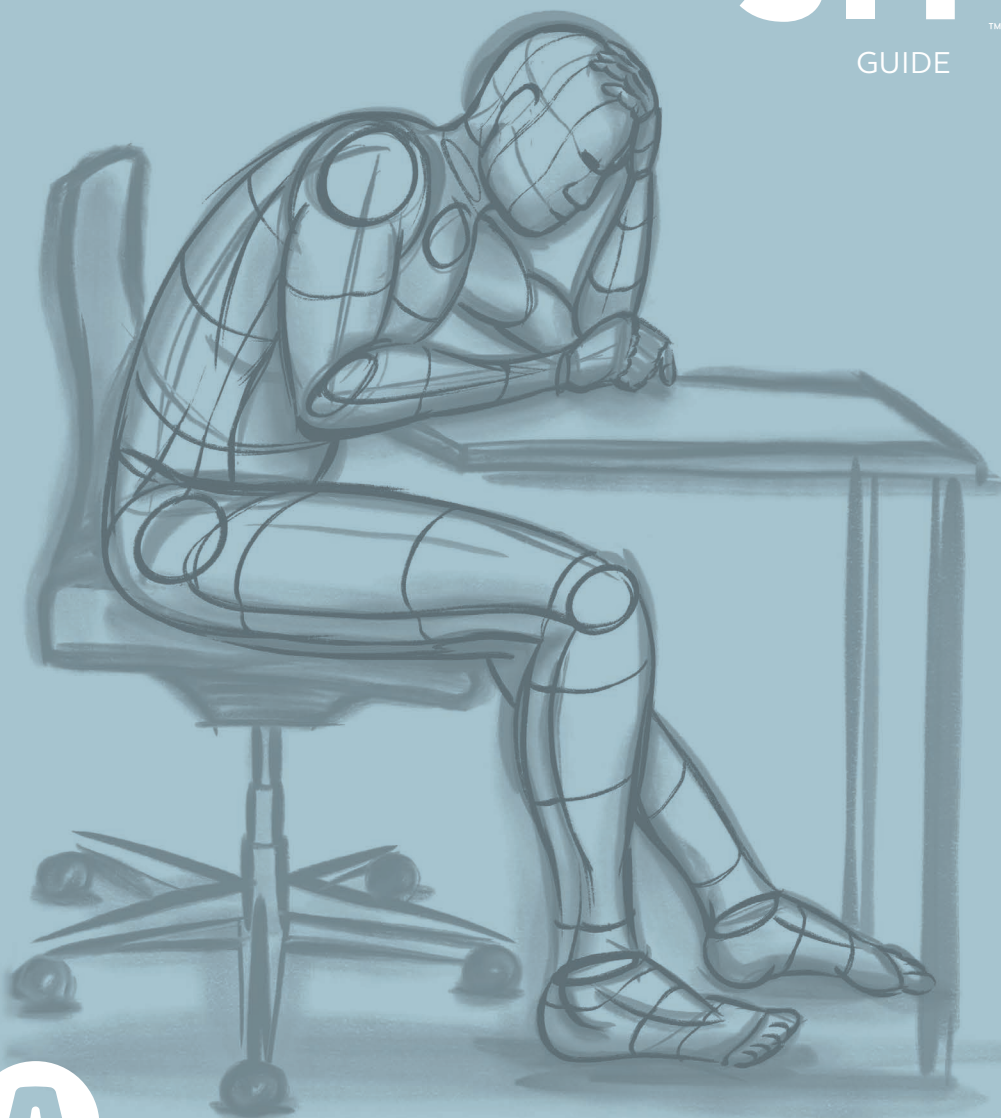


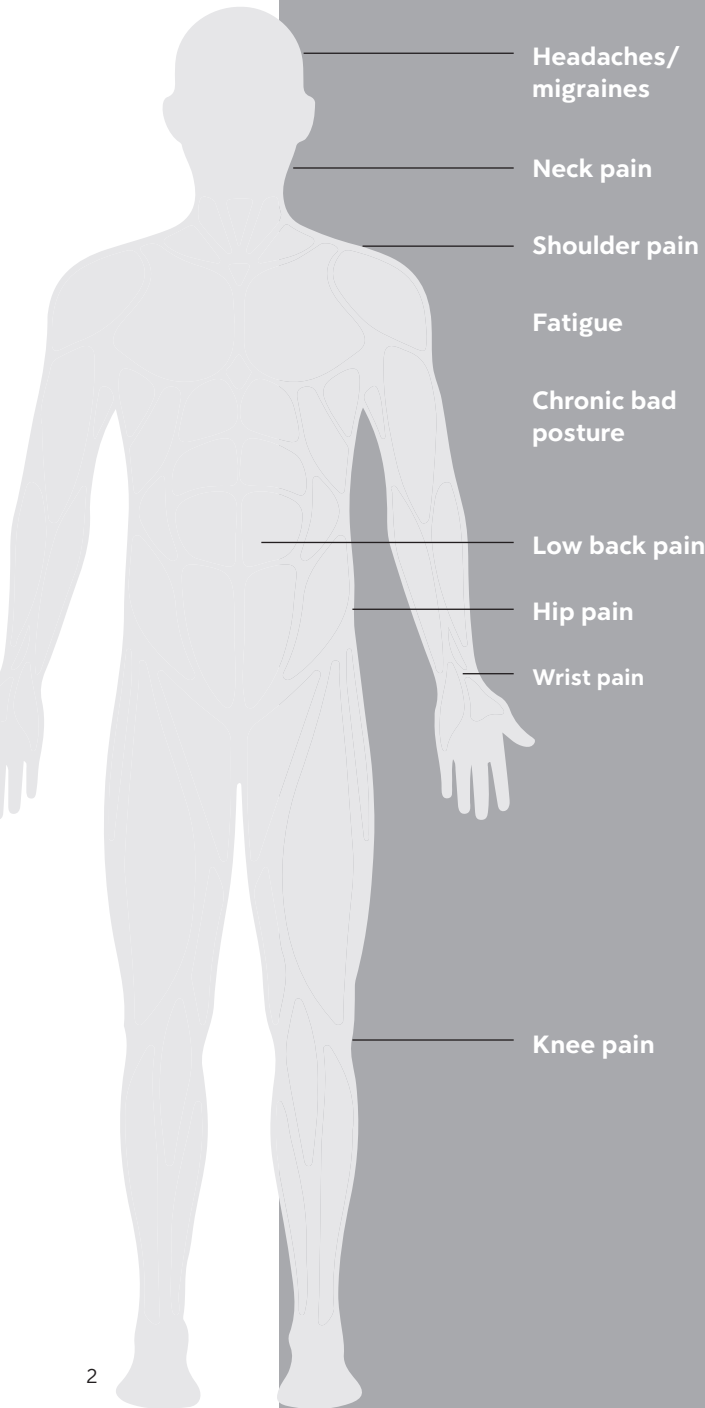
FIX YOUR SIT™

GUIDE



ANTHROS

UNWANTED SYMPTOMS OF PROLONGED SITTING



Headaches/
migraines

Neck pain

Shoulder pain

Fatigue

Chronic bad
posture

Low back pain

Hip pain

Wrist pain

Knee pain

86%
of the U.S.
workforce
sits at work

**7 HOURS
PER DAY**
is spent sitting
at a desk for the
average office job

**BACK
PAIN**
is the biggest
disease burden
in developed
countries

149M
work days/year are
lost to back pain
in the U.S. costing
\$100-\$200B/year

80%

80% of the general population will suffer from a severe episode of lower back pain at least once in their lifetime.

31M

31 million Americans suffer from back pain at a given time.

25%

25% of American adults suffer from "chronic" back pain.

54%

54% of workers suffering with back pain spend most of their workday sitting down.

40%

As the leading contributor to sick days, back pain accounts for 40% of all missed work days and costs businesses in both worker loss and productivity loss.

\$\$\$

Back disorders cost employers \$1,685 per employee every year in productivity, a loss of \$225.8 billion nationally.

\$\$\$

The average claim against an employer for back pain will pay between \$40K and \$80K. Those claims are not limited to jobs with a demanding physical workload.

BACK PAIN IN NUMBERS

SITTING IS VIRTUALLY UNAVOIDABLE

**CAN WE FIND A WAY TO SIT
WITHOUT COMPROMISING
OUR POSTURE, HEALTH, AND
PERFORMANCE?**

Yes!

This guide will shed light on the TRUTH about sitting and will offer solutions for sitting well.

6 A LOOK AT SITTING POSTURES

What is “Good” Posture?
Why is this Optimal Posture?
Why is Good Posture Difficult to Maintain?
What Happens to the Body During Sitting?
What are the Results of Poor Sitting Postures?
Can Sitting Posture Affect Standing Posture?
Are Standing Desks the Best Alternative to Sitting?
Is Sitting Always Bad?
What Does it Take to Undo the Effects of Bad Posture?

18 THE SOLUTION TO GOOD SITTING: ANTHROS

20 THE INGREDIENTS OF GOOD SITTING

Support the Pelvis, Not the Lumbar
Elongation of the Spine
Protection of the Sit Bones Against High Pressure
Maintenance of Good Posture in Resting Position

30 THE CONCLUSION

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A - How Can the Perfect Office Chair
Minimize/Prevent Pain?
B - Set Up Your Workspace
C - 5 Exercises + Stretches to “Undo” the
Negative Effects of Sitting

40 REFERENCES + FURTHER READING

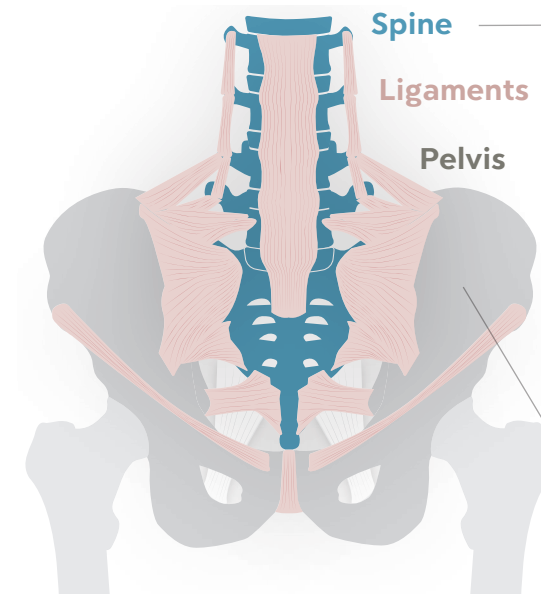


A LOOK AT SITTING POSTURE

WHAT IS “GOOD” POSTURE?

Optimal posture

To understand good posture, we need a refresher on simple anatomy.



At the base of the spine is the pelvis. The pelvis is connected to the spine with multiple ligaments, so when the pelvis moves, the spine moves with it.



Pelvis

WHY IS THIS AN OPTIMAL POSTURE?

While in a neutral position, the spine has four natural curves with intervertebral discs in between.

When properly supported at the pelvis, a neutral, strong, and healthy spinal posture should look like an "S".

This posture creates increased disc space, allowing the muscles to relax in this stable position. However, in a slouched posture, the discs compress, resulting in pain over time.

THIS POSTURE:



Improves circulation
+ digestion



Optimizes lung capacity



Increases disk space, which
decreases the risk of back pain

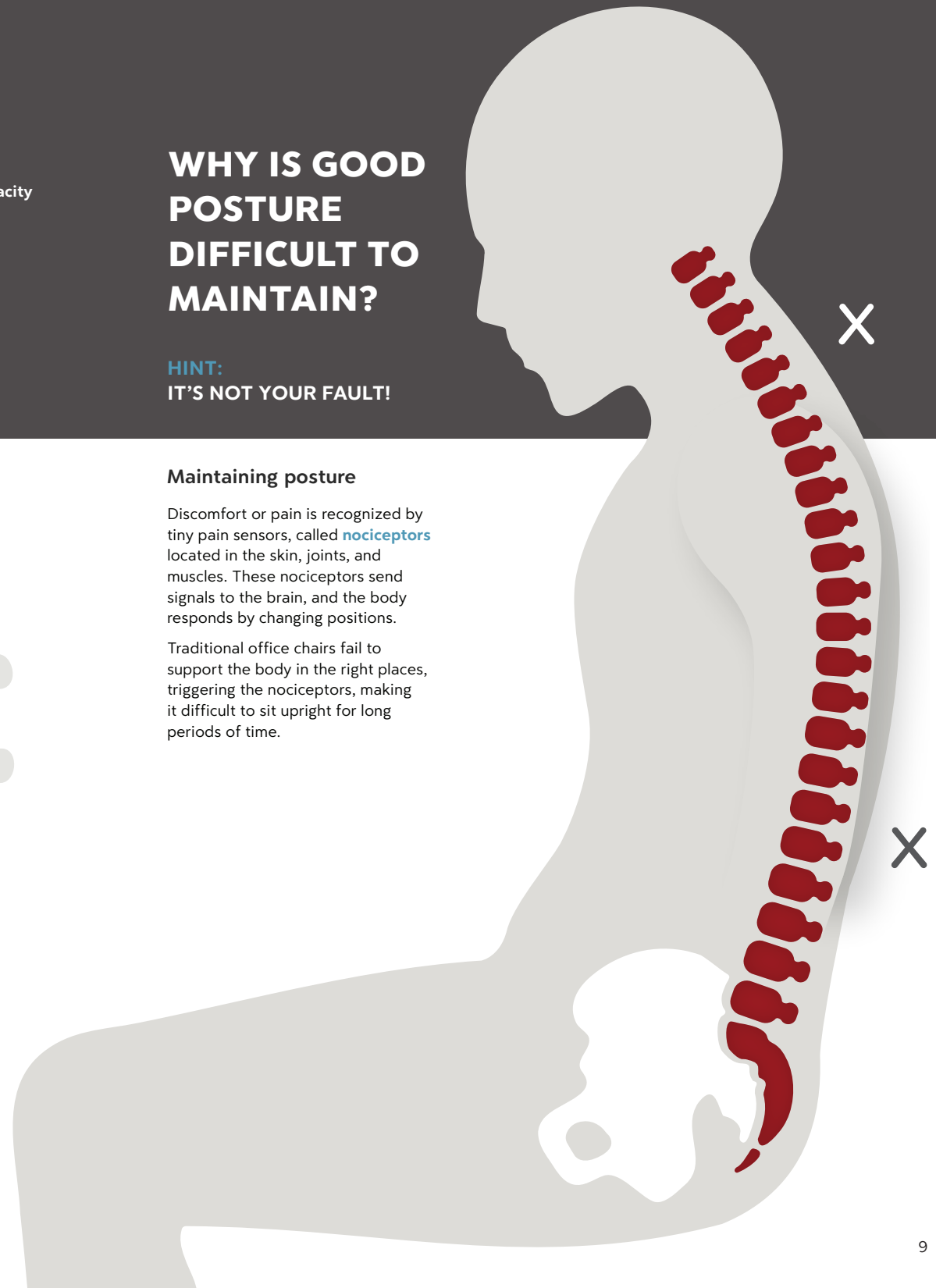
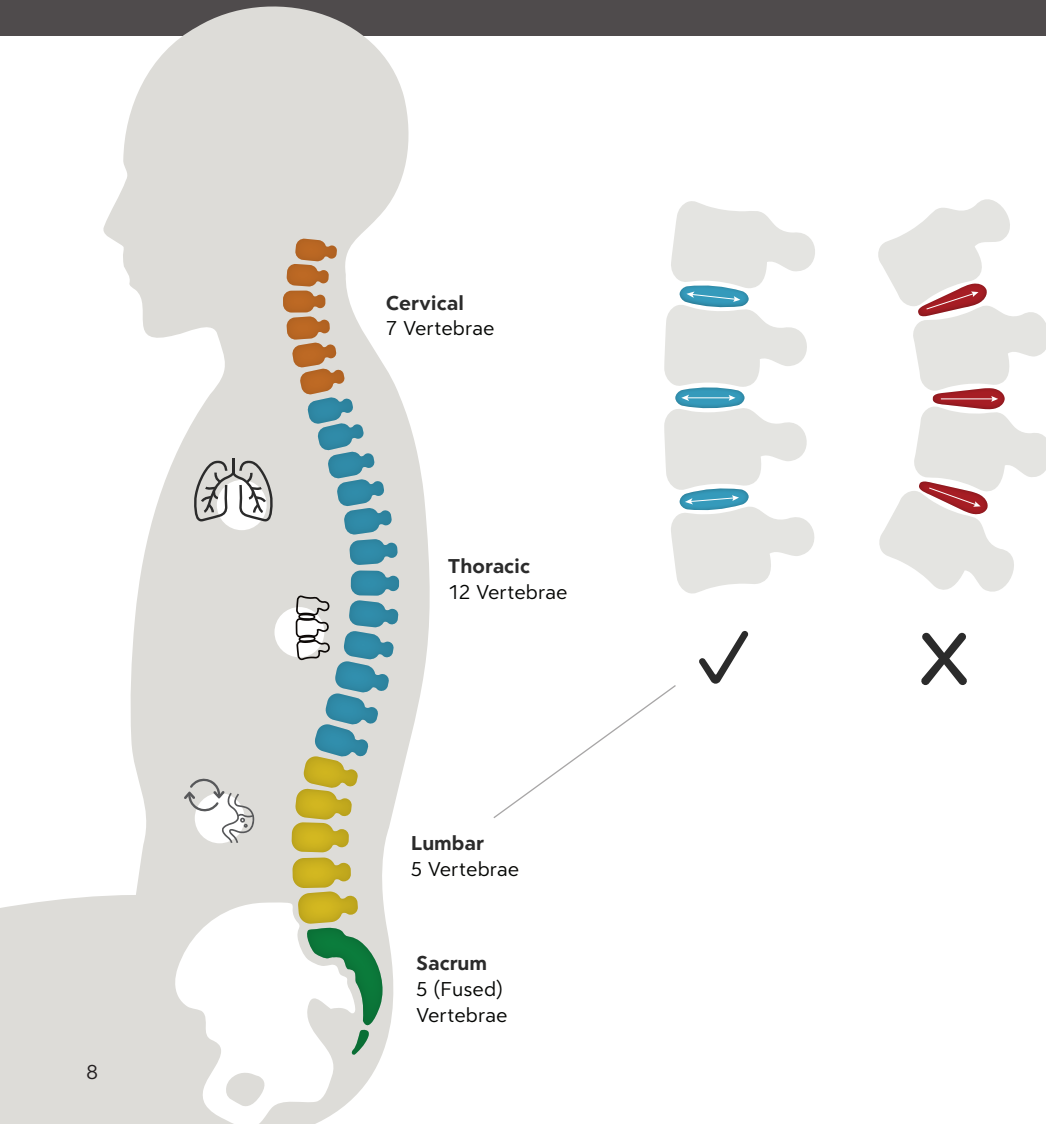
WHY IS GOOD POSTURE DIFFICULT TO MAINTAIN?

HINT:
IT'S NOT YOUR FAULT!

Maintaining posture

Discomfort or pain is recognized by tiny pain sensors, called **nociceptors** located in the skin, joints, and muscles. These nociceptors send signals to the brain, and the body responds by changing positions.

Traditional office chairs fail to support the body in the right places, triggering the nociceptors, making it difficult to sit upright for long periods of time.



WHAT HAPPENS TO THE BODY DURING SITTING?



1 When sitting without support, the pelvis rolls backward to seek comfort and stability. This motion flattens out the lumbar and lower spine.

2 As the spine flattens in the lower region, the upper and thoracic spine falls forward.

3 The neck and head then move forward to the body's center, over its mass.

4 This "C" posture has been linked to compressed intervertebral discs, muscular tension, and increased pressure and discomfort in the neck, back, and hip areas.

5 As the upper spine falls forward, the shoulders rotate inward, increasing the risk for shoulder injuries.

6 Coupled with increase hip flexion, this slumped posture results in weak glutes, shortened hamstrings, and tight hip flexor muscles.

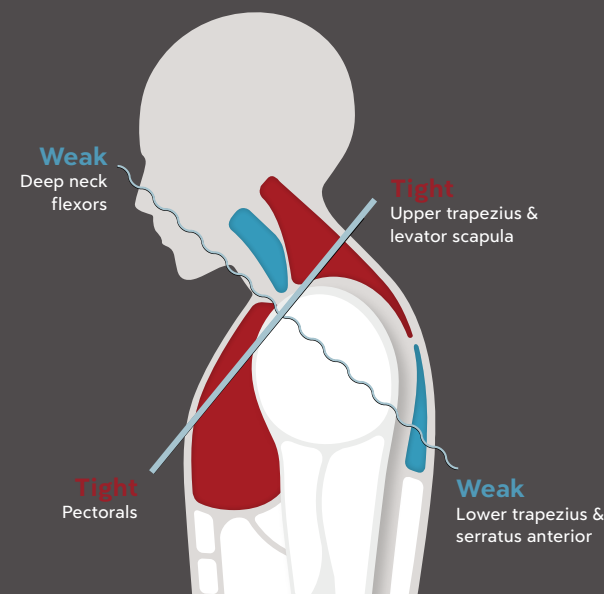
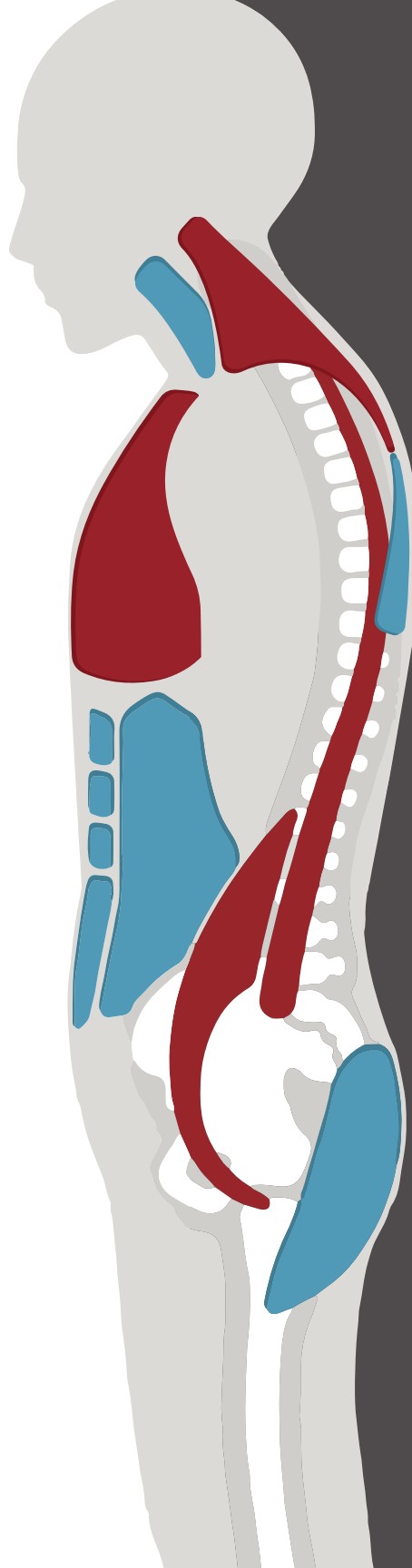
**THE AVERAGE PERSON
WILL SPEND ROUGHLY
23 YEARS OF THEIR
LIFE SITTING DOWN**

WHAT ARE THE RESULTS OF POOR SITTING POSTURE?

Sitting in poor posture affects the upper and lower body muscles

Over time, the “C” posture leads to some muscles becoming weaker and some becoming stronger, resulting in muscle imbalance.

Muscles, tendons, and ligaments adapt to positions over time. When the body is in the same position day after day, muscles and joints may become contracted and tight or stretched and weak, leading to restrictions of joint motion.



Upper body muscle imbalance

Sitting in a slouched posture lengthens and weakens opposing muscles.

Symptoms of this muscle imbalance may include:

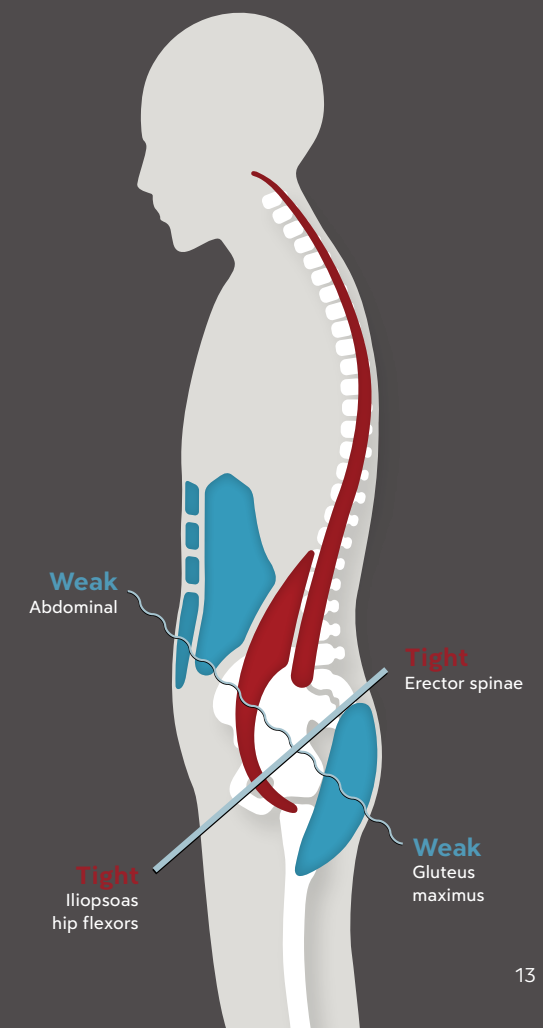
- Neck pain
- Shoulder pain
- Decreased range of motion of the shoulders, mid-back, and neck
- Feeling of tightness or discomfort with shoulder or neck movements

Lower body muscle imbalance

Sitting for long periods can also cause muscle imbalance in the lower body.

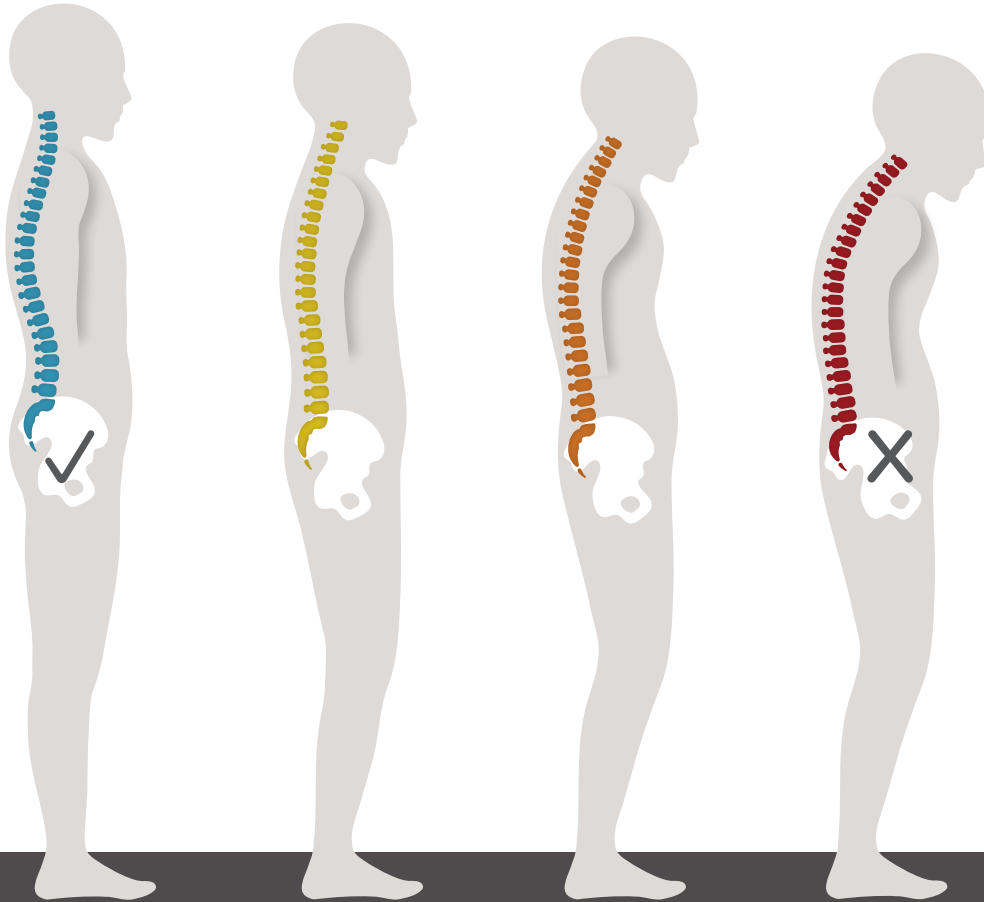
Symptoms of this muscle imbalance may include:

- Lower back pain
- Hip pain
- Decreased range of motion of the hips and lower back
- Feeling tightness or discomfort with hip movements



It's crucial to incorporate exercises that strengthen the weak muscles and stretch the tight muscles.

(See Appendix B)



CAN SITTING POSTURE AFFECT STANDING POSTURE?

Yes!

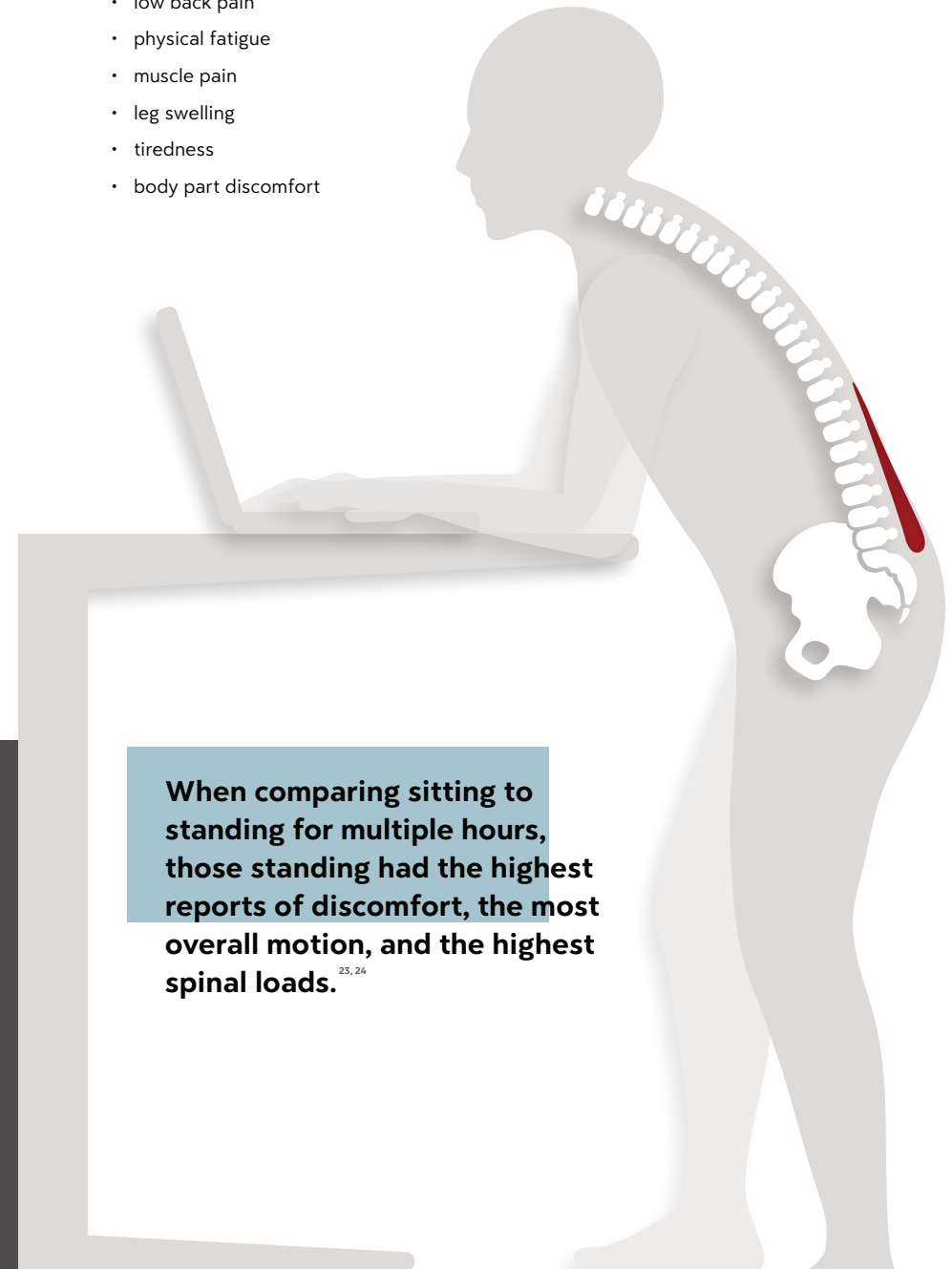
Prolonged sitting leads to lower body muscle imbalance – namely, weakened glutes and abdominals and tight hip flexors and erector spinae – all factors leading to poor standing posture.

ARE STANDING DESKS THE BEST ALTERNATIVE TO SITTING?

Standing desks can be effective to offer short sitting breaks; however, using a standing desk can result in poor posture and muscle imbalances since it can't offer the body postural support.

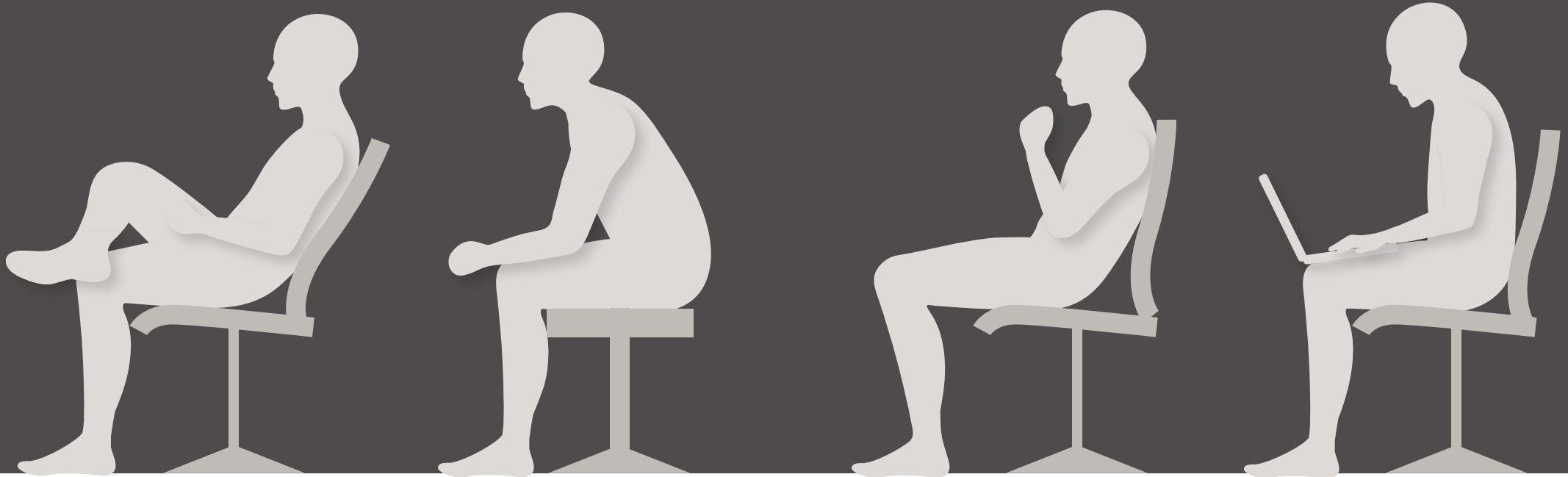
Studies have shown that prolonged standing can result in:

- low back pain
- physical fatigue
- muscle pain
- leg swelling
- tiredness
- body part discomfort



When comparing sitting to standing for multiple hours, those standing had the highest reports of discomfort, the most overall motion, and the highest spinal loads.^{23, 24}

Accept a little short-term discomfort as the body adapts to the postural changes. Think of it like getting braces: short-term discomfort leads to a beautiful result!



IS SITTING ALWAYS BAD?

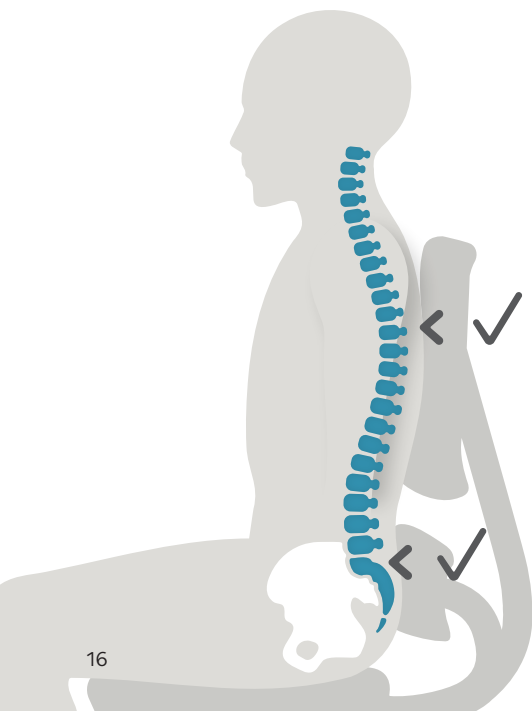
No!

Sitting doesn't have to be bad; unfortunately, though, most people are seated in chairs that don't support the body where it should be.

Good news!

It is possible to sit well, minimizing harmful muscle imbalances. Supporting the right parts of the body leads to an upright, elongated spine and better sitting and standing posture.

By sitting well in a good posture all day, every day, the body can be trained to an upright posture.



WHAT DOES IT TAKE TO UNDO THE EFFECTS OF BAD POSTURE?

Fixing poor sitting posture

Undoing the effects of bad posture can take time. Just like it took time for your body to change with poor posture, it takes time for the body to adapt to good posture!

It is a **PROCESS**. It's important to:

- Develop new sitting habits - sit in a chair that supports the body in the right places and ease into your best posture.
- Remember, a chair can't change your posture overnight - your body won't be used to good posture so pushing too hard, too fast to correct it can also result in discomfort.
- Work to stretch and strengthen - undo muscle imbalances by stretching and strengthening the right muscles (see exercises in Appendix B).

With intention and consistency in following this process it can take anywhere from 1-6 months to see your best results!

THE SOLUTION TO GOOD SITTING: ANTHROS

Designed by medical seating professionals with combined 70yrs+ experience in the wheelchair seating industry.

Anthros has designed a revolutionary chair that supports the body in all the RIGHT places to keep you in good posture comfortably all day. When supported in the right places, you can experience:

- increased comfort
- decreased back, neck, shoulder, or buttocks pain
- decreased fidgeting and repositioning, increasing focus and performance



THE INGREDIENTS OF GOOD SITTING

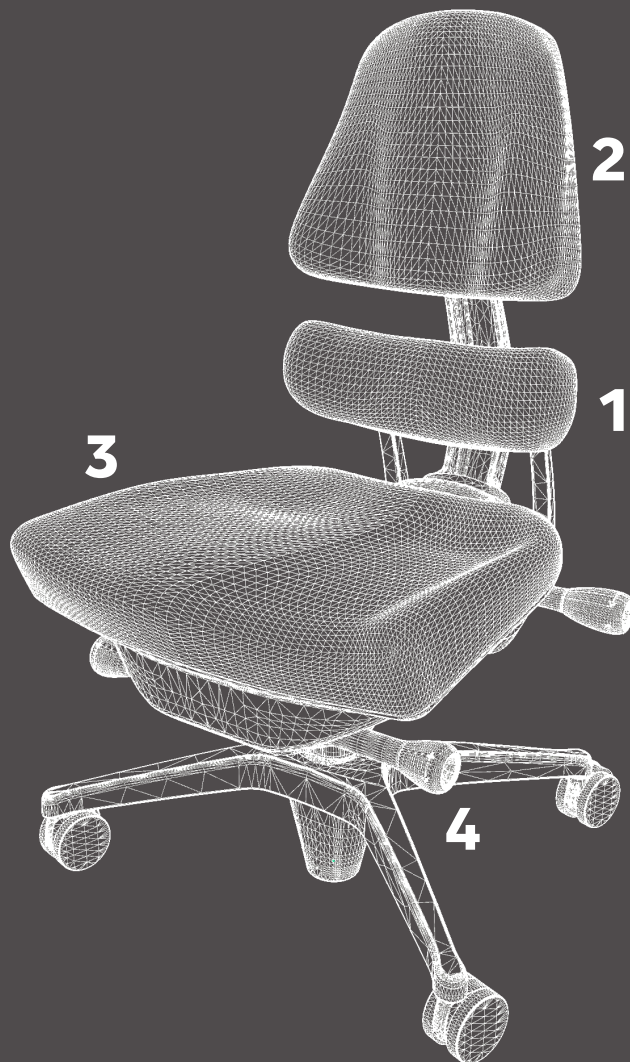
Based on research and sitting expertise, there are four key components to sitting well:

1 Support the pelvis, not the lumbar

2 Elongation of the spine

3 Protection for the sit bones against high pressure

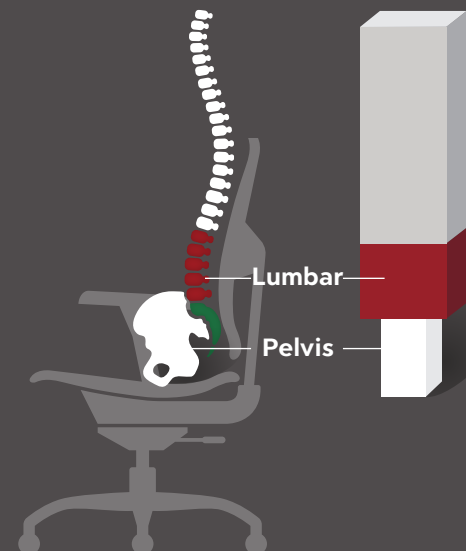
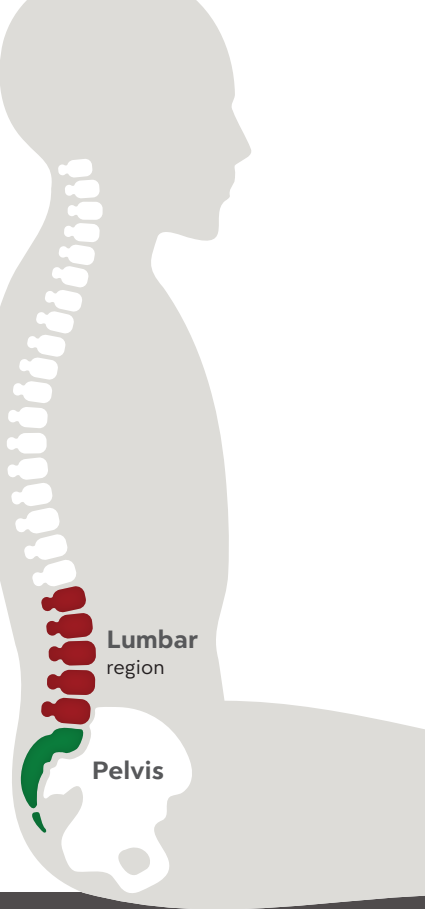
4 Maintenance of good posture in resting position



1 SUPPORT THE PELVIS, NOT THE LUMBAR

To support the pelvis in a neutral position, the office chair's support must be at the top of the pelvis, NOT at the lumbar spine.

Stabilizing the pelvis, not the lumbar, as the base of our support positions everything above in a neutral position and is the key to healthy sitting.



Think of the spine as a high-rise building: the concrete base, or the pelvis, is the foundation. The spinal column represents the multiple floors of the high rise. Traditional office chairs offer a lumbar support that supports "the building" on the 5th floor rather than at the foundation.

Providing traditional lumbar support may cause strain to the structures above and below.

To promote healthy spinal curves, the support must be at the foundation, namely the pelvis. This results in a stable, upright, and pain-reducing posture.

Anthros has designed an adjustable low back pelvis support that can accommodate individual shapes and sizes. It can be adjusted to meet the pelvis and hold it in a neutral posture, which is the foundation for upright sitting.

Could a lumbar support cause pain?

Yes!

Traditional office chairs incorporate lumbar support in the backrest. A “one-size-fits-all” approach doesn’t work for most people.

As a result, the body shifts into a posture to avoid the aggressive lumbar support. Sitting incorrectly in the chair only exacerbates the feeling of discomfort, continuing the cycle.



A lumbar support that lacks proper pelvis support allows the hips and pelvis to slide forward on the seat, ultimately creating a pelvic tuck that leads to a slouched position.

When this happens, the lumbar support makes very aggressive contact above the lumbar region, which often leads to additional discomfort or pain.



THE SHAPE OF THE LUMBAR SPINE WHEN SITTING DEPENDS DIRECTLY ON THE POSITION OF THE SACRUM CONNECTED TO THE PELVIS. THE SUPPORT SHOULD BE GIVEN TO THE PELVIS, NOT THE LUMBAR SPINE.⁸

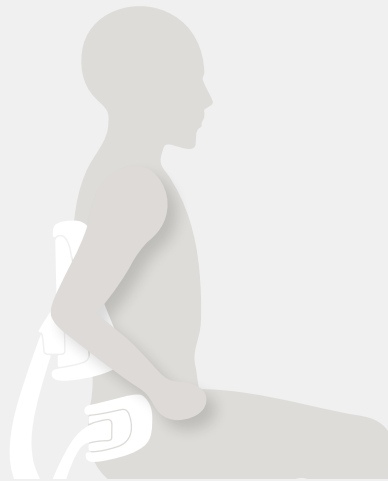
2 ELONGATION OF THE SPINE

Is a chair with a high back the best option?

No!



The common high-and-wide-back office chair is a contributor to bad posture. These chair backs are often contoured, and the contours don't match the shape of the average person. The wide surface causes the shoulders to round forward, resulting in a slumped posture with a forward head.



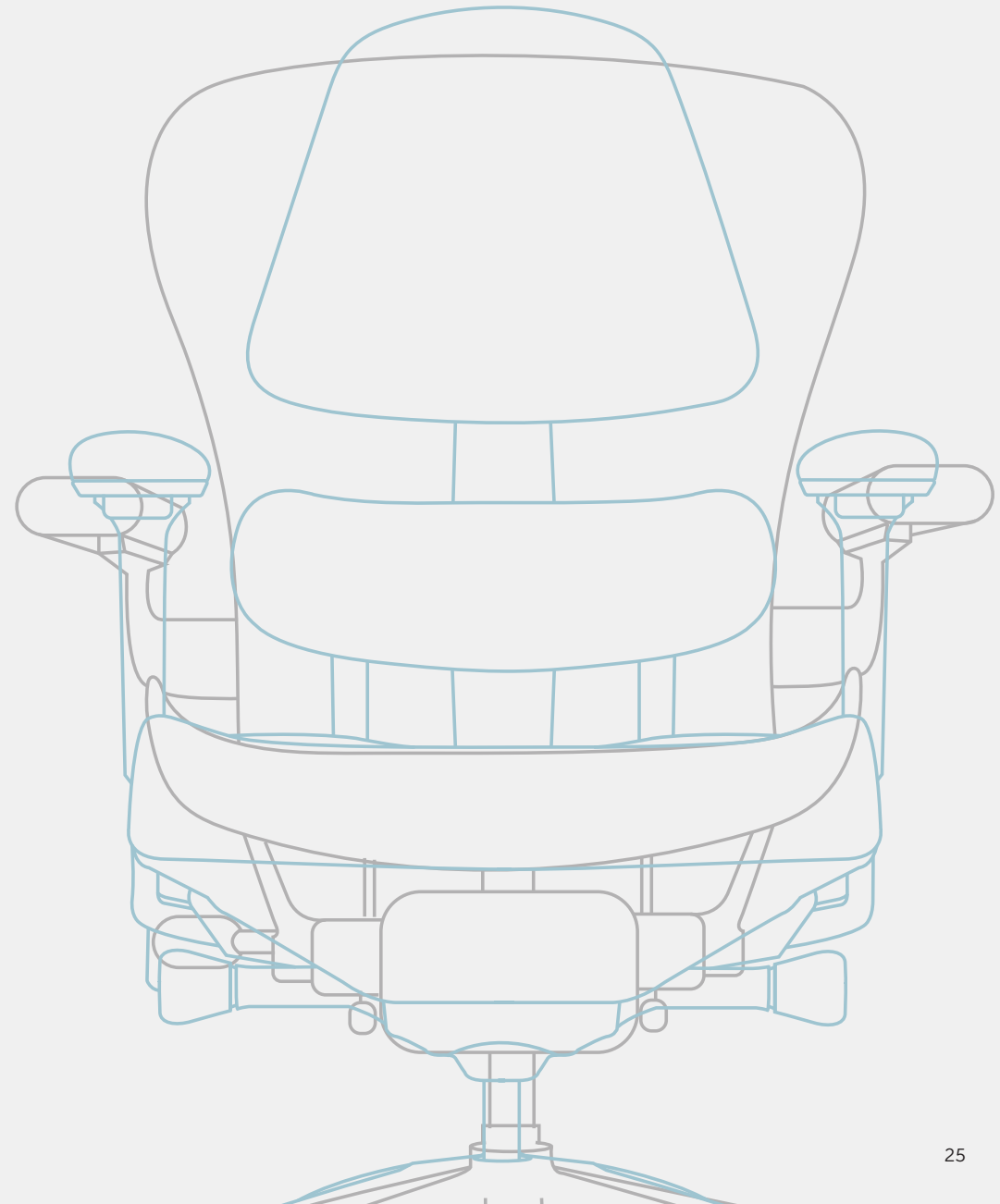
Anthros has designed an adjustable tapered support for the upper back that acts as a "posture motivator", promoting the elongation of the spine, elevating the rib cage, and lengthening the abdominal muscles. Good, upright posture, resulting in good, upright posture.

The taper allows the shoulders to be pulled back, bringing the elbows in line with the shoulder.

Will a tapered upper back support me? It looks too small!!

When it comes to providing the best back support, it's not the size that matters. Rather, it's all about placement.

Even though the tapered upper back looks small compared to the traditional high and wide backs, it provides support only where needed. This allows movement where it's wanted, namely for the shoulders.

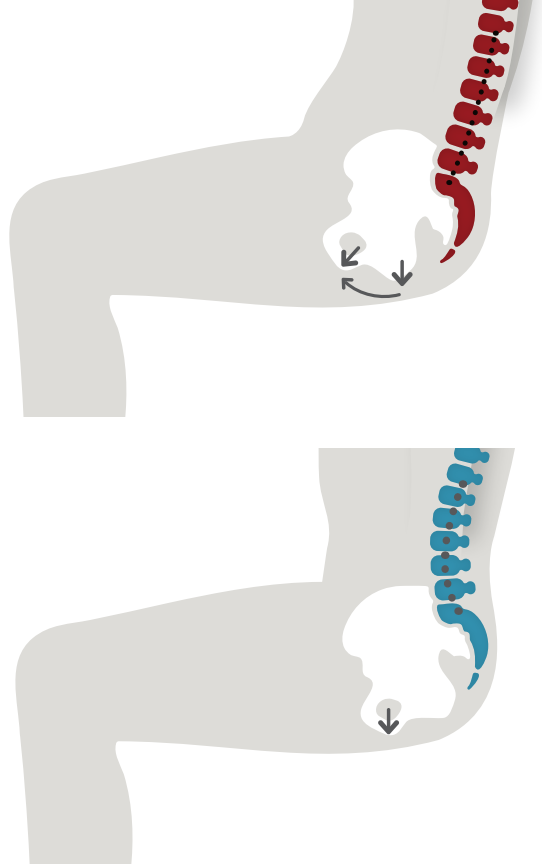


3 PROTECTION FOR THE SIT BONES AGAINST HIGH PRESSURE

When sitting for long periods of time on a mesh seat or a hard surface, the sit bones cause high-pressure areas that result in discomfort.

Most of us tuck the pelvis to relieve pressure from the sit bones.

Not only is posture compromised but comfort is also affected in this inefficient posture, which may also result in increased pain.

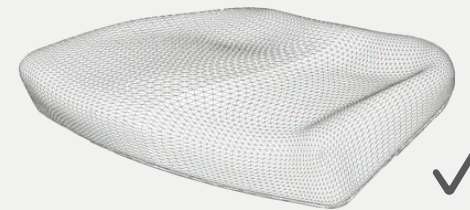


SYSTEMS IN THE HUMAN BODY, INCLUDING THE NOCICEPTORS IN THE SKIN, RECORD THE CHANGES IN THE STRESSED SURFACE UNDER THE SIT BONES AND SEND THE INFORMATION TO THE BRAIN INFLUENCING INTERPRETATION AND EVALUATION OF SEAT COMFORT. ¹⁵

Mesh is not the best option!

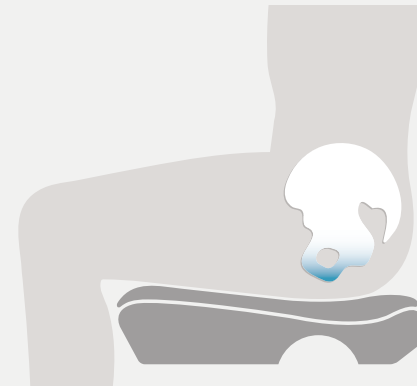
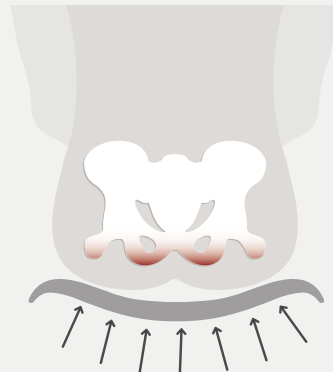
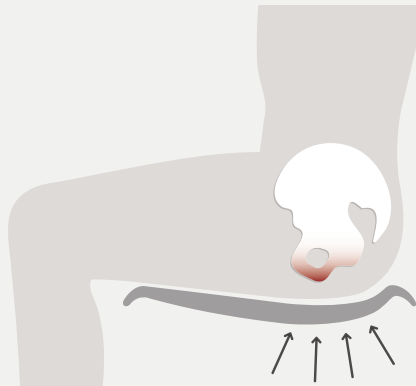
A chair cushion with an adequate amount of contoured foam – not mesh – will increase sitting comfort by:

- reducing pressure on the sit bones
- aligning the legs in a neutral position
- decreasing the risk of sciatica
- supporting the pelvis in neutral to maintain an upright posture



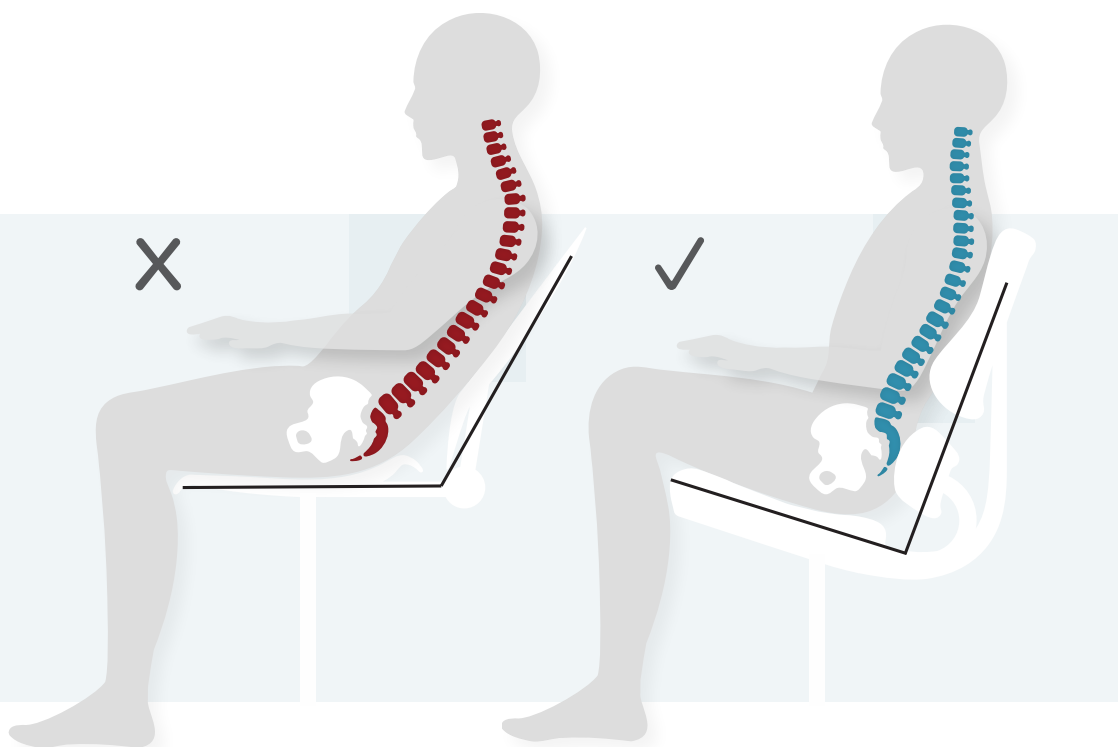
Contoured foam is the best option!

Based on results of 3D Human Modeling testing, Anthros has added patented pressure-relieving cutouts under the sit bones, increasing comfort.



4 MAINTENANCE OF GOOD POSTURE IN RESTING POSITION

A resting posture is important in an office chair, especially when taking a phone call or relaxing during the workday.



Recline

Opening the back angle causes the pelvis to tuck and slide forward in the seat. This results in a slumped "C" curve and forward head.

Tilt

The seat and back tilt rearward together, maintaining posture and alignment. This prevents sliding forward on the seat surface and avoids the unwanted effects of recline.

TILT REORIENTS THE BODY IN SPACE TO REDUCE THE EFFECTS OF GRAVITY AND PROMOTE NEUTRAL POSTURE. ²²

CONCLUSION: ONLY ANTHROS IS DESIGNED WITH THE COMPONENTS OF GOOD SITTING

Most high-end “ergonomic” chairs lack one or more of the four components of good sitting!

	ANTHROS	TRADITIONAL OFFICE CHAIRS
Adjustable low back pelvis support	✓	✗
Adjustable upper back support	✓	✗
Pressure-relieving cushion	✓	✗
Posture-saving gravity-assisted tilt	✓	✗



APPENDIX A

HOW CAN THE PERFECT OFFICE CHAIR MINIMIZE/PREVENT PAIN?

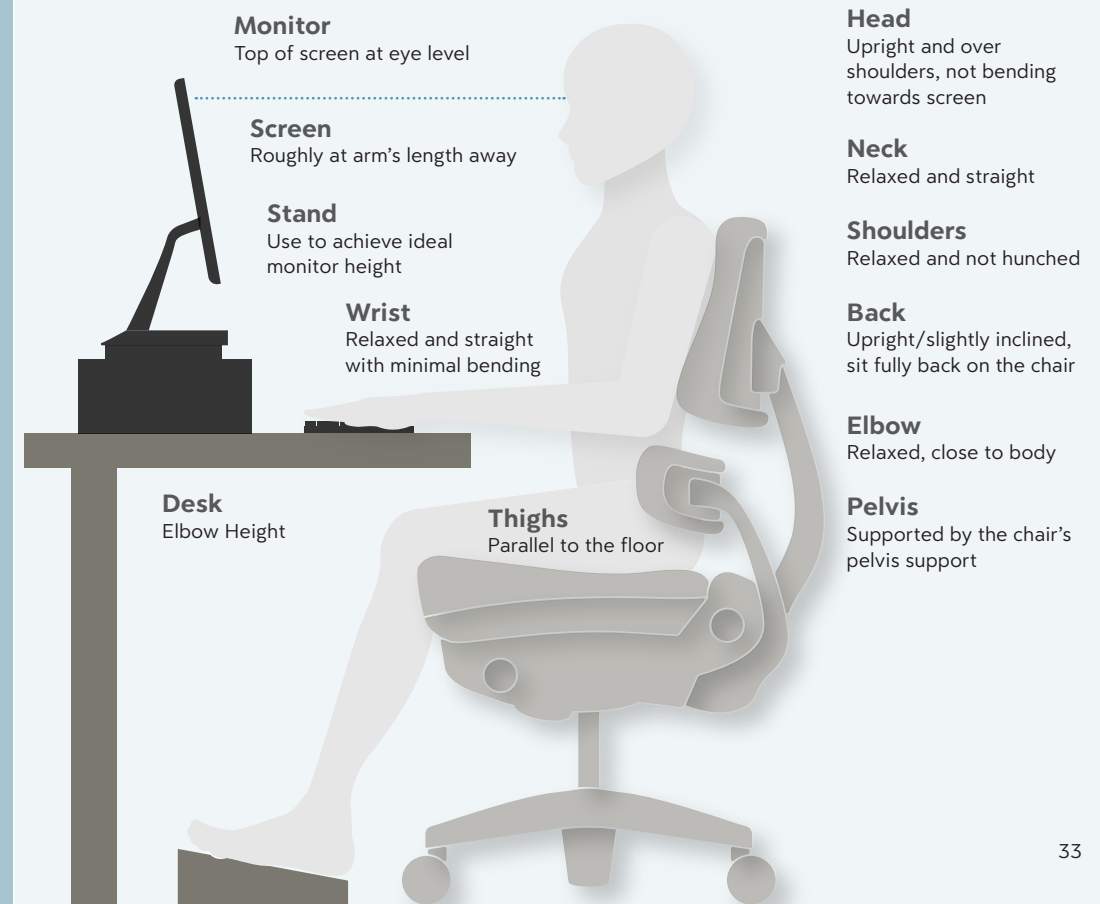
WHAT YOU ARE FEELING	WHAT THE BODY IS EXPERIENCING	HOW THE PERFECT OFFICE CHAIR CAN HELP
Chronic tension headaches Migraines Neck pain	➤ Forward head posture	➤ Provide pelvic support independent of backrest to promote upright posture
Spinal fractures Rotator cuff dysfunction Frozen shoulder Shoulder pain	➤ Increased Thoracic Kyphosis Rounded shoulders	➤ Provide trunk extension independent of pelvis to increase upper back mobility ➤ The back should be narrow at the top to not push shoulders forward
Low back pain Lumbar disc herniation Weakened abdominal muscles Decreased hip range of motion	➤ Posterior Pelvic Tilt	➤ Provide support at or below pelvis to prevent pelvis collapse and place pelvis in anterior tilt
Carpal Tunnel Syndrome Wrist pain	➤ Unsupported elbow	➤ Provide height and width adjustable arm support to be placed directly below the shoulder at 90°
Sciatica Piriformis syndrome Hip pain Knee pain	➤ Sitting with legs spread	➤ Provide contour on the seating surface to support the upper thigh in neutral alignment

APPENDIX B

SET UP YOUR WORKSPACE

The whole picture of the workspace and interaction with the chair.

Not only do you need an office chair that supports you in the right places with the four components of good sitting, but you must also address your workplace set-up and commit to exercises to maintain proper posture and alignment.

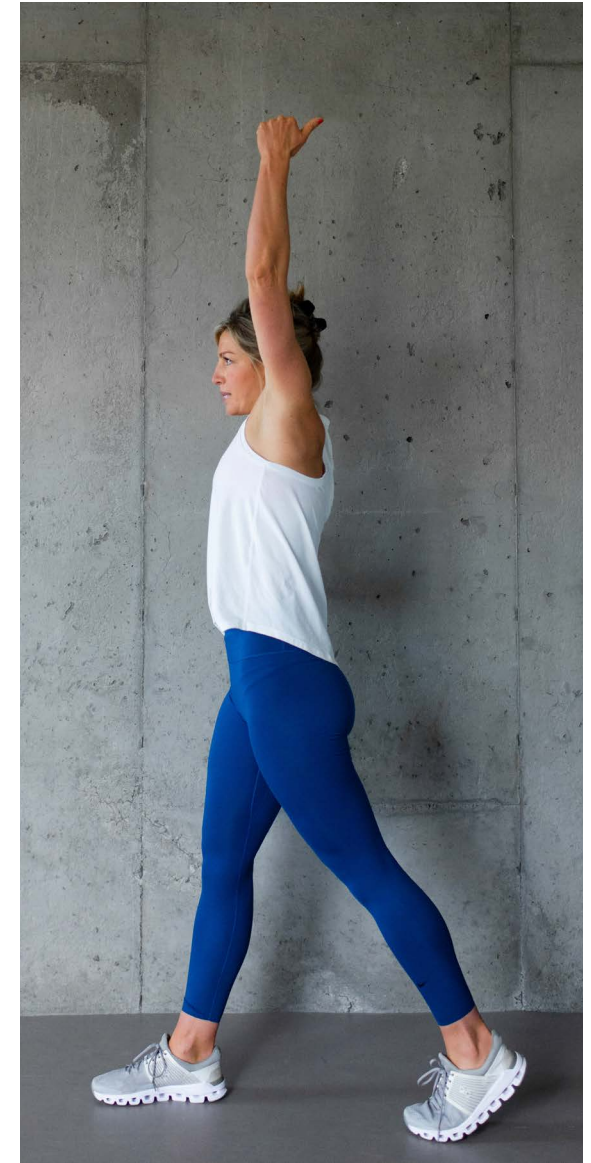


APPENDIX C

5 EXERCISES + STRETCHES TO “UNDO” THE NEGATIVE EFFECTS OF SITTING

1 ANTERIOR CHAIN STRETCH

Muscles Stretched: Hip Flexors,
Quadriceps, Core



- i. Step your left foot back about 2-3 feet behind you.
- ii. While keeping your back heel 2-3 inches off the ground, shift 50% of weight into the ball of the back foot. Stand tall.
- iii. Reach left arm overhead and point thumb backwards.
- iv. Tuck pelvis under, and while standing tall to open front side of body, lean slightly to the right to lengthen and open torso.
- v. Should feel gentle stretch on the front of the right side of the body.
- vi. Hold for 1 minute and repeat on the other side.

2 CHEST OPENER

Muscles Stretched: Pectorals

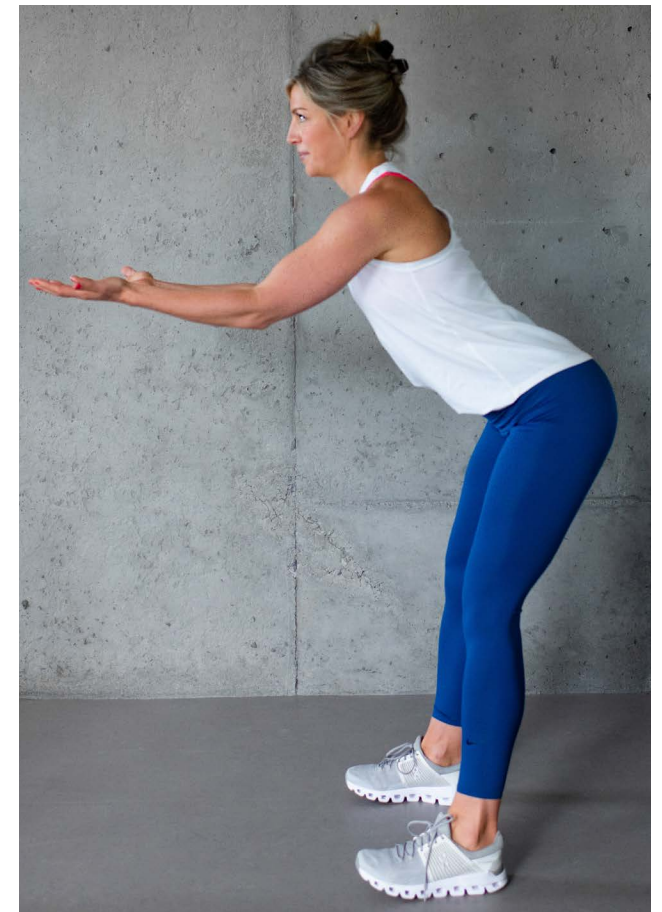
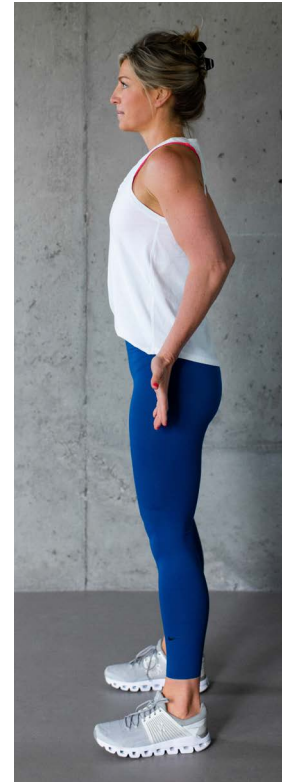
- i. Face the wall and place your right arm (bent at 90 degrees) on the wall about shoulder height. Your hand should be 2-3 inches above your head.
- ii. Rotate body to the left and turn away from the arm on the wall.
- iii. Should feel gentle stretch throughout chest area.
- iv. Hold for 1 minute and repeat on other side.



3 HIP HINGE

Muscles Activated: Hamstrings, Gluteals, Erector Spinae

- i. Stand with feet shoulder-width apart and with an open chest and palms facing forward, shift weight onto heels.
- ii. Unlock knees, and with a long and neutral spine, hinge hips back behind heels.
- iii. Allow hands to come forward to counter as the hips pull back.
- iv. Return to standing position with spine long and palms forward.
- v. Should feel gentle stretch down backside of legs.
- vi. Repeat 15 slow hip hinges.





4 WOODPECKER (SINGLE LEG STATIC HINGE)

Muscles Activated: Hamstrings, Gluteals

- i. Stand with feet shoulder-width apart and step your right foot back about 2-3 feet behind you and lock your back knee.
- ii. Push up on the ball of the back (right) foot and place all your weight on the heel of the front (left) foot.
- iii. Soften the front knee and with a slight bend in the front (left) knee, position left knee directly over left heel.
- iv. Hinge left hip back and allow your torso to bend (at the spine) forward.
- v. Hold this position while actively pushing your front (left) heel into the ground until you can feel the left glute engaging/activating.
- vi. Hold for 20-30 seconds and repeat on other side.

5 QUADRICEP STRETCH

Muscles Stretched: Quadriceps, Core

- i. Stand with feet shoulder-width apart, bend your left knee, and place the top of the left foot on a chair behind you. *Chair seat should be about 15-20 inches off the ground.
- ii. Tuck the pelvis under by engaging glutes and flattening lower back.
- iii. Reach left arm up and with thumb pointed backwards, focus on lengthening torso.
- iv. Should feel gentle stretch on front of left thigh.
- v. Hold for 1 minute and repeat on the other side.



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**This is also supported by results from the study by Cascioli et al. (2016), presenting a methodology using in-chair movements (ICM) to measure discomfort. Their findings indicate a positive relationship between ICM and discomfort, i.e. discomfort increases when ICM increase.*

Reducing slouched posture will decrease pain

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