

People used to say lactic acid was fatigue agent and body fat never burns unless you perform cardio exercises for more than 20 min. Today, none of us believes such an old urban legend but this topic must be shocking for those wise readers of our magazine because what we believe that human body is symmetric and should be used in symmetric manner could be a new urban legend.

If you think that's ridiculous, let's go back to basics and take a look at our structure of the body. We will start with internal organs.

The two thirds of the heart stays on the left side of body's across the mid line and liver which weighs about 1.2kg stays on the right side of the body. This fact itself makes body asymmetrical.

Those organ positioning or arrangement affects diaphragm structure and function because heart sits on top of diaphragm and liver stays right underneath of diaphragm. Believe or not, diaphragm is a muscle (*In Japanese, diaphragm writes as 横隔膜 directly meaning "sideway dividing membrane", and I personally believe many Japanese people misunderstand diaphragm). Because the left diaphragm compressed by the heart have tough time contracting and relaxing, our body adjust using diaphragm more on the right side to breathe. Liver supports right diaphragm from the bottom which adapts diaphragm shape like a dome, and this support from liver makes right diaphragm easier to contract and relax enabling breathe deeply. In contrast, heart compressed left diaphragm is flatter than the right and forces shallow breathing. Therefore, right diaphragm has wider surface area due to the muscle training effect (I don't totally agree with this sentence though...). Because the human body design is based on this asymmetry manner, right lung is basically bigger than the left and has 3 lobes as compared to 2 lobes on the left side.

Illustration2 (bottom middle left)

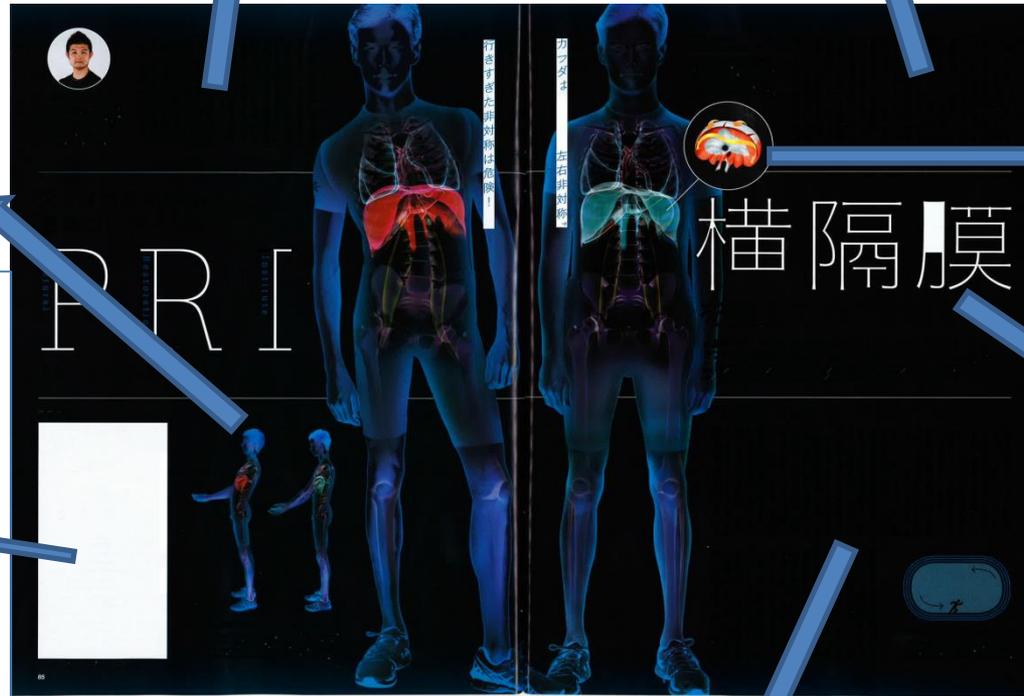
Curvature of diaphragm affects respiration and posture

Illustration is looking at diaphragm from the left. When diaphragm drops down, air comes into lungs, and when it rises up, air gets out from the lungs. Hence, with dome-shaped diaphragm (right picture), we are able to breathe deeply, and flat-shaped diaphragm (left picture) promotes rib flare and lordosis of the lumbar spine.

Illustration 1 (Top middle right)

Heart and liver changes shape of diaphragm

Illustration is looking at diaphragm from the bottom. Right side has more area and easier to use because heart sits on top of left diaphragm and liver supports right diaphragm from the bottom. Tendon and muscle fiber of the diaphragm connects with psoas muscle.



White Column "What is PRI?"

Essence and mission of PRI, a message from the founder

Upon introducing PRI for the first time in our magazine, please let us introduce a message from Ron Hruska, the founder of PRI.

The Postural Restoration Institute (PRI) is built around 30 years of clinical practice associated with recurring successes of specific patient treatment programs. We established reproducible, outcome-based programs based on consistent evidence-based correlations, discovered with patient biomechanical, respiratory, and neurological functional patterns and limitations. My passion for the integrated systems of the body has resulted in an examination and intervention process of the asymmetrical human body called Postural Restoration. The PRI mission is to explore postural adaptations and asymmetries and their influence on the polyarticular chains of the body. Our mission is based on the development of an innovative treatment approach that explains the primary contributors of postural kinetic and kinematic movement dysfunction." – Ron Hruska

Adjusting your diaphragm will restore your body

The latest conditioning tool called PRI has arrived from the US!

Human body is asymmetric if you think about heart is on left and liver is on right side. Latest method from US approaches diaphragm to restore "naturally asymmetric" posture!

It is still too early to be surprised. The end of the diaphragm muscle fibers extends down along with the spine, and a part of those fibers is attached with the psoas muscle. The psoas muscle connecting spine and pelvis has important role as an "inner muscle" linking upper and lower body together. Developed right diaphragm has thicker muscle fibers which make our body to use right psoas easier, and this thicker right side link spontaneously shift the center of gravity to the right side. The reason why running tracks or ice skating links are counterclockwise is because our right side of the body is easier to use. Also most of us are right handed because of the same reason.

PRI (Postural Restoration Institute) in US has been performing respiration rehabilitative exercises focusing on diaphragm and pelvis position based on human body's asymmetry. As a physical therapist, Ron Hruska has developed his concept since 1980's and his idea is in the process of spreading out as a rehab tools among MLB, university sports, or other facilities. PRI interestingly states that "posture (including internal organs) is a reflection of positions of many systems in a body which has asymmetry, and functional limitation and those systems need to be put together to create balanced posture" (Ron Hruska). Please refer his comments in the column on left bottom corner in this page.

You should not misunderstand this concept though. This body's asymmetry cannot be an excuse to leave your body distorted just because human body is asymmetrical. It's the same thing you hammer a tilted nail into a piece of wood. We can easily imagine that tilted nail will be bent even more and cannot be recovered. Before that tragedy happens, "it is important to direct your body which went too much asymmetry back towards natural asymmetry" (Takashi Onuki, ATC; practicing his fitness service based on PRI concepts). Following Takashi's direction, let's begin to learn how to practically execute PRI from the next page.

EXERCISE

Turn on the right side, turn off the left side. Let's restore your balance!

Basic principles of PRI upon restoration of side-to-side balance is to turn off the right side which has been working too much, and turn on the left side which has been dysfunctional. When you hear this, you might think you just need to lift some weights only on the left side, but don't jump the gun too early. Of course you need to train your left side, but for example, how about the right gluteus maximus weakened by posteriorly tilted pelvis due to the center of the gravity shifted to the right? Right gluteus maximus is one of the important muscles which need to be turned on to decrease too much side-to-side difference.

We will introduce total 5 exercises. All of them have very specific instruction and you won't get desired effect if you don't follow those directions. After a while performing those exercises, go back to page 86 to re-check your body. If you see less side-to-side difference, you are on track to obtain desired results.

If you are actively playing sports or training frequently, "PRI exercises before your warm-up can be very beneficial. Some MLB team introduced PRI to their training and data suggested they had less injuries" (Onuki). When you don't have time to do all 5 exercises, try the first one at least to reduce the risk of getting hurt.

Before → After (Top right)

Diaphragm changed dramatically after one session!

After our photo session, those 5 PRI exercises already changed our model's posture dramatically. Before the photo session, his left diaphragm was flat and his back was hunched over with curved low back. However, after the session, diaphragm restored dome-like shape and spine got better curve. Basically we saw better posture.

PRI EXERCISE 1; You may only do this if you are busy

This exercise will restore the integration of the diaphragm, ribcage, and spine movement. If you don't have much time to do everything, try this one and your posture starts to restore neutral.

All-4 Belly Lift

Get down to all-4 position with both hands and knees on the floor. Make sure to put your hands straight under shoulders and knees under hip joint. Round your entire back as you breathe in through your nose. Press down the floor and lift your back even more as you take breath in. 5 breath x 3 sets

Point – Similar exercise pose can be found in yoga class which will round your back as you breathe out. This exercise breathes in as you round the back to energize diaphragm movement.

Point – When you breathe in, try to drop down ribcages and move the diaphragm so that you can place air to the side and back.

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CHECK

左右差がどのくらいあるのかをチェックしてみよう。

1 股関節を脱力する

足指の向きが右側より左側より開いているか、確認する

2 仰向けになる

足指の向きが右側より左側より開いているか、確認する

3 脚を引き寄せる

右側より左側のほうが引き寄せにくい

CHECK

Let's check how much asymmetry you already have in your body.

Check No.1

Relax your hip joint
Lay down on the floor and just relax the hip joint to see how much your feet opens out.
✓ Obviously your left toe opens out more than your right

Check No.2

Lay down flat on a floor
Lay down on a floor and cross your arm on top of the head. Check to see your ribcage from above and head side
✓ Left ribcage raised obviously more than the right

Check No.3

Straight leg raise
Lay down flat on a floor, with knee kept straight, raise your leg up.
✓ Harder to raise left leg more than the right.

When you put more weight on right leg and breathe more with right chest wall, it will increase side-to-side distortion which could result low back pain or neck tightness. First of all, let's check side-to-side asymmetry.

When PRI says bony structures and posture is not perfectly symmetrical, the actual difference should not be that big. "If you see obvious difference just looking at a body part, that asymmetry has gone too far" said by Onuki. Since PRI's thorough evaluation should be done by certified specialist, let us introduce 3 simplified ways to observe whether you have obvious body's asymmetry or not.

Excessively shifted center of gravity to right will cause laxity of the left hip joint. Check No.1 shows externally rotated left toe more than right indicating left hip joint disorder.

Let's look at position of your diaphragm. Flattened left diaphragm compressed by heart would cause left rib flare and you can see elevated left rib cage at Check No.2. Lastly at Check No.3, when you have difficulty raising your left leg more than your right, your left hamstring, located behind the thigh has already been stretched due to anteriorly tilted left pelvis.

PRI EXERCISE 4; Energize weakened right gluteus maximus

Gluteus maximus is also an external rotator of the hip joint. While elongated with overly asymmetric state of the body, right gluteus has been weakened and you need to train only the right gluteus. This exercise is another one that you should not perform the other side.

Sidelying Right Hip ER

With lying down on your left side close to a wall, place a roll of towel under left belly, and bend your knees 90 degrees. Place another roll of towel under feet and make sure to place feet on the wall. You may put the bottom arm to rest your head, and top arm over your belly. As you breathe out, round your back and lift your right knee. Breathe in from nose to come back to the start position. 3 sets x 5 breath.

Point – When you position the right knee in front of the left knee, you will feel the right gluteus much better. A little thing makes a big difference.

NG (No Good) – If your back is extended while trying this exercise, it may activate wrong target muscle called tensor fascia latae (TFL) located outside of your thigh.

Point – Placing towel under ankles and left belly will position left hip joint internally rotated which will turn off the TFL and easily turn on the right gluteus.

Point – Tilt upper body to left to compress left belly and shut off the left diaphragm. When reaching forward with left arm, you should aim to breathe onto the right chest.

NG (No Good) – The purpose of the small box or stool is to facilitate rounding your back and preventing the rib flare. When you sit on a chair up right extending your back, rib cages are easily to open up.



PRI EXERCISE 2; Synchronizing Diaphragm and Pelvic Movement

When standing, it is hard to re-adjust posture due to gravity bias. Therefore, you would start re-setting posture with supine and feet-on-wall position so that you won't get too much effect from gravity.

90-90 Hip Lift

With laying down supine, put feet on wall and place a roll of towel between your knees. Your knees should be at 90 degrees and arm should be relaxed next to hips. As you breathe out from nose and drop down ribcage, lift your butt off from the tail bone. 3 sets x 5 breath



Point – Try not to push toward the wall but try to hook the heel down from the wall. You will feel harder to hook on your left side as you may notice your left heel slides down.

Point – Try to keep the towel between your knees. Tilt your pelvis backwards bringing butt closer to knees. You will feel tension over hamstring behind your thighs.

Point – Your left knee should be more inside and lower than the right side. This exercise will restore left hip joint which tends to rotate externally with overly asymmetric state.

Point – This exercise is designed to enhance on coordination between posteriorly tilted pelvis and diaphragm first. Then focus on left hamstring located back of your thigh.

PRI EXERCISE 5; Relaxing diaphragm to restore right breath domination
Because heart compressed left diaphragm is hard to use, you are accustomed to use right diaphragm which may cause posture distortion as it gets overly asymmetric. This exercise will turn off the left diaphragm making it possible to breath from left side.

Seated Left Reach

Sit on a chair with feet on a little box so that you can round your back. Raise your right arm to your shoulder height with elbow bent, and extend the left arm in front of you. Breathe out from nose and reach the left arm forward. Then breathe in and reach again as you breathe out. 3 sets x 5 breath.

PRI EXERCISE 3; Stimulate Rusty Left Hamstring
This exercise will stimulate the left hamstring, back side of your thigh. As the “common sense” will urge you to do the right side also, just train your left side to restore physiological normal asymmetric state.

90-90 Hemibridge

Start from the same position with 90-90 hip lift listed above. Breathe in from the nose and tilt your pelvis backwards as you lift your butt. Breathe out and lift the right leg up. Then breathe in from nose to come back to the start position. 3 sets x 5 breath.

