

FLATTEN YOUR CHEST

**EXERCISES AND TECHNIQUES TO IMPROVE
PECTUS EXCAVATUM**

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This book is not intended as a substitute for the medical advice of physicians. The reader should regularly consult a physician in matters relating to his/her health, and particularly with respect to any symptoms that may require diagnosis or medical attention.

The reader should consult their primary physician before attempting any exercises or techniques described in this book.

The information in this book is meant to supplement, not replace, proper strength training. Like any sports activity involving speed, equipment, balance and environmental factors, strength training poses some inherent risk. The authors and publisher advise readers to take full responsibility for their safety and know their limits. Before practising the skills described in this book, be sure that your equipment is well maintained and do not take risks beyond your level of experience, aptitude, training, and comfort level.

ABOUT THE AUTHOR

I have lived with Pectus Excavatum with most of my life. I first noticed I had PE when I was 6 years old. My father mentioned that I have a small hole in my chest, although I didn't think much about it at that time. For most of my childhood the hole was fairly insignificant, until I turned 13 and puberty came. From then on, I grew rapidly and so did the depression in my chest.

By the time I was 19 I had stopped growing and my sternum was sunken in so deep it was touching my heart. I went to many doctors asking for a way to fix it. All but one told me that my condition was purely cosmetic. It wasn't. Throughout my 20s I suffered from dizzy spells and fainting attacks. I would stretch while standing up and suddenly wake up on the floor. My resting hear rate was abnormally high, and I had reduced stamina. even though I was in great athletic shape.

A few years after being rejected for surgery I decided to fix my condition on my own. It took years of research as well as trial and error, but finally I achieved near complete correction of my pectus deformation, and with it all the health benefits, including better lung capacity, improved breathing and better heart function.

This book is the culmination of all the things that I've learned throughout my journey to fix my Pectus Excavatum.

WHAT IS PECTUS EXCAVATUM

As defined by the Mayo Clinic, Pectus excavatum is a condition in which a person's breastbone is sunken into his or her chest. In severe cases, pectus excavatum can look as if the center of the chest has been scooped out, leaving a deep dent.

While the sunken breastbone is often noticeable shortly after birth, the severity of pectus excavatum typically worsens during the adolescent growth spurt.

Also called funnel chest, pectus excavatum is more common in boys than in girls. Severe cases of pectus excavatum can eventually interfere with the function of the heart and lungs. But even mild cases of pectus excavatum can make children feel self-conscious about their appearance. Surgery can correct the deformity.

For many people with pectus excavatum, their only sign or symptom is a slight indentation in their chests. In some people, the depth of the indentation worsens in early adolescence and can continue to worsen into adulthood.

In severe cases of pectus excavatum, the breastbone may compress the lungs and heart. Signs and symptoms may include:

- Decreased exercise tolerance
- Rapid heartbeat or heart palpitations
- Recurrent respiratory infections
- Wheezing or coughing
- Chest pain
- Heart murmur
- Fatigue

THE PROCESS OF REVERSING PECTUS EXCAVATUM

It is the opinion of the author of this book that posture in formative years of one's childhood plays a major role in chest development and may be one of the leading causes of Pectus Excavatum.

Therefore, if we are to reverse our condition, we must improve our posture, and produce a force opposite of the one that caused our chest to grow inwards.

This process will not be easy, and will require major life changes and daily exercises. It will require dedication and motivation. In this book I will explain how you will go about achieving this and in a span of 1-2 years may be able to completely, or at least close to completely, reverse your Pectus Excavatum.

It's important to note that this program will not work for everyone. Severe cases or very asymmetrical cases of PE might not be able to be corrected without surgery.

Furthermore, some cases of PE will benefit more from certain aspects to this program than others. For example, some will benefit more from stretching than vacuum bell usage, such as with platylthorax (where the entire chest wall is flattened towards the spine, like a pancake) or more valley like PE shapes (as opposed to bell or funnel shaped PE that is more common).

You should consult your primary physician whether you should proceed with the program, as they will be best equipped to consult you about your condition.

The process of PE repair described in this book will be roughly broken into 5 aspects:

The most important aspect of improving your PE is posture correction. Think of it as the foundations of a building. If your posture is incorrect then all other exercises described in this book will be for naught.

The second most important aspect will be daily stretching. The daily stretching will keep your muscles and connective tissue around your chest loose and relaxed.

The third aspect is strength training. By training your muscles you will make them larger, stronger and more durable, allowing you to keep good posture throughout the day. There is also the secondary benefit of bone strengthening, as thanks to Wolff's law bones get stronger when repeated mechanical load is put on them. Therefore, through strength training we will aim to thicken our sternum.

The fourth aspect is vacuum bell (VB) use. Using the VB, we will temporarily flatten the sternum, and through repeated usage make it thicker and straighter. Although we could get decent PE correction without the VB, potentially over 50%, the VB is needed for optimal results and complete correction.

And lastly the fifth aspect is breath training. By training our lungs through breath holding we will increase our lung capacity and also loosen and warm up our intercostal muscles, allowing for greater chest expansion.

THINGS YOU WILL NEED

During the course of this program you will require a few items. How you will use these items will be explained further in the book.

- **Tape measure and straight ruler**
These will be used to measure the depth of your PE on a daily basis. The ruler should be sturdy enough to survive being pressed against the chest.
- **Vacuum Bell**
This device will be used to temporarily pull out your sternum. You can buy one online from a manufacturer directly or from a reseller on internet marketplaces such as Amazon or eBay. This will cost you about 200-500 USD, depending on shipping and seller. It's important that the device is professionally made from medical grade silicone. It's best to talk with your primary physician before buying the device, as they will be able to assist you with the technical details.
- **Elastic resistance band**
Preferably a thicker one with higher resistance.
- **Exercise ball or a stretching stool**
The stool can be constructed by combining a towel, a stool and broom handle – the instructions are provided in this book. If you do not want to construct one then just use an exercise ball.
- **Yoga mat, or something similar to it, like a soft rug or thick blanket.**
Needed for stretching before using the vacuum bell.
- **Shoes with no heel rise**
For proper posture you will need shoes that have flat soles with no heel raise, i.e. “zero drop” shoes.

- **Pull up bar, parallel bars and gymnastic rings**

You will need access to these to perform the exercises explained in the strength training guide of this book.

- **5kg / 12lb dumbbell**

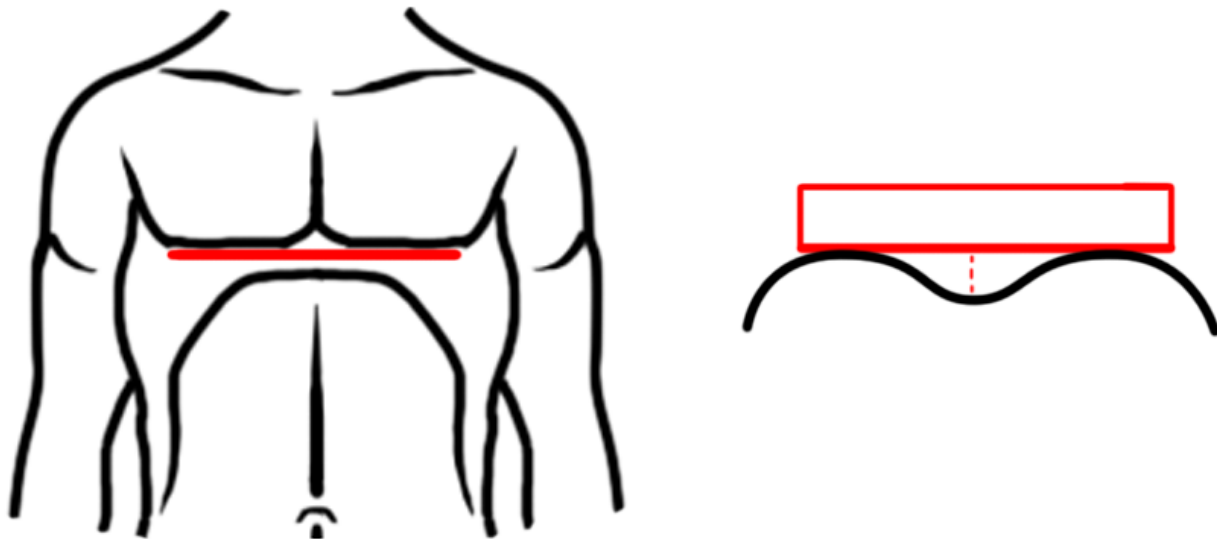
If you don't have a dumbbell then a plastic bottle filled with dirt or gravel will do.

DRAFT

MEASURING YOUR PE DEPTH

It is imperative that you measure and write down your PE depth every single day. Not only will this allow you to see how your PE improvement is progressing, but it will also keep you motivated in times when you will feel like you are not progressing at all.

To measure your depression, you place the edge of your ruler under your pectoral muscles, where the thickness between your skin and ribcage is at its thinnest, and press the ruler hard against the rib cage. Then, with your other arm you measure the distance from the ruler to the depressed sternum with your tape measure. The amount of pressure applied to the ruler when pushing it into the chest as well as the spot measured should be exactly the same with each measurement.



This image shows where the ruler should be placed. The dotted line shows the PE depth measurement performed with the tape measure.

Measurements should be taken every day at the same time, preferably directly after you wake up, as well as directly after each vacuum bell usage. You can measure while sitting down, lying down or standing with good posture, but it should always be performed in the same conditions.

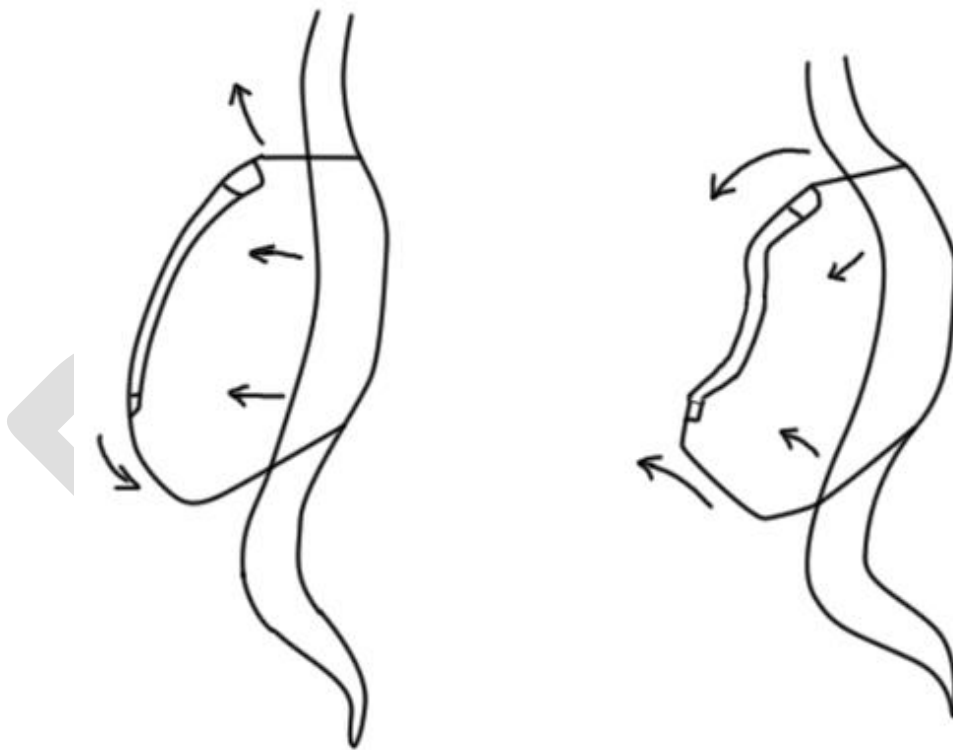
If you measure for the first time in the morning while standing up then you should measure like that every day from now on.

POSTURE

If you have Pectus Excavatum then there's very high chance you also have poor posture. And you will need to improve it before you are able to improve your PE.

Good posture will be the foundation of this program. It will be an ongoing struggle throughout these months, and something you will have to pay close attention to every waking moment from now on.

HOW POSTURE AFFECTS YOUR CHEST DEVELOPMENT



This image shows how forces act on your chest when your posture is correct (left) and when it's incorrect (right).

Your spine has great influence of your ribs, as each rib attaches to two vertebrae. When your spine is in the correct position your ribs will also be correctly aligned, and will be in a neutral position. When your spine is in an incorrect (slouching) position, your ribs will be incorrectly aligned and compressed at the furthest point away from the spine. This will in turn produce a force acting upon your sternum, leading to inward growth of the sternum.

Furthermore, with correct posture muscles of the upper body will keep the upper part of the sternum under constant tension pulling it outwards. When the posture is incorrect and shoulders are rounded the inverse will happen, and the sternum will be pushed downwards and inwards.

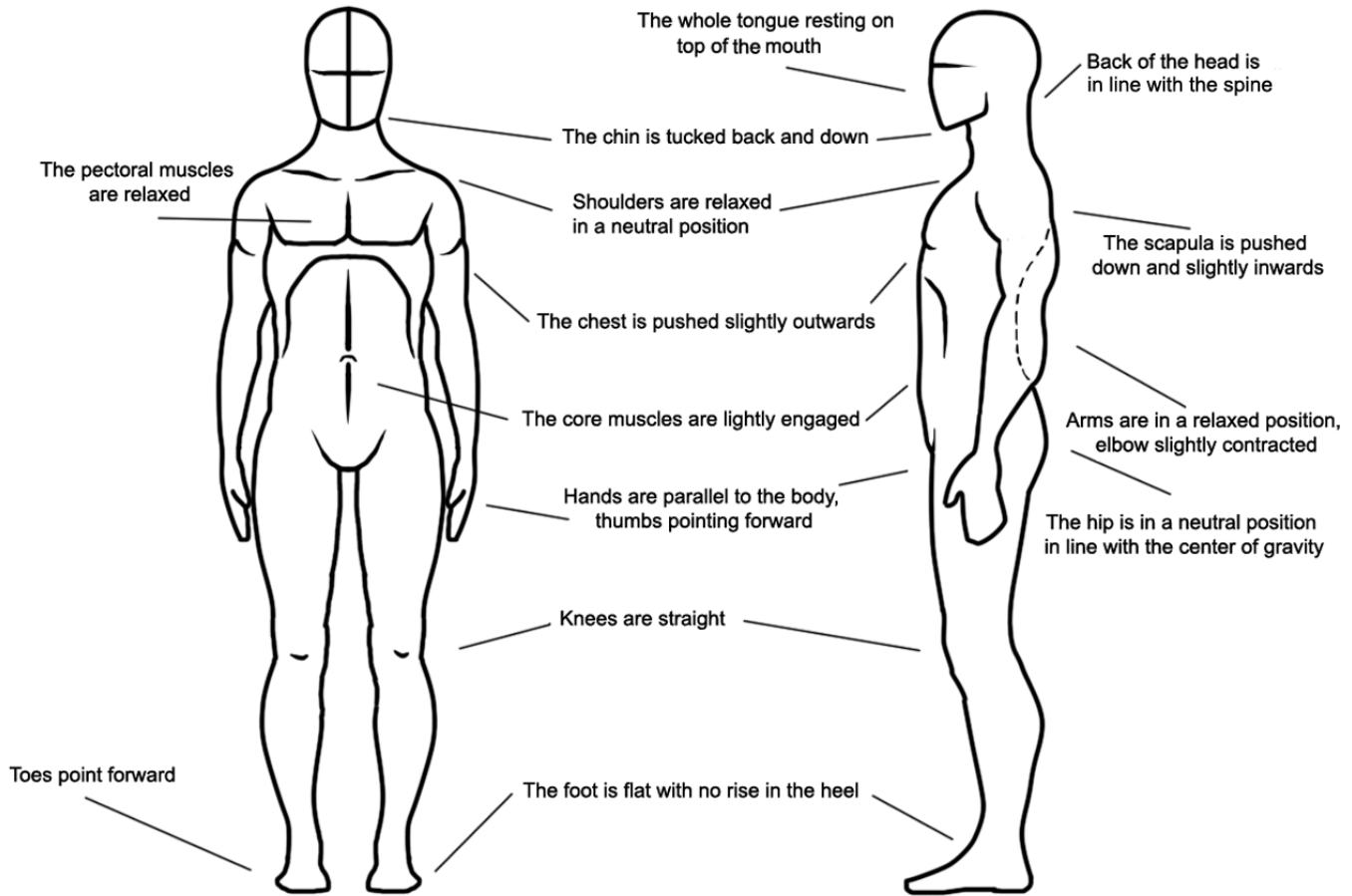
This in turn will compress the upper chest, making it hard to breathe. With correct posture your lower rib cage is kept under constant inward tension by the core muscles. With incorrect posture, the core muscles are relaxed and the lower rib cage is pushed outwards by the diaphragm, which has to expand outwards due to the compressed chest above it. This may, through several months, lead to flared ribs.

EXAMPLE OF GOOD AND BAD POSTURE

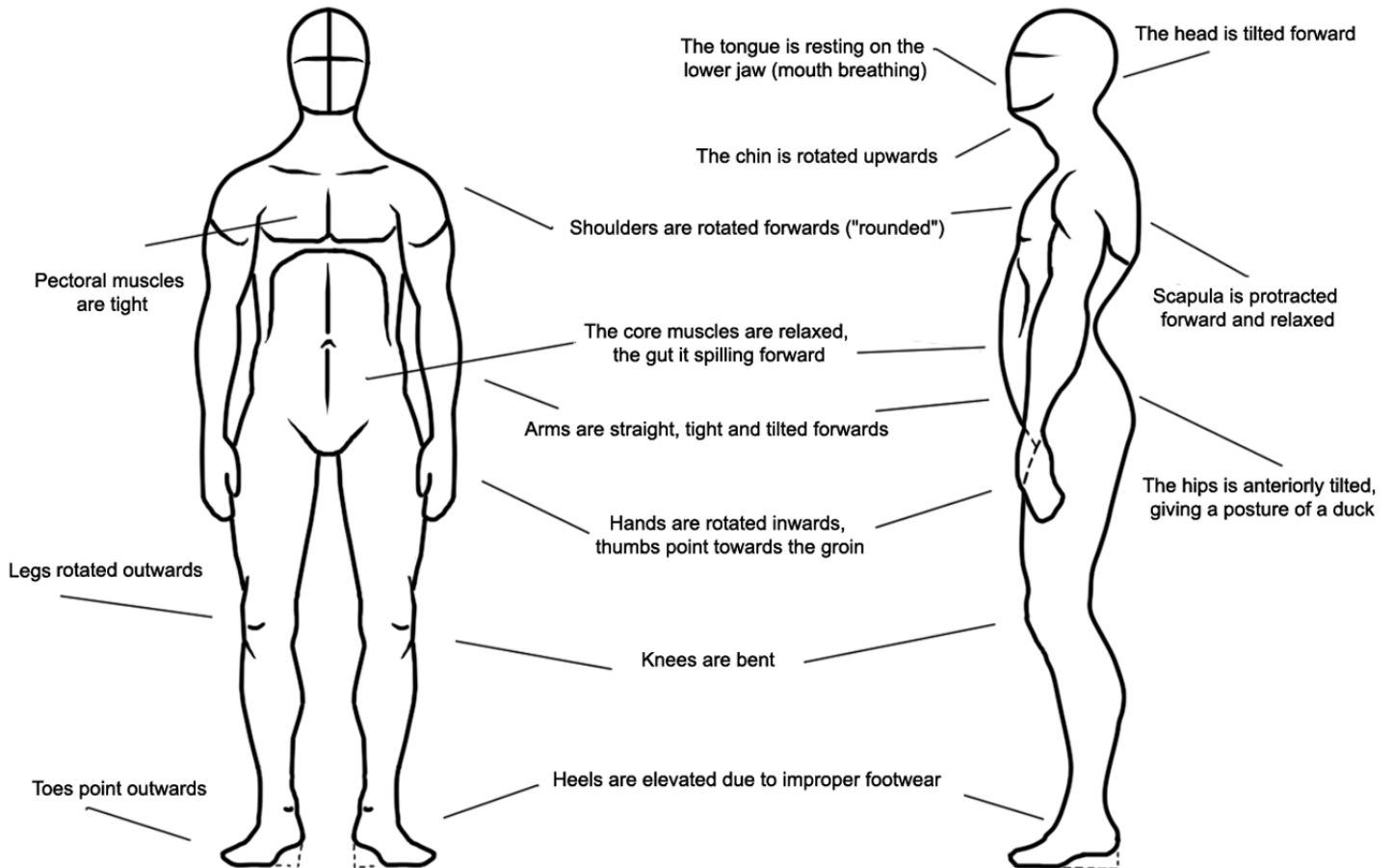
Good posture starts at the tongue and ends at the toes, and in between you have a chain of muscles and bones that have to be kept in balance.

The next two pages demonstrate how the incorrect posture and walking gait of those with PE usually looks like and how it's supposed to look like.

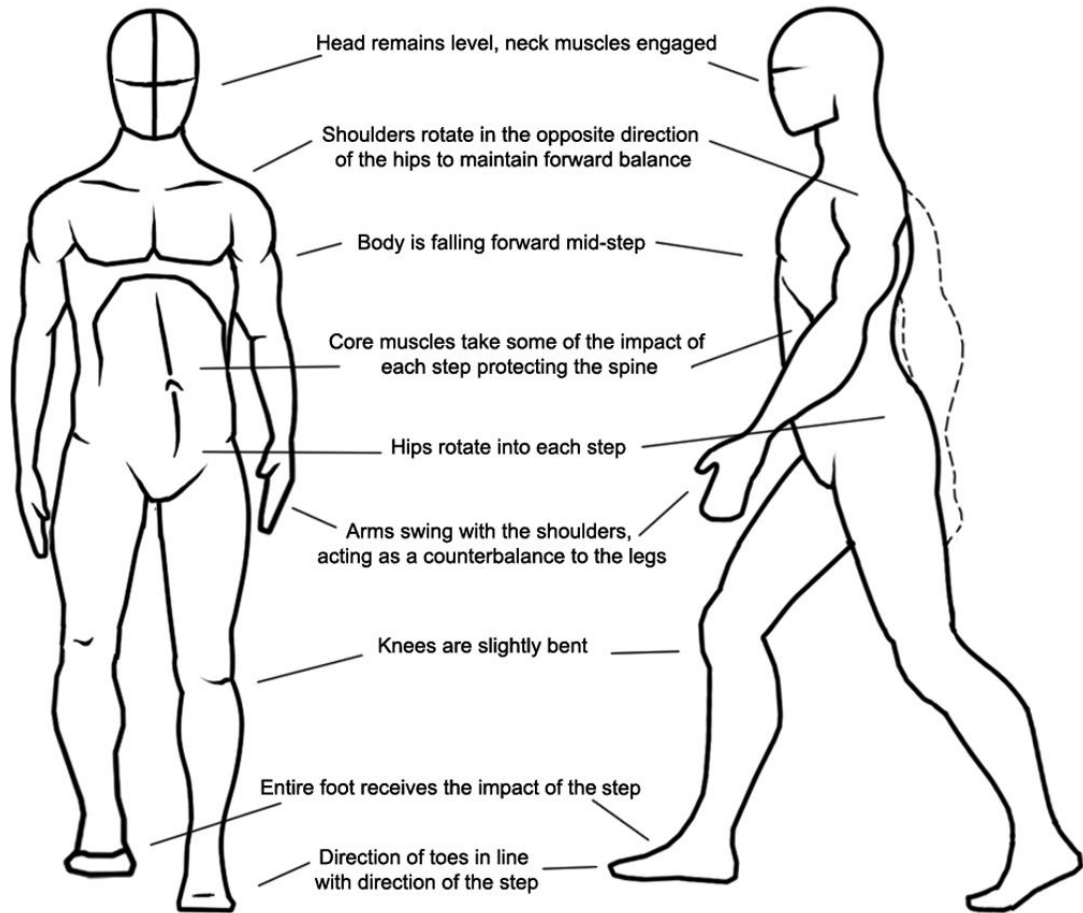
GOOD POSTURE



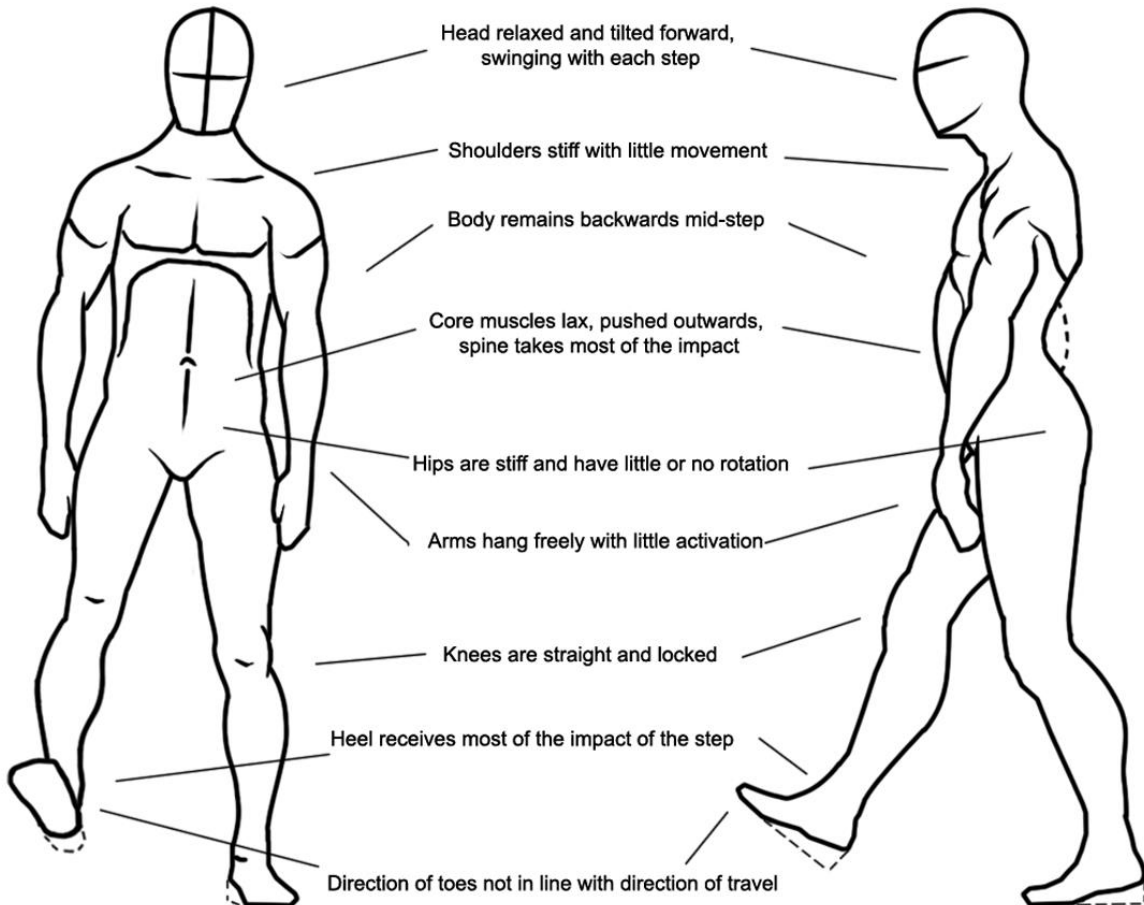
BAD POSTURE



PROPER GAIT



IMPROPER GAIT



As you can see the differences between good and bad posture are many, so let's break down how good posture should look like by body parts.

Head

The head should be pushed back so that it is in line with the spine. It should not protrude forward. The jaw should be tucked in so that the eyes are parallel to the ground.

Your tongue should rest at the top of your mouth. When the tongue is in the correct position it becomes impossible to breathe through your mouth, and you will naturally breathe through your nose.

Shoulders

Your main shoulder muscles (the deltoids) should be in a relaxed position. Your shoulder blades (scapula) should be pushed downwards and slightly together. You should not be trying to push your shoulders backwards.

Chest

When your head and shoulders are in the correct position your chest will rise upwards on its own. You don't have to force it out.

Core

Your core muscles should be lightly activated to maintain good posture. Your abdominal muscles should keep your lower ribs and gut in check

Arms

Arms should be relaxed with a slight comfortable bend in the elbow. Hands should be parallel to the body with thumbs pointing forwards.

Hips

Hip. Hips should not protrude outwards. They should be relaxed in a neutral rotation, so that they support your body in the vertical plain.

Pay close attention to the anterior rotation of your hips. If your hips are protruding outwards then you need to bring them back in by rotating the inwards.

Legs

The knees should be straight when standing, your feet should point forwards and there should be no elevation of the heel.

Any elevation of the heel will shift your center of gravity forward which will in turn destroy your posture.

WALKING

When it comes to walking gait, a proper gait means controlled falling from one leg to the other. It should be nearly impossible to stop walking mid-step. Improper gait will look more like a penguin shuffle, with the back leg carrying most of the weight.

Striking point on the foot is also important. You don't want your heel to take all of the force of each step. Your foot is arched for a reason - to soften the blow of the step when you make contact with both the front and the back of the foot.

You should practice walking with good posture at least 30 minutes a day. While doing so you should not carry a heavy backpack and your arms should be free to swing by your sides.

CHANGES NEEDED TO FOR GOOD POSTURE

In order to improve your posture, you will have to make a few changes to your life. You will be combating a lifetime of bad habits after all.

Shoes

The most important change will come to your shoes. Chances are, you are, like most people, wearing shoes that are tilted forwards, meaning the heel of the shoes is thicker than the front. This has the unfortunate effect of moving the center of gravity of your body forward as well, which forces your body to compensate so that you don't tip over. This compensation is what causes poor posture. Therefore, we need to remove the main cause of poor posture before we can start addressing it.

The shoes that you wear should be completely flat, with absolutely no tilt. If you were to put a marble inside the shoe it should stay in place, instead of rolling forward.

Examples of such shoes would be "zero drop" shoes, which are shoes designed specifically to have no tilt, or "drop", hence the name. These shoes can be quite expensive, but they are the best choice when it comes to posture correction.

Sleep

The way you sleep can have a big impact on your posture. Your body effectively stays in roughly the same position for 1/3 of the day.

The optimal way to sleep for posture and PE correction is on a very hard mattress, with no pillow, and on your back.

A hard mattress will not deform much from the weight of your body, meaning your spine will remain in proper alignment. Sleeping on the floor can be an alternative to sleeping on a hard mattress.

Pillows destroy your posture and round your spine forward, driving your upper chest inwards, which is the last thing you want if you have Pectus Excavatum. Therefore, you will have to learn

how to sleep without one. It will be difficult at first and will take a few months to get used to, but once you do get used to it you will never want to sleep with a pillow ever again.

The only way you should sleep for proper posture and chest expansion is flat on your back. Just like sleeping without a pillow, if you are not used to sleeping on your back you will have to force yourself to sleep like this. Stacking pillows around your body to prevent you from rolling to the side might help you get used to sleeping like this faster.

Your jaw should be tucked into your neck, so that the back of your head lies flat on the bed.

Sitting position

Slouching is very common in modern society. Due to computers and smart phones we have been conditioned to sit with our shoulder and back rounded forwards and our heads hanging downwards. Such posture leads to muscle imbalances which must be eliminated if we want to improve our PE.

Therefore, we must improve our sitting position so that our muscles rest in a neutral position. There is no single position that is the best, each individual will have to find what best works for them, but there is a good rule of thumb here - the closer your feet are to your hips and the closer your knees are to your chest (anterior chain is shortened), the better and more comfortable your sitting posture will be.

Therefore, sitting with your feet on the chair would make for a much better sitting position. You could sit in a lotus position, a squatting position, or a half squat half lotus position. Alternatively, you can use a small step stool to elevate your feet from the ground and shorten your anterior chain.

SPINAL ABNORMALITIES

If you have any spinal abnormalities such as kyphosis or scoliosis then that is something you will have to address separately, as it falls outside the scope of this book.

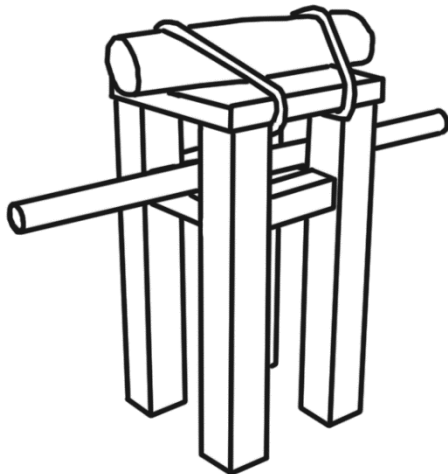
There are many resources, books and videos, made on this topic and there are doctors and physical therapists who specialize with rehabilitating the spine through stretching and exercise. It's best you research on how to proceed with that on your own.

DAILY STRETCHING

Stretching is paramount for good posture and proper chest expansion. If you have PE then you likely have overly tight muscles around your chest, as well as your upper back and hips due to incorrect posture.

STRETCHING STOOL

As the name implies, this stool is intended for stretching. It allows for great chest expansion and decompression of the spine.



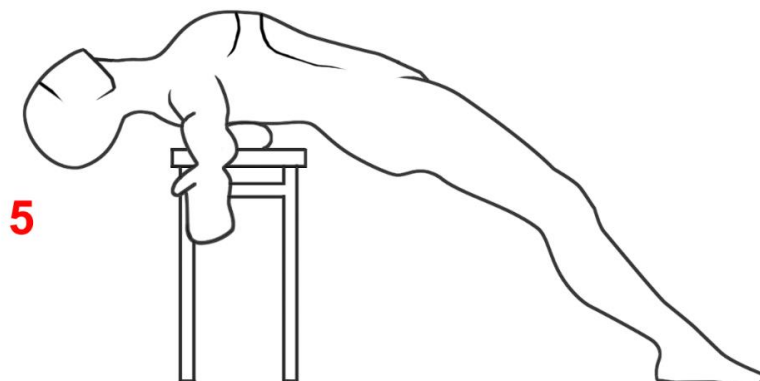
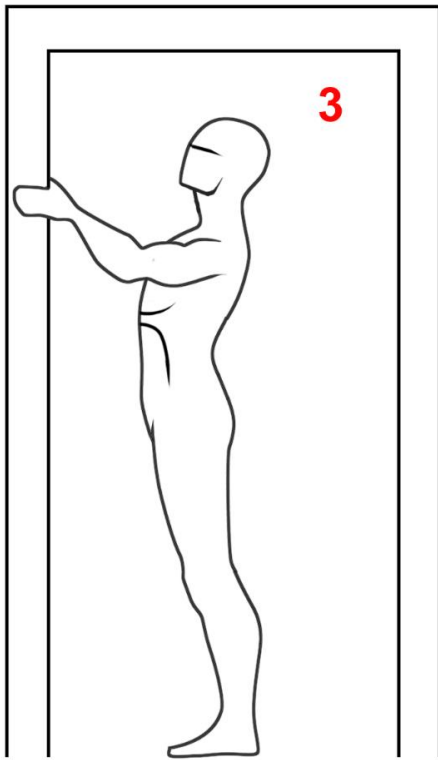
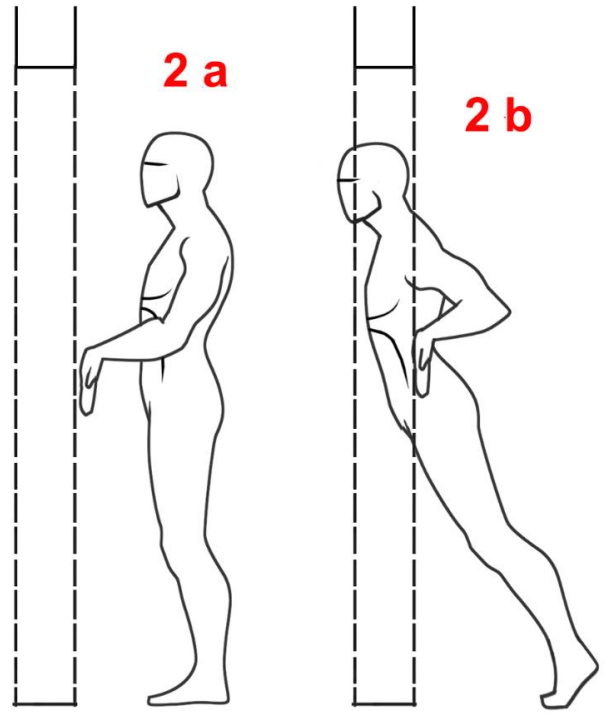
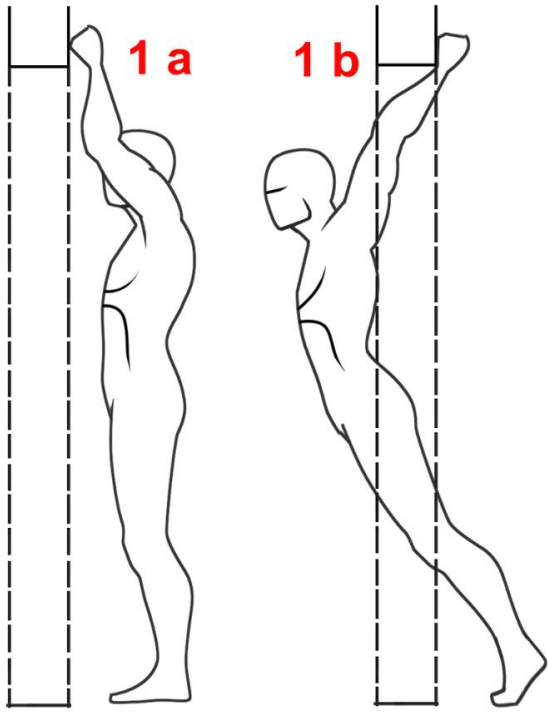
To make it, all you need is a wooden stool, a large rolled up towel, a broom handle and some rope. Put the towel on top of the stool and secure it with rope. Then put the broom handle under the stool and secure it with rope as well. Make sure that the rope will be able to handle the weight of your body. Use the broom handle to get on and off the stool.

If you do not wish to construct a stretching stool you may use a large exercise ball as an alternative.

DAILY STRETCHES

The next page will show you 5 stretches that **should be performed at least 3 times a day**, spaced throughout the day. You should stretch slowly and with control, making sure you're not using any momentum.

You might feel tightness on your ribs and sternum and perhaps even hear loud popping noises while stretching. Do not be alarmed as this is perfectly normal, it means your stiff chest is loosening up.



1 - Door frame lean 1.

1. Step about half a foot behind a door frame
2. Make a fist on both hands and put them on the top of a door frame with the pinky touching the frame and thumbs facing you (1 a)
3. Slowly lean forwards while maintaining a straight back and straighten your hands (1 b)
4. Hold for 5 seconds then slowly pull back
5. Perform this for 5 repetitions of at least 3 sets per day

2 - Door frame lean 2.

1. Step about half a foot behind a door frame
2. Put the palms of your hands on either side of the door frame at about belly button height with your fingers pointing downwards (2 a)
3. Lean forward as far as you can with your back straight (2b)
4. Hold for 5 seconds then slowly pull back
5. Perform this for 5 repetitions of at least 3 sets per day

3 - Door frame chest pull

1. Position your body inside the door frame facing one side
2. Grab the frame from both sides with your hands at about head height
3. Strongly pull downwards while pushing your chest out and your hips forward while keeping your back straight
4. Hold for 25 seconds then relax.
5. Perform these at least 3 times a day.

4 - Band pull

1. Stand straight with your feet together and knees together maintaining good posture
2. Grab your elastic band at both sides with each hand and place it behind your lower back
3. Rotate your hips inwards and push them forward
4. Pull the elastic band forward as hard as you can
5. Hold for 5 seconds then relax
6. Perform this for 5 repetitions of at least 3 sets per day

5 – Stool / ball stretch

1. Slowly lower your upper back onto the stool or exercise ball
2. Lean backwards and extend your arms outwards at your side
3. Put your feet as forwards as you can and maintain your toes and heels on the ground
4. Relax and maintain position for 2 minutes
5. Do this at least 3 times a day.

DRAFT

STRENGTH TRAINING

In order to maintain good posture as well as strengthen your sternum you will perform strength training exercises aimed at your upper body. The exercises here are all performed with body weight and minimal equipment.

You will need access to a pull up bar, parallel bars and gymnastic rings. The gymnastic rings should be hanging about 30 cm (1 foot) above the ground.

When performing the exercises, **do them slowly**, making sure you are not using any momentum in either direction and keeping strict form. When you can no longer perform the exercise with correct you stop doing it and take a break.

Exercises should be performed for 30-50 seconds of time under tension (the time your muscle is under mechanical load). If you can do more than 50 seconds then it's time to move to a harder progression, and if you can't do at least 30 seconds you should focus on doing only the negative portion of the exercise (slowly descending from a pull up, slowly descending into a dip, etc.).

You should aim for 3-5 sets of each exercise per every workout. The amount of sets depends on your fitness and intensity of performing the exercises. If you feel very tired the next day or even during the workout then that means your intensity is too high, and you need to either reduce it or reduce the amount of sets. You should be fresh enough on your rest days to be able to maintain good posture.

You should do 2-3 workouts per week and allow your body enough time to recover. It's important to get enough sleep and nutrition to be able to build and repair muscles, bones and tendons.

The next pages explain how the exercises should be performed. You can perform them in which ever order you choose, but note that the exercises that feel the hardest to you should be performed first.

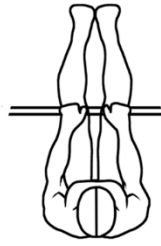
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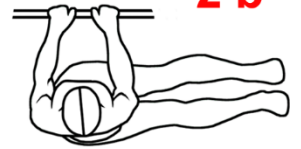
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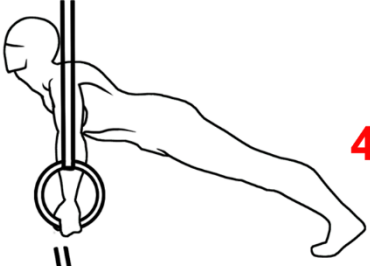
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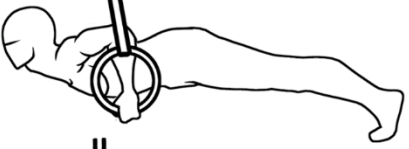
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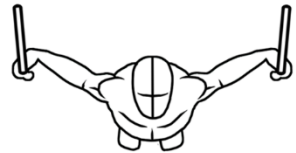
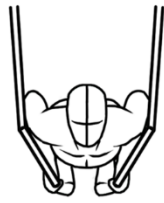
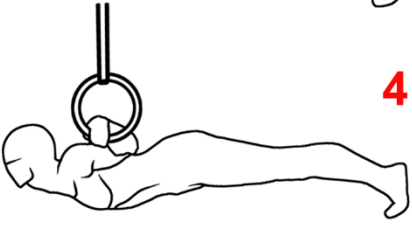
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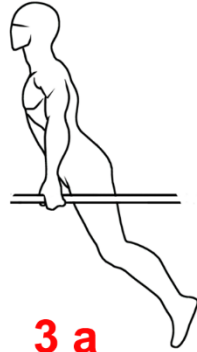
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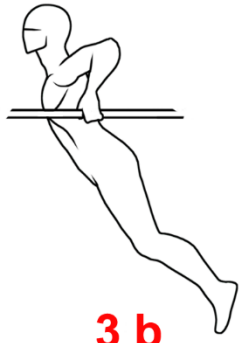
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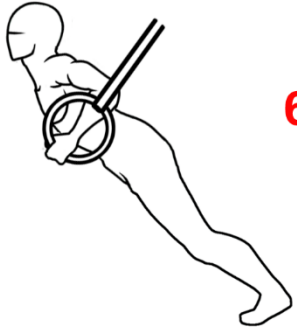
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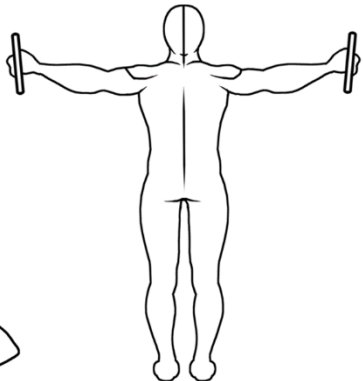
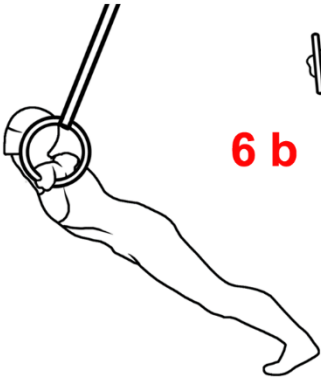
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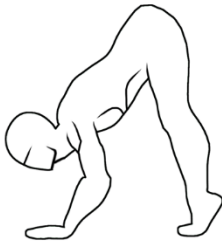
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6 b



5 a



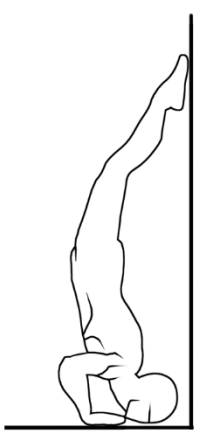
5 b



5 c



5 d



1 – Pullups

1. Grab the bar at shoulder width apart and hang from it
2. Pull down your shoulder blades so that your chest rises (1 a)
3. Let your legs hang in a relaxed position
4. Pull up as high as you can and hold at the top for 1 second (1 b)
5. Very slowly lower yourself down keeping tension until the very end
6. Perform for 30-50s

If you are not strong enough to do a single pullup then you can do negative pullups or elastic band assisted pullups. Simply put the elastic band around the bar and around one of your legs.

2 – Windshield wipers

1. Grab the bar at shoulder width apart and hang from it
2. Pull down your shoulder blades so that your chest rises
3. Pull your legs up so that your body is parallel to the ground and your legs are pointing upwards (2 a)
4. Rotate your body at the hips left and then right slowly, like a windshield wiper (2 b)
5. Perform for 30-50s

Note that you do not have to perform this exercise as is shown in the illustration. If your back and core are not strong enough then you can simply bring your legs as far up as you can and perform the exercise from there. You may also bend your knees to shorten the lever of your legs, making the exercise much easier.

3 – Dips

1. Grab the parallel bars with straight arms and your shoulder blades pushed back and down (3 a)
2. Rotate your body slightly forward
3. Very slowly lower yourself down as low as you can then hold for 2 seconds (3 b)
4. Push yourself back up
5. Perform for 30-50s

As dips are a fairly easy exercise you may want to make the exercise harder by using a more pronounced forward lean or adding weights to your body.

4 – Pelican pushups

1. Grab the rings with straight arms then straighten your body (4 a)
2. Slowly lower yourself down by tucking your shoulders back and bending your elbows, the rings should be below the chest muscles (4 b)
3. Keep your arms bent and push them to the side while simultaneously lowering your body, then hold for 2 seconds at the bottom (4 c)
4. Pull your arms back in into the previous position (4 b) then push your body up into the starting position (4 a)
5. Perform for 30-50s

If the exercise is too difficult you can change the angle of the body by taking a step or two forwards, lessening the load.

5 – Pike pushups and handstand pushups

If you are not strong enough to perform handstand pushups then you will first build your strength with pike pushups. Once you can hold a hand stand against a wall and perform 1 good form pushup you no longer need to do pike pushups.

Pike pushups

1. Put your hands on the floor at shoulder width apart
2. Raise your hips and keep your legs straight, so that most of your weight is on your arms (5 a)
3. Slowly lower yourself down and forward until your head is just above the ground (5 b) then hold for 1 second
4. Push yourself up to the starting position
5. Perform for 30-50s

Handstand pushups

1. Face a wall and place your hands on the floor at shoulder width apart, about 30 cm (1 foot) away from the wall
2. Raise your legs up and lean then against the wall, keep your body straight (5 c)
3. Slowly lower yourself down and forward until your head is just above the ground (5 d) then hold for 1 second
4. Push yourself up to the starting position
5. Perform for 30-50s

6 – Chest flys

1. Grab the rings and lower yourself down by tucking your shoulders back and bending your elbows, the rings should be below the chest muscles, the body should be at about a 45-degree angle (6 a)
2. Extend your arms outwards slowly into a fully stretched position while lowering your body, then hold for 2 seconds (6 b)
3. Pull yourself into the starting position
4. Perform for 30-50s

You can change the difficulty of this exercise by changing the angle of your body relative to the floor. The further back your step the steeper the angle, and therefore the harder this exercise will become.

THE VACUUM BELL

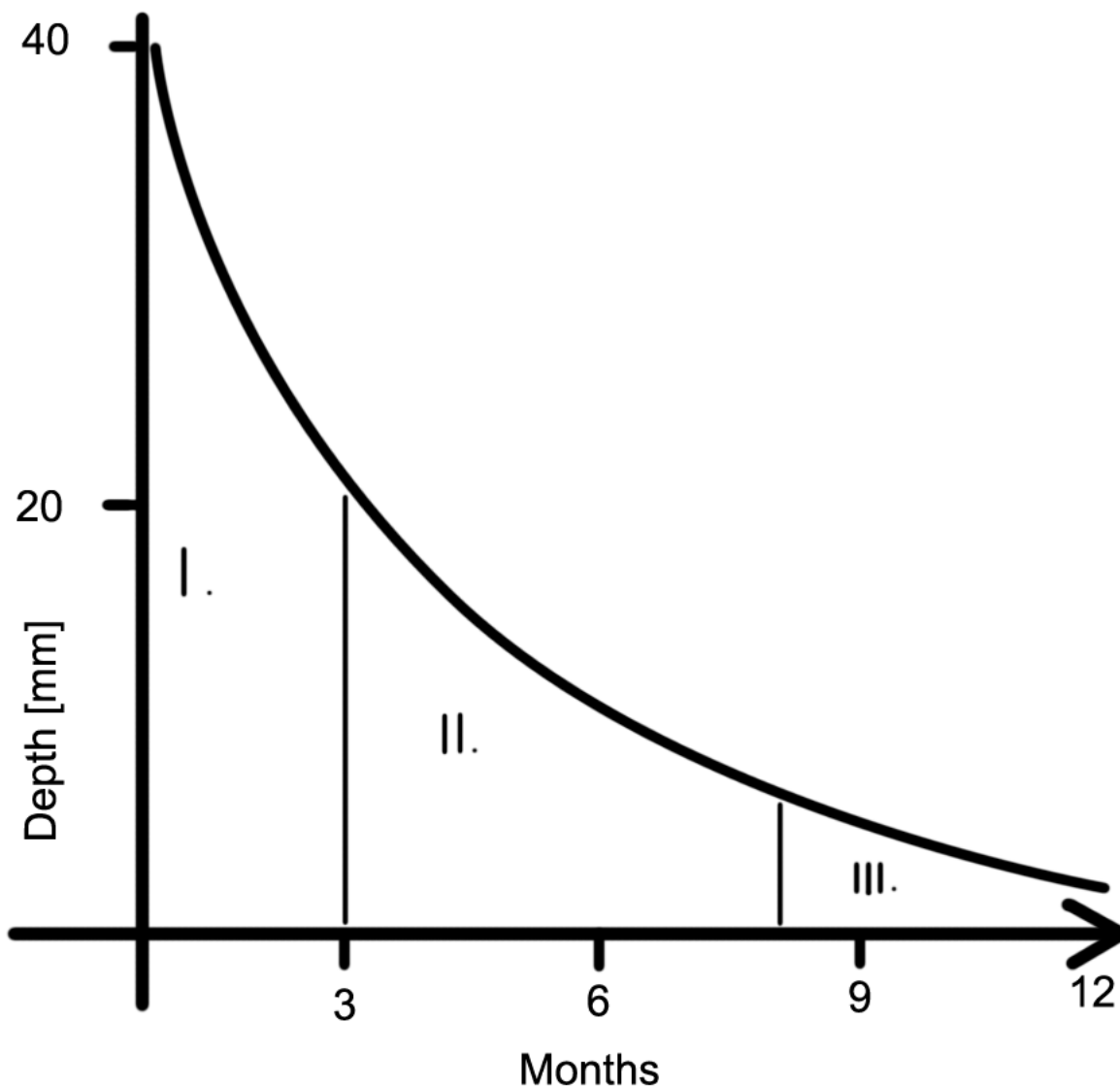
The vacuum bell is a device used to create a chamber of negative pressure on your chest. The negative pressure then pulls on your sternum, while the pressure differential between the vacuum chamber and your thoracic cavity also causes a pushing force on your sternum from the inside. The result is the movement of the sternum and the surrounding ribs in the outwards direction. Though this correction of the PE depression is temporary, it can with repeated use lessen and even completely fix it.

It's important to understand that the vacuum bell itself is just a tool to temporarily lift up your sternum, and it is up to you to keep it up there. What you do during the day will have great impact on how effective your vacuum bell application will be. It's important to follow all the previous steps described in this book to maximize the effectiveness of vacuum bell treatment.

PHASES OF TREATMENT

There are 3 distinct phases of vacuum bell treatment, dependent on your PE depth. The phases will determine the frequency of your vacuum bell usage.

The more you use the vacuum bell the softer your sternum will become. Eventually, you will start seeing diminishing returns and you will have to take rest days between vacuum bell usage to optimize your PE correction.

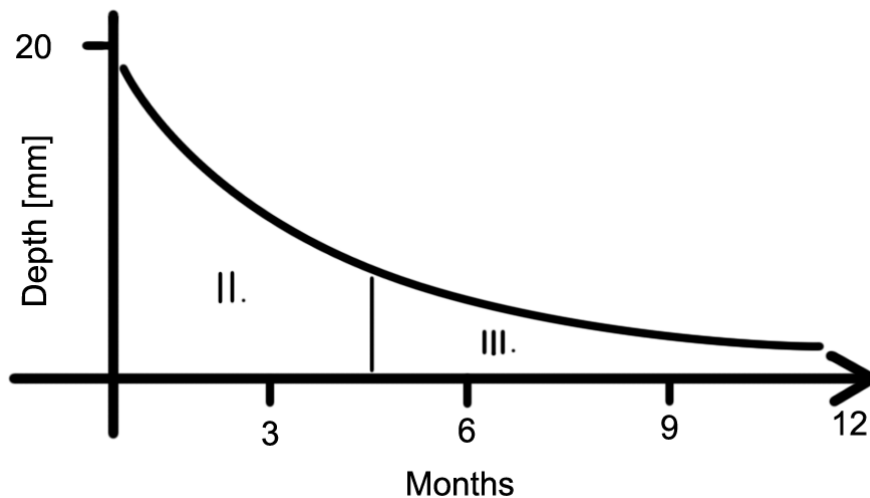


This image shows how the 3 phases correspond to your PE depths. The timescale is symbolic and is only a rough estimate to what you might expect from following this program.

The first phase is the phase of rapid improvement, where you will see the fastest correction to your sternal depression. This phase will last until you reach about 20mm of depth.

During this phase, you will apply the vacuum bell for 3 consecutive days followed by 1 day of rest.

If you are already at or below 20 mm of depth then you can skip this phase entirely.



The second phase is the phase where improvement starts to slow down but you can still see daily or weekly improvements. This phase will begin after you go below 20mm of depth and last until you reach about 8 mm of depth.

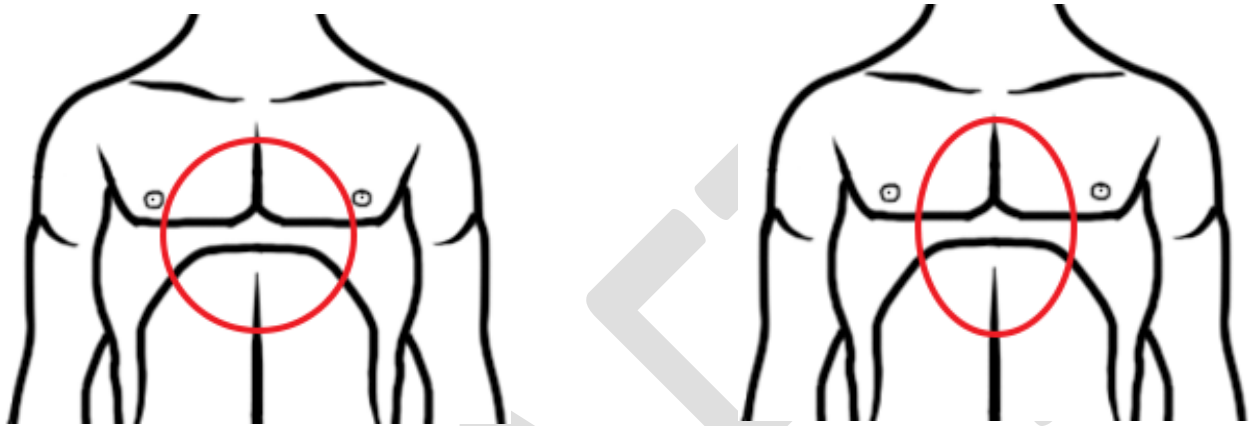
During this phase, you will apply the vacuum bell for every second day.

The third phase is the phase where progress slows down to a grind, and you will only see progress over a span of several weeks or even months. This phase will begin when you go below 8mm of depth and last until you are satisfied with results you've achieved, at which point you will discontinue using the vacuum bell.

During this phase you will use the vacuum bell 3 times a week, and you will take 1 week off every month.

APPLICATION OF THE VACUUM BELL

It's important that your vacuum bell is of the correct size. The vacuum bell should cover your entire sternum and fit between your nipples. Your nipples should not be inside the vacuum chamber.



This picture shows the approximate location of where the vacuum bell should be place.

Generally, 2 types of vacuum bell exist – the round and the oval vacuum bell. Whichever you get is not important, as long as you can cover the area shown above.

There also exists a third, crescent type, designed for women. The VB is designed with two crescent wedges on the sides to fit between the breast, but overall acts exactly the same as the oval type.

If you have asymmetrical PE then you can shift the vacuum bell over to the side that has the deeper depression.

Make sure your skin is washed clean before applying the vacuum bell. If you have a lot of chest hair then you might have to shave it off as it can interfere with the vacuum seal.

To apply the vacuum bell correctly place it as shown on the image above, the strongly push it into your chest. You may also lean against a wall or a table to push it with more force. After a seal has been established start to pump the air out to about **120 – 150 mmHg (5-6 inHG) of negative pressure.**

If you do not have a gauge on your pump then simply pump until you feel a strong pull on your skin, but not pain. If you start to feel pain then stop pumping and wait for the sternum to rise. This will lower the pressure inside the chamber.

The vacuum bell should be applied a few hours before going to bed for best results. This way, you minimize the amount of pressure you might impart on your sternum through poor posture, as long as you sleep on your back without a pillow.

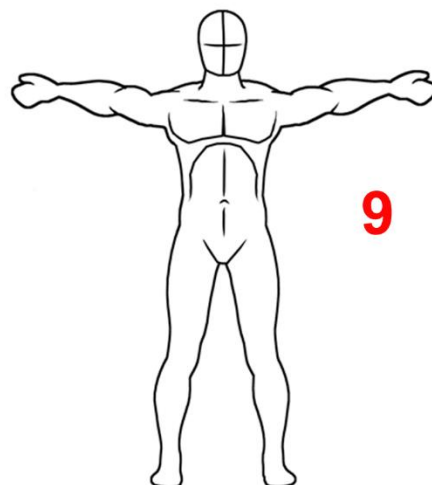
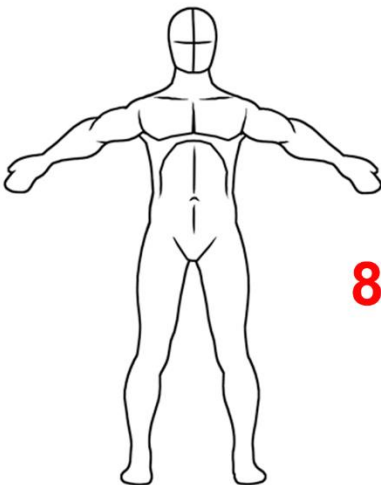
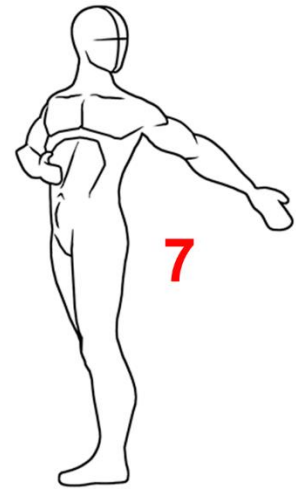
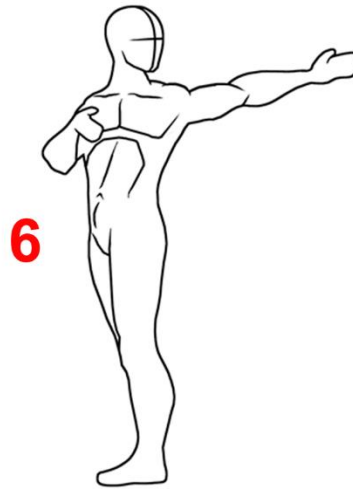
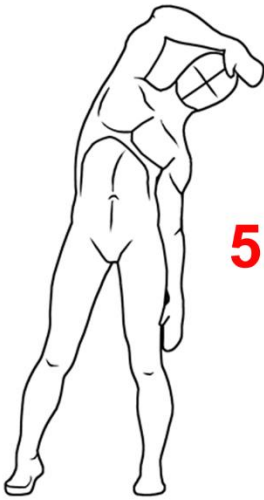
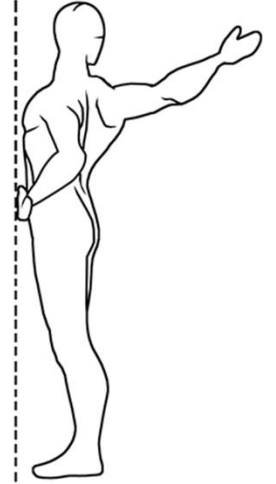
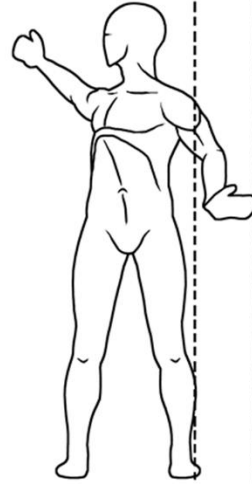
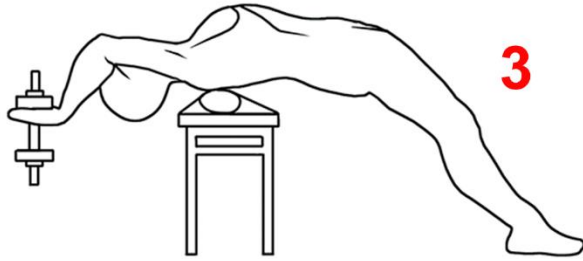
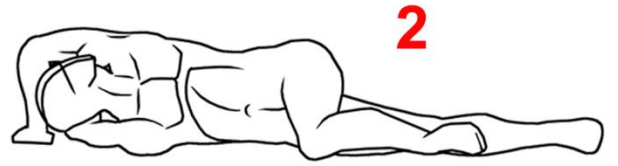
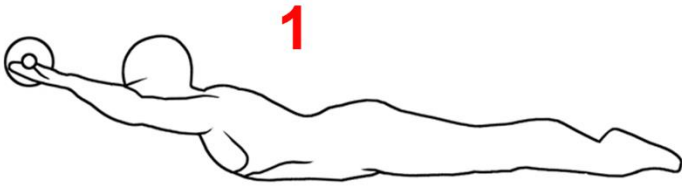
You should also time your workout session to be before your vacuum bell application, as strength training may depress your sternum temporarily, and you can then conveniently pull it out with the vacuum bell a few hours later.

Your first vacuum bell application should be done under medical supervision. Discuss this with your general physician before trying it yourself.

WARM UP STRETCHES

Before you can start with the main pre-vacuum bell stretches it's best you complete these warm up stretches described in the following pages, to prevent injuries.

Be sure to complete them slowly and controlled without using any momentum. You may perform them in whichever order you want.



1 – Dumbbell hold

1. Lay down on your stomach with a straight body and place a dumbbell in front of you
2. Grab the dumbbell from both sides and lift it up with straight arms
3. Hold for 5 seconds then lower it back into starting position
4. Perform 5 times

2 – Drunk man stretch

1. Lay on your right side with your right leg straight and your left leg bent 90-degrees and resting on the ground.
2. Place your right hand under your head and your head should be turned slightly towards the floor.
3. Place your left hand behind your head with fingers pointing away from the head
4. Rotate your head upwards towards the ceiling and push your chest forward
5. Take 10 deep breaths
6. Do the same for your other side

3 – Dumbbell pullover

1. Position your upper back on the stretching stool with your feet flat on the ground
2. Hold the weight firmly above your chest with slightly bent arms and palms facing upwards
3. Lower the weight backwards as low as you can and hold there for 3 seconds
4. Bring the weight back to starting position
5. Perform 10 times

4 – Standing twisting stretch

1. Stand shoulder width apart to the side of a door frame and place your right palm on it
2. Push your hips forward, rotate as far as you can to the left with your left arm extended and push into the frame with your right hand
3. Hold for 30 seconds
4. Do the same for the other side

5 – Side stretch

1. Stand shoulder width apart and step on your toes with your right foot
2. Lift your right arm over your head and lean to the left
3. Slide down your left leg with your left hand
4. Hold for 30 seconds
5. Do the same for the other side

6 – Chest rotation 1

1. Stand shoulder width apart and hold your right pectoral with your right hand
2. Rotate as far as you can to the left with your left arm extended above your shoulder and your hips straight
3. Hold for 30 seconds
4. Do the same for the other side

7 – Chest rotation 2

1. Stand shoulder width apart and hold your right lower ribs with your right hand
2. Rotate as far as you can to the left with your left arm extended below your shoulder and your hips straight
3. Hold for 30 seconds
4. Do the same for the other side

8 – Chest expansion 1

1. Stand shoulder width apart
2. Stretch out your arms as far back as you can below shoulder level
3. Hold for 20 seconds

9 – Chest expansion 2

1. Stand shoulder width apart
2. Stretch out your arms as far back as you can above shoulder level
3. Hold for 20 seconds

CORE STRETCHING EXERCISES

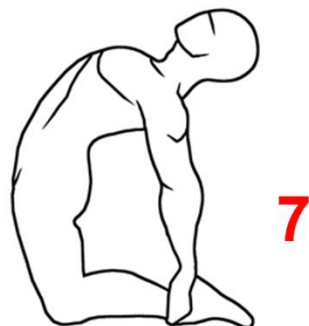
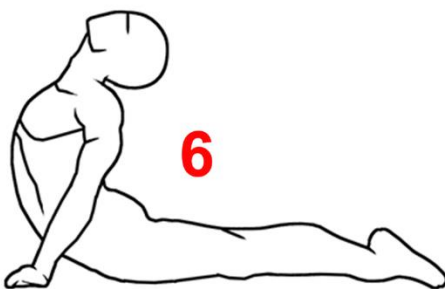
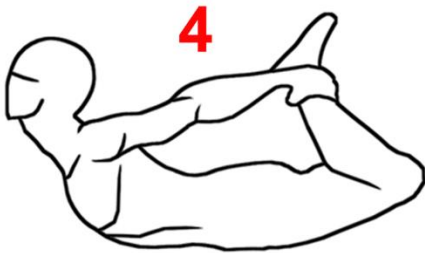
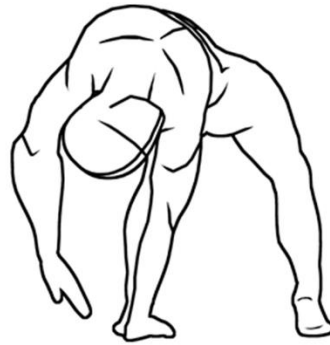
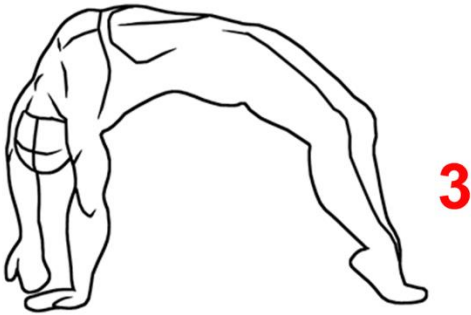
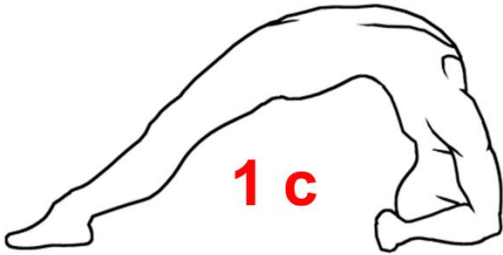
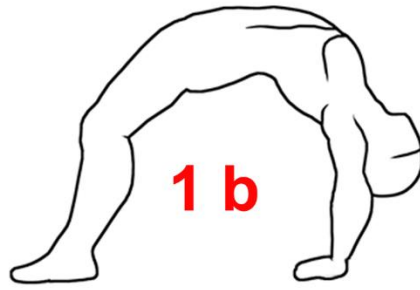
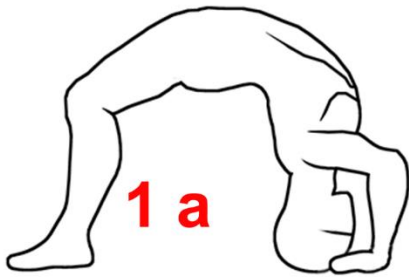
These stretching exercises are designed to loosen and warm up your chest muscles as well as soften your bones and cartilage before vacuum bell application.

Yoga practitioners might recognize some of these exercises, as most are directly copied or modified versions of Yoga stretches.

Doing these stretches can improve how much your sternum rises with vacuum bell use by up to 50%, so it's important you do them before every vacuum bell application.

All the stretches should be held for 60 seconds, but if you're unable to hold this long initially then just hold for as long as you can. Eventually you will build up enough stamina to do them correctly for the full duration.

You can do them in whichever order you prefer.



1 – Bridges

The image shows progression of this exercise. You must only complete one of these, depending on how flexible you are. It might take a few months to progress from 1a to 1c.

Headstand bridge

1. Lie flat on your back with your knees bent pointing upwards
2. Bring your feet to your buttocks, place your arm behind your head, palms facing down, fingers pointing towards you
3. Push up with your hips as high as you can with your weight on your head and your arms (1 a)
4. Hold for 60 seconds

Handstand bridge

1. Go into the headstand bridge (1 a)
2. Push up with your upper body so that your weight is on your arms (1 b)
3. Hold for 60 seconds

Elbow bridge

1. Go into the headstand bridge (1 a) and shift your weight onto your head
2. Grab the back of your head with your hands and place your elbows at the side and slight in front of your face
3. Push up so that the weight is supported on your elbows
4. Straighten your legs and push your body forwards (1 c)
5. Hold for 60 seconds

2 – Sitting rotation

1. Sit on your left leg with both knees bent at around 90-degrees, your right leg in front of your left
2. Extend your right arm with your palm facing upwards and place your elbow below your right knee
3. Extend your left arm and place it behind your left hip, fingers facing away from the body
4. Rotate your upper body to the left while pushing hard against your knee with your right arm
5. Hold for 60 seconds
6. Do the same for the other side

3 – Corkscrew stretch

1. Place your palms on the mat then raise your body on your feet, so that you are facing the mat with your face and chest
2. Raise your right arm and switch your feet so that the left foot goes where your right is, and your right foot goes where your left was while simultaneously rotating your body towards the ceiling
3. Try to touch your left hand with your right hand while pushing your hips up as high as you can
4. Hold this position for 60 seconds
5. Do the same for the other side

4 – Bow pose

1. Lay flat on your stomach and chest
2. Bend your legs backwards and hold them with your hands from the outside
3. Lift your upper chest and legs as high as you can
4. Hold this position for 60 seconds

5- Half frog pose

1. Lay flat on your stomach and chest
2. Place your right hand parallel to your shoulders in front of your face and support your weight on the forearm
3. Bend your left leg and hold it with your left hand from the inside
4. Pull your leg in as hard as you can and rotate towards it with your upper chest
5. Hold this position for 60 seconds
6. Do the same for the other side

6 – Seal pose

1. Lay flat on your stomach and chest
2. Place your hands a bit higher than your hips with fingers pointing outwards
3. Push off the floor with your upper body and bend as far back as you can
4. Hold for 60 seconds

7 – Camel pose

1. Spread your knees shoulder width apart and support your weight on them, with your feet making contact with the ground either on your toes (easier) or the extended arch (harder)
2. Slowly lean back and grab the heel (easier) or Achilles tendon (harder)
3. Push your hips as forward as you can
4. Hold for 60 seconds

BREATH TRAINING

Breath holding exercises may be beneficial for PE improvement by improving lung capacity, expanding the rib cage and loosening overly tight muscles surrounding the rib cage.

This book contains a very simple form of breath holding technique. If you want to use a more advanced techniques, like apnea training used by free divers, you can do so as well.

To perform the breath holding exercise, simply inhale as much air as you can then exhale it completely, so that nothing remains in your lungs, then again inhale as much air as you can pack in your lungs through both your nose and mouth.

Hold your breath as long as you can and fight the urge to breathe when your diaphragm starts to convulse. When you can't hold on any longer exhale a small amount through your nose and quickly inhale again, then resume breathing normally.

Take a 2-minute break then repeat this exercise for a total of 8 times, and measure how long you can hold your breath so that you can track your progress.

You can do breath training every day or every other day.

Usage of the vacuum bell may result in some minor damage to the skin. The upper layers of the skin will become red and some small air bubbles might form on the surface. Furthermore, if too much pressure is used blood can be sucked up to the upper layers causing bruising. All of this will heal with time but there are ways we can speed up the healing.

First is moisturizing of the affected skin. We can use an oil that is readily absorbed by the skin, like coconut oil, castor oil or emu oil to speed up the natural healing process, or we can use an Aloe Vera extract for the same effect.

Taking an oral supplement of Astaxanthin taken with Phospholipids (krill oil) may greatly increase skin healing as well as skin thickness, elasticity and water retention. Astaxanthin is also a natural food colorant and will make your skin slightly darker for as long as you're taking the supplement, which will protect your skin from UV radiation. Astaxanthin is a natural sun screen that works from inside your body.

Note that Astaxanthin is also a natural DHT blocker. Generally, a small decrease in DHT shouldn't cause any problems but if your DHT is already very low or you're sensitive to small hormonal changes it's best to avoid it. In such cases it's best to consult your primary physician before taking the supplement.

Adequate protein and collagen intake are important for proper skin repair. Make sure you're getting a surplus of those two. You can supplement collagen with collagen gel pills.

Intake of vitamins is vitally important, not only for skin health but also for general health. Make sure you're getting enough of them, especially vitamin C and D.

And lastly, fasting, especially prolonged fasting, will also promote skin healing and bone remodeling.

It's best to follow an intermittent fasting protocol where food is not consumed for at least 14 hours each day, and also a prolonged fasting protocol a few times a year where food is not consumed in a 48-72 hours' time frame.

During the intermittent fasting period the only thing that should be consumed is water, as any substance that has to be processed by the liver may break the fast.

You can drink tea or sugar free coffee during the prolonged fast, as well as supplement with vitamins and minerals.

MANAGING BLISTERS

If you use too much negative pressure with the vacuum bell for too long then blisters may form on your skin. These blisters are like contact blisters one might get on their hands and feet, but unlike hands and feet your chest does not have several layers of dead skin protecting the lower layers of the dermis. Therefore, more care must be taken when managing them.

It's best to leave the blisters to heal on their own without popping them. Depending on size they should disappear within 2-7 days.

If the blisters do burst accidentally then you need to disinfect the area with rubbing alcohol, then prepare a mixture of brine (hot water and salt) and apply it on top of the burst blisters. As the water evaporates it will leave behind the salt which will dry up the upper skin, killing bacteria and speeding up the healing process. A few hours later scabs will form over it which should be moisturized periodically.

RIB FLARE

If you have flared ribs and are following the program described in this book then you've already done most of what can be done to improve your rib flare. Your flared ribs should start to slowly recede throughout the months of following this program.

That said, there is one final thing you can do to speed up this process.

You will want to improve muscle tone (also known as residual muscle tension) of your core muscles surrounding your lower ribs. Muscle tone is the measure of how tight your muscles are during rest, and how they respond to forces during rest. Strong muscle tone is important for proper posture.

To improve muscle tone all you will have to do is hold your core muscles (obliques, abdominals and transversus muscles) as tight as you can for 20 minutes uninterrupted each day.

If you are unable to hold them for 20 minutes at first you may just hold them for as long as you can, then slowly work your way up to 20 minutes by holding them longer with each passing day.

Doing this you will find that within a few weeks your core will become noticeably tenser at rest and your ribs will no longer protrude as much as they did before.

CONCLUSION

To follow through with this program will take a lot of dedication and motivation, but more than that it will take formation of good daily habits.

Without daily habits, motivation and drive is useless. Eventually you would burn out and fall to your old ways. So, approach this program as if you would brushing your teeth or taking a shower – just something you do every day to better yourself.

Daily stretching and good posture should become inseparable parts of your life, and eventually strength training, breath training and long walks will become enjoyable activities you do on a regular basis.

Until then, keep fighting. I was once where you are and believe me when I tell you it gets easier as time goes on. Your hard work will be repaid in the end.

P.S: Don't forget to rest and have fun once in a while. Take a break and go on vacation, then come back with renewed vigor and passion.