sitting posture, lifting, and their relationship with low back is one of those questions.

When we do a through search of the literature and really get into the details of the studies we have come to realize that there is a lack of strong evidence to support statements espousing the importance of "ideal" posture in sitting, standing, or lifting.

The dangers to consumers of research-backed products or fitness programs is that the information provided is often cherry-picked to fit a narrative. While it is possible to pick several studies that conclude that sitting posture or lifting technique is associated with higher risk of experiencing low back pain, it does not tell the whole story. Research results can be tainted by low sample sizes, poor research methods, lack of controls, and other confounding factors that could impact results.

Multiple systematic reviews over the years have all come to similar conclusions, that sitting posture, bending, and lifting are not correlated with low back pain [6-8].

Systematic Reviews: Collect and analyze data from multiple studies after doing an exhausted search of the available literature.

Not All Are Bad Actors

By now you might be thinking that I believe anyone promoting these beliefs regarding "ideal" posture to be charlatan whose sole purpose is to cheat you out of your money. However, this is not true. In fact I will freely admit that I have been guilty of this myself. So do not rush to judge too quickly. Instead, ask questions. Ask about the research your healthcare provider or fitness professional is using to support their statements. Is it recent or 15 years old? Are they from low-quality non-randomized trials with a low sample size? Or is the information from multiple studies, including systematic reviews with a meta-analysis.

It can be difficult for healthcare providers to remain current regarding the latest evidence. In fact, numerous studies have indicated it can take up to 10 or even 15 years for research evidence to become standard clinical practice! So, maybe the person has just not kept up to date.

PT TIP: Don't be afraid to inquire about the evidence to back up a claim or recommendation.

Even if they do not have the ability to cite information from an article on the spot, a high quality healthcare provider or fitness provider will do a literature search and give you a response in a timely manner.



Have specific questions or uncertain what steps you should take?

Call the clinic at 844.737.0894 or schedule an appointment on the My Premise Health app today!

Posture Assessment, Ergonomics, and Lifting Technique Still Have A Role

While there is a lack of strong evidence to support statements surround correct posture while sitting and the optimal lifting technique that does not mean we should throw these out the window.

Take, for example, someone who is experiencing a sudden episode of intense low back pain and is very sensitive to spine flexion. I often do recommend modifications to lifting technique and sitting posture to promote a more upright posture. However, the important part of this is that these are temporary measures. These modifications are not meant to be used in the long-term or permanently. Only until symptom severity has decreased. At that point it is vital to begin a progressive return to normal activities, movements, postures.

My Top 7 Pieces of Advice

- 1) Don't panic.
- 2) PT first saves time and money.
- 3) Early PT >>> delayed PT.
- 4) The spine is incredibly strong and has a tremendous capacity to adapt.
- 5) Do what you can tolerate, even if there is minor to mild discomfort.
- 6) It is a process. Try to do a little bit more each day.
- 7) Know that you awesome and the team here at Premise Health is here to support you however we can.

1. **There is no single “correct” posture.** Despite common posture beliefs, there is no strong evidence that one optimal posture exists or that avoiding “incorrect” postures will prevent back pain.
2. **Differences in postures are a fact of life.** There are natural variations in spinal curvatures, and there is no single spinal curvature strongly associated with pain. Pain should not be attributed to relatively “normal” variations.
3. **Posture reflects beliefs and mood.** Posture can offer insights into a person’s emotions, thoughts, and body image. Some postures are adopted as a protective strategy and may reflect concerns regarding body vulnerability. Understanding reasons behind preferred postures can be useful.
4. **It is safe to adopt more comfortable postures.** Comfortable postures vary between individuals. Exploring different postures, including those frequently avoided, and changing habitual postures may provide symptom relief.
5. **The spine is robust and can be trusted.** The spine is a robust, adaptable structure capable of safely moving and loading in a variety of postures. Common warnings to protect the spine are not necessary and can lead to fear.
6. **Sitting is not dangerous.** Sitting down for more than 30 minutes in one position is not dangerous, nor should it always be avoided. However, moving and changing position can be helpful, and being physically active is important for your health.
7. **One size does not fit all.** Postural and movement screening does not prevent pain in the workplace. Preferred lifting styles are influenced by the naturally varying spinal curvatures, and advice to adopt a specific posture or to brace the core is not evidence based.



Acknowledgment: The authors would like to thank Kevin Wernli @KWernliPhysio for his assistance in developing the illustrations for the figure.

FIGURE. Key points to change the posture narrative.

Bibliography

1. Violante, F. S., Mattioli, S., & Bonfiglioli, R. (2015). Low-back pain. *Handbook of clinical neurology*, 131, 397–410. <https://doi.org/10.1016/B978-0-444-62627-1.00020-2>.
2. Fatoye, F., Gebrye, T. & Odeyemi, I. Real-world incidence and prevalence of low back pain using routinely collected data. *Rheumatol Int* 39, 619–626 (2019). <https://doi.org/10.1007/s00296-019-04273-0>
3. Hoy, D., Bain, C., Williams, G., March, L., Brooks, P., Blyth, F., Woolf, A., Vos, T., & Buchbinder, R. (2012). A systematic review of the global prevalence of low back pain. *Arthritis and rheumatism*, 64(6), 2028–2037. <https://doi.org/10.1002/art.34347>
4. Ferreira, G. E., Lin, C. C., Stevens, M. L., Hancock, M. J., Latimer, J., Kelly, P., Wisbey-Roth, T., & Maher, C. G. (2021). Exercise Is Medicine, But Perhaps Not for Preventing Low Back Pain: A Randomized Trial of Exercise and Education to Prevent Low Back Pain Recurrence. *The Journal of orthopaedic and sports physical therapy*, 51(4), 188–195. <https://doi.org/10.2519/jospt.2021.10187>
5. Slater, D., Korakakis, V., O'Sullivan, P., Nolan, D., & O'Sullivan, K. (2019). "Sit Up Straight": Time to Re-evaluate. *The Journal of orthopaedic and sports physical therapy*, 49(8), 562–564. <https://doi.org/10.2519/jospt.2019.0610>
6. Saraceni, N., Kent, P., Ng, L., Campbell, A., Straker, L., & O'Sullivan, P. (2020). To Flex or Not to Flex? Is There a Relationship Between Lumbar Spine Flexion During Lifting and Low Back Pain? A Systematic Review With Meta-analysis. *The Journal of orthopaedic and sports physical therapy*, 50(3), 121–130. <https://doi.org/10.2519/jospt.2020.9218>
7. Swain, C., Pan, F., Owen, P. J., Schmidt, H., & Belavy, D. L. (2020). No consensus on causality of spine postures or physical exposure and low back pain: A systematic review of systematic reviews. *Journal of biomechanics*, 102, 109312. <https://doi.org/10.1016/j.jbiomech.2019.08.006>
8. Roffey, D. M., Wai, E. K., Bishop, P., Kwon, B. K., & Dagenais, S. (2010). Causal assessment of awkward occupational postures and low back pain: results of a systematic review. *The spine journal : official journal of the North American Spine Society*, 10(1), 89–99. <https://doi.org/10.1016/j.spinee.2009.09.003>.
9. Manor, J., Hibberd, E., Petschauer, M., & Myers, J. (2016). Acute Effects of Posture Shirts on Rounded-Shoulder and Forward-Head Posture in College Students. *Journal of sport rehabilitation*, 25(4), 309–314. <https://doi.org/10.1123/jsr.2014-0304>
10. Palsson, T. S., Travers, M. J., Rafn, T., Ingemann-Molden, S., Caneiro, J. P., & Christensen, S. W. (2019). The use of posture-correcting shirts for managing musculoskeletal pain is not supported by current evidence - a scoping review of the literature. *Scandinavian journal of pain*, 19(4), 659–670. <https://doi.org/10.1515/sjpain-2019-0005>.
11. Kuo, Y. L., Huang, K. Y., Kao, C. Y., & Tsai, Y. J. (2021). Sitting Posture during Prolonged Computer Typing with and without a Wearable Biofeedback Sensor. *International journal of environmental research and public health*, 18(10), 5430. <https://doi.org/10.3390/ijerph18105430>
12. Lee, R., James, C., Edwards, S., Skinner, G., Young, J. L., & Snodgrass, S. J. (2021). Evidence for the Effectiveness of Feedback from Wearable Inertial Sensors during Work-Related Activities: A Scoping Review. *Sensors (Basel, Switzerland)*, 21(19), 6377. <https://doi.org/10.3390/s21196377>.
13. Kuo, Y. L., Wang, P. S., Ko, P. Y., Huang, K. Y., & Tsai, Y. J. (2019). Immediate effects of real-time postural biofeedback on spinal posture, muscle activity, and perceived pain severity in adults with neck pain. *Gait & posture*, 67, 187–193. <https://doi.org/10.1016/j.gaitpost.2018.10.021>