

# How to keep your body working at its optimal efficiency through balanced oscillatory activity

**A guide for daily activities to manage life in a  
patterned world.**

## Oscillation:

- a) a movement back and forth at a regular speed
- b) a variation or fluctuation between two extremes of opinion, action, or quality.

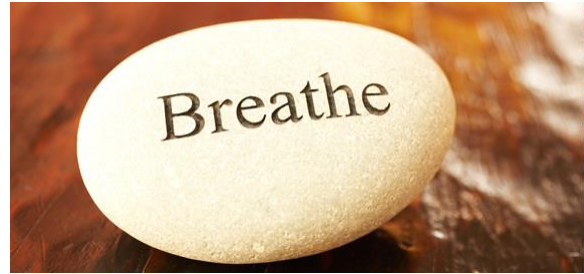
If you are alive, your body is in constant motion! I mean right now, even if you are sitting still parts of you are moving. There is constant change and movement happening both voluntarily and involuntarily. Your body is oscillating. As defined on the first page oscillation is a regular movement, variation or fluctuation between two extremes of opinion, action, or quality. This happens in small ranges like the natural nystagmus or rhythmic beat of our eyes that is so small that we cannot perceive it, which helps our visual system do its job better, or the 60 beats per minute of your heart muscle. It happens in large ranges like the air coming in and out of our lungs 12-16 times a minute, or the daily oscillation of waking and sleeping. When we walk we alternate right and left arm and leg swing. This constant rhythmic shifting and oscillating both large and small is a good and natural thing.

If any system in our body stops oscillating or shifting evenly, then we become less and less efficient to handle the stress and strain we put on it each and every day. In order for your body to work at its peak efficiency these systems must work in balance with themselves and with each other. If your body is not working at its peak efficiency, which could manifest as anything from fatigue, to pain, to full blown autonomic dysfunction, we feel strongly that there is an imbalance somewhere within the system. That imbalance could be a difference in strength or flexibility that creates strain on one side of the body or the other (i.e. the strong side is strained from doing too much work or the weak side is strained from not being able to keep up with the demand on it). That imbalance could be one foot that was injured and doesn't move the way the other does when you walk which can have a cascade of effects throughout the whole body. It could be someone who doesn't get enough restful sleep and therefore never recovers from the activity of the daytime. Whatever the imbalance is, your goal is to get it more balanced with its counterpart, so that the stress and strain, and therefore the symptoms associated with it, can be reduced. The challenge we all face in keeping balance is that we live in an asymmetrical body, in an unbalanced world, doing unbalanced things. This constant imbalance challenges our systems to maintain their balance with each other. With this guide, we will offer you some simple suggestions or things to do to maintain oscillation, or balance, in the systems of your body. This will help keep your body working at its optimum efficiency.

## BREATHE

On average, a person at rest takes about 16 breaths per minute. This means we breathe about 960 breaths an hour, 23,040 breaths a day, or 8,409,600 breaths a year. That's a lot of breaths! If you take 20,000 efficient breaths a day you'll feel pretty good. If you take 20,000 inefficient breaths a day you will probably feel like garbage. Each breath is an oscillation

between the position at the end of exhalation and the end of inhalation. Therefore it is necessary to make sure you have the ability and strength to easily move between those two positions. If your body is stuck at one extreme or the other you won't be oscillating well and your body will know it. Try these things to try and regain some efficiency with breathing oscillation.



1. **Balloon breathing:** In a world of hyper-stimulation, stress, anxiety, and a go-go-go attitude, people often end up in a pattern of breath holding or what we could call hyperinflation. Under stress, the tendency is to take a deep breath in and hold it, or at least not exhale fully. When relaxed, we tend to sigh all our air out and "let go". If you find you are a breath holder, hold tension in your neck or back muscles (your inhalation helps), or just can't seem to "let go" blowing up a balloon can be a great tool to regain this balance. The resisted exhalation stimulates your exhale muscles (called abs) which reflexively allows your inhalation muscles to let go. If a balloon is too hard, exhaling through a straw or other narrow tube can simulate this until you build enough power to blow up a balloon. This can be done in a variety of positions (see the following examples). We would recommend blowing into a balloon for 4-5 full breaths, pausing after exhalation, and then inhaling through your nose keeping the balloon in your mouth. Doing this 4-5 times in a row can be a great tool to balance your breathing rhythm.
2. **Supine Breathing:** When you breathe in and fill up your lungs your rib cage should expand and when you breathe out your rib cage should fall or constrict. Tension in muscles that attach to your ribcage can restrict this normal movement and will create imbalanced airflow and breathing muscle activity. The other side of that coin is that restricted rib mobility will create tension in muscles that attach to it due to the restricted airflow and imbalanced muscle activity. Tightness of the pectoral (chest muscles) on one or both sides is a common restriction for airflow in the apical (top) chest wall. Lying on your back with your arms out to the side with your legs up on a chair or couch and focusing on full exhalation and inhalation can be a great activity if you have chest wall tightness. Feel free to add the balloon in this position
3. **Flexed Breathing:** Back tension either in the lower or middle (between the shoulder blades) back can restrict the expansion of the back chest wall which can in turn exacerbate continued back tension. Getting your back into a rounded or flexed position and then focusing on breathing and filling up your back chest wall with air can be a great tool. Some examples for this includes sitting on a low stool or the bottom step and hugging your knees or lying prone (on your stomach) over a large exercise ball. Again balloons can be great tools in these positions.

4. Alternate Nose Breathing: Normal efficient breathing usually is done with inhalation through the nose and exhalation through the mouth. Air flowing into your lungs through your nasal cavity is ideal due to the filtering and moistening of the air that is done as it travels through your sinus cavities. The sinus cavity is also highly innervated with sympathetic (fight or flight) and parasympathetic (rest and digest) nerve endings that are stimulated by airflow through the sinus cavity. The right and left sinus cavity each have different ratios of these types of nerve endings. Asymmetrical flow through your sinus cavities can therefore stimulate your autonomic system asymmetrically. Intentionally alternating airflow through one nostril and then the other by alternately closing one nostril and then the other can help regain balance between your sympathetic and parasympathetic autonomic nervous system. Yoga practitioners have done this activity for millennia for that reason. If you have a structural limitation limiting airflow through one sinus or the other, a visit with an Ear, Nose and Throat (ENT) physician may be helpful for you.



5. Sing: Your voice is something that you own that you have control over and allows you to connect with people, communicate with people and create. Your voice comes through controlled exhalation vibrating your vocal cords and resonating through your voice box and oral cavity to produce the sounds we hear and interpret as voice. The quality, volume, pitch, sound of your voice is unique to you and controlled by an intricate system of muscles and muscle activity. Singing is a great way to give your breath a purpose with some creativity. Changing (oscillating) pitch and volume, even if it is “bad” is a great way to regain balance of your breathing system and apparatus. Sing to your hearts content it’s good for you!

## WEAR APPROPRIATE FOOTWEAR

The human foot and ankle serves many normal functions in many areas of life. It senses things, holds us up, adapts to uneven surfaces to help us balance and more. It directs activity and motion of the leg above it through the ankle joint, yet at the same time is at the mercy of

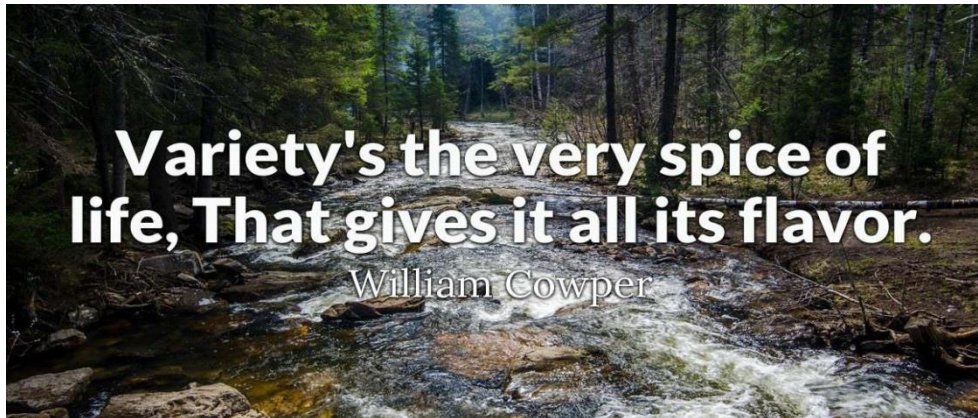
the activity of the body above it. The oscillatory function that we are looking at in the foot and ankle is the ability for the ankle to go through the movement of pronation and supination. This oscillatory movement is necessary for efficient/even gait. Moving efficiently through pronation and supination is a good thing. Staying supinated or pronated throughout the gait cycle disrupts normal oscillatory function of the foot and ankle. This can have a significant effect on the oscillatory function of the whole body above it. Therefore, proper footwear that helps the foot oscillate between the ranges of pronation and supination can be of utmost importance for whole body function. Each foot and body has different needs based on its shape, history, and the body and brain attached to it. In general, here are some guidelines to pick a good shoe.

1. Stable heel counter (back of shoe) that does not fold in. This allows the calcaneus (heel bone) to be controlled and held in a position to allow the ankle and leg joints to work in a mid-range manner. If the heel bone stays tipped in or out, the ability for the ankle and leg to rotate evenly above it when you walk is lost, and there will be consequences.
2. The bottom of the shoe bends at the toe joint, not in the middle of the arch. If your shoe bends where your foot doesn't, your foot will start to bend where it isn't supposed to.
3. The heel height should be symmetrical and not give on either side. This allows your heel bone and ankle to stay and function in a mid-range position which is necessary for proper balanced oscillatory function.
4. You should be able to feel your heel, arch, and big toe on each foot when walking without significant effort. One of the primary neurological functions of your foot is to sense where you are in relation to the surface you are standing on. You should be able to sense the pressure on the bottom of your foot fully. Otherwise you may not be receiving a normal message from your feet about where you are. With limited information there is the potential for improper output of activity particularly when it comes to balance.



If you have further questions about the type of shoe that fits you correctly talk to your PT, local shoe salesman, or see our website ([www.primengagement.com](http://www.primengagement.com)) for further information on what shoes we recommend.

## VARY YOUR ACTIVITIES



**O**ur brains and bodies weren't meant to do the same thing day after day after day.

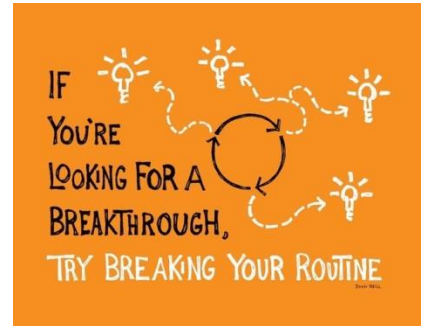
Unfortunately in the world we live in we become creatures of habit and our lives can become predictable, patterned and lack variety. A common day might include: Sleep in the same bed, on the same side, facing the same direction. Wake up, shower, get dressed and have a cup of coffee (in the same mug) and maybe the same breakfast. Drive to work. Sit at the same computer desk doing the same task all morning. Have a lunch break (if you're lucky) and eat the same food as every other day. Go back to the desk and sit for 4 (or 6 or more) hours on the same computer. Drive home (on the same route every day). Sit down to a meal, and if we are lucky interact with our family for a short time. Binge-watch some Netflix while scrolling through Facebook, and fall back asleep on the same bed that we started the day. In fact, we can get so programmed for this routine that often we don't even remember parts of it, like the drive to or from work because we do it so much. That route is so auto-piloted in our brain that it doesn't even register. When our patterns of life and movement become so engrained that we don't even experience them anymore we have lost variety, spice, and oscillation of our activity.

We don't recommend quitting your job and going back to live on the farm where you had to work all day to grow, hunt, and prepare what you would eat, and do a different job everyday just to survive. However, living in that world was in some ways much healthier for us, but also

significantly harder. We would, however, recommend getting some variety or oscillation in the activities of your life. We would consider doing this in 2 ways:

1: Break up your daily routine:

This is great for keeping your brain engaged and body less patterned in its habits. You could sleep on the other side of the bed (warn your partner, but it would be good for them too!). Take a different route to and from work every day. Run the mouse of your computer with your left hand every now and then, or maybe move the phone to a different side of your desk every now and then. Eat some new food. Talk to new people. Sit in a different spot at meetings or at church. Don't walk in your usual straight lines. Walk and weave between cars in the parking lot, or around people on the sidewalk. Heck, walk in the grass next to the sidewalk. Be creative!



2: Do new and novel activities:

When you do the same activity, even if it something you enjoy, your brain gets wired for that activity and the cognitive novelty of it goes way down. Doing something new, just for the sake of doing it can be great to stimulate your brain and get it out of a stuck position. If you like to walk, every now and then go for a bike ride. Take a new exercise class, like water Zumba for example, that you've never done before. Go to a concert (even if you don't know or even like the music). Learn a new skill like cooking, art, or maybe drywall. You don't have to master these activities, but your brain will thank you for the cognitive and physical novelty. This in turn will allow your normal routine things to be less "normal" and have more meaning when you return to them. Some great ideas of activities that we all should be doing include:



**Dancing:** There is no better way to oscillate than hearing some rhythmic music and just move to it. You don't even have to be good at it. Your brain (and body) will love you for it.

**Hiking:** We live in a world with flat ground and flat floors (and now flat feet). Getting out in nature and moving on uneven ground does wonders for us in many ways including your breathing, feet, and activity levels.

Rock climbing: Having to coordinate arm and foot movement to get from here to there is great oscillatory activity. You don't need to be an expert climber, even scrambling over some boulders is great activity. Every park has jungle gyms in them which is great urban rock climbing for the kid in all of us. Take advantage of it.

Play: Speaking of play, kids do it well. They love and yearn for these great activities that we all could learn from. Hula hooping, Jump roping, hop scotch-ing, jumping on a trampoline, riding a scooter are all great activities. If you don't have a kid of your own I'm sure you could find someone who would love to let you play with their kid. You might even get a babysitting fee for it!



## REST (AND WAKE UP)

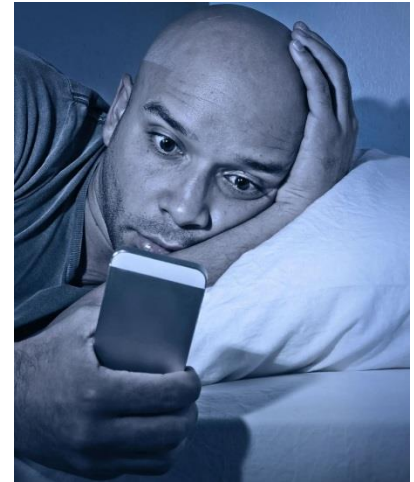
One of the more normal cycles or oscillations of our life is the sleep/wake cycle. Your body is designed and needs to fluctuate from awake, energized, and ready to move to perform at a level needed to at least survive, to asleep, inactive, and resting, to repair from the demands put on us during the day. This rest/wake cycle or circadian rhythm is an entrainable, yet internally driven cycle that repeats itself roughly every 24 hours but is modulated by external and environmental factors (daylight and temperature for example). For normal health, we need wake and rest, activity and non-activity, as well as ability to transition seamlessly between the two. What we do while we rest helps us recover from the day's activity and what we do during the day uses up our energy stores and prepares us for needed sleep. In our agrarian days there were clearly defined repeatable periods of activity during daylight hours necessary for survival. If you didn't work for your food you didn't eat. If you needed anything you worked for it, you couldn't just run to the store and buy it. When the sun went down you knew it was time to go in and when the sun came up it was time to wake up and get back to work. Nature was responsible for setting our sleep and wake cycles. We didn't need double espresso coffees to wake us up from late nights staring at our phones, just so we can sit sedentarily at a desk all day not burning any calories, which in turn didn't wear us out enough to go to bed at night. In our world now there is not a time where we are not bombarded with light and stimulation. It's no wonder our natural circadian rhythms are a mess. We don't do enough activity during the day to rest





at night and we don't rest at night enough to do activity during the day. Our oscillatory activity for sleep/wake is lost. So, here is what we would recommend:

1. Try to establish a normal routine for bedtime, wake time, and eating time. If it works for toddlers it should work for adults. If we are constantly changing when we sleep and when we wake it is hard for that cycle to normalize. There is a lot of research linking poorer mental and physical health with nurses who work alternating day and night schedules.<sup>1</sup> Consistent mealtimes can also train your system to know when to prepare to digest food and when to store food. This is a learned pattern through repetition. Without a routine your brain and body never knows when it needs to prepare to rest or prepare to work. This routine should also include...
2. Eliminating screen-time before bed. Light hitting your retina (particularly in the blue-light spectrum) creates an actual chemical reaction that releases wake neurotransmitters in your bloodstream. The design of this is so when it's light out you have a bloodstream literally juiced to keep you awake. When the sun goes down the production of that chemical lessens which allows you to slowly get to a state of rest and go to sleep. Constantly bombarding our eyes with blue-light from screens (even with the blockers on) stimulates our body chemically to stay awake and can have a detrimental effect on sleep quality. This can be as important as not drinking a big cup of coffee right before bed.
3. Work at something during the day. Sometimes the key to a good night's sleep is doing enough work during the day to need rest. 200 years ago there weren't workout facilities and gyms because no one needed to exercise. Everything was exercise. The amount of walking and physical work done in a day just to survive would beat the best boot camp we have today. Now if you don't live on an 18<sup>th</sup> century farm or do a job that requires physical activity, you need some sort of physical activity built into your day. Your body needs it, demands it and wants it. You don't need boot camp, but exercise isn't only to lose weight it is to help you regain normal circadian rhythm essential for health
4. Talk to your doctor (or your PT) if establishing these routines doesn't help. There could be some medications or other physical health things that need to be addressed to help your body establish these natural rhythms.



## CHEW

Just as light hitting your eyes stimulates you to wake up, the act of chewing stimulates your body to prepare itself for digestion. While chewing does aid in the rest/wake circadian rhythm, chewing does so much more for you than just stimulate gastric juices. There is so much oscillatory activity happening to help with balance in your body when you chew. When you chew you don't just chomp your jaw up and down, you grind your food with your back moving them teeth forward and backward, side to side, and circles. You are moving the food back and forth between the two sides of your mouth with your tongue and cheek muscles to make a clump of food that you can swallow using your tongue and neck muscles. All of this



is coordinated in a way that you don't bite the tip off your tongue or gouge your cheek or swallow a big clump of meat that won't fit down your esophagus. The rhythmic movement of the chewing muscles is like an internal massage for your neck and skull which happens as these muscles contract and relax when we chew. It's an amazing system that we don't even think about.... Until it doesn't work. If you have a tooth ache, or even more drastic, have a tooth pulled, the pattern of how you used that part of your bite to eat is changed. The balanced massage you give yourself when you eat is now different. Certain muscles now are working harder, some are not working at all... it's just different. Maybe your teeth don't fit together well enough for you to chew on one side, or doggone it you may just love chewing on one side and not the other. It can become so patterned in how you chew that you don't even realize the bias in your chewing other than this darn headache or jaw ache or neck tension. Even when we do chew the amount of chewing we do in a given day is much less. We love our food soft; we don't want to have to chew. If you have to chew a bite of food more than a few bites we get impatient and send it back because it must be cooked improperly. Some of us don't chew at all, getting most of our calories from shakes and drinks. We are missing out on a lot of benefit for our neurological systems as well as our head and neck by not chewing. So...

1. Be intentional about chewing your food. Take your time when you eat. Start by putting your fork down between bites so you don't shove your food in your mouth so fast. Don't put more food into your mouth until the last bite has been swallowed. Take 5 (or more) bites on each side before swallowing. Make sure you are using both sides of your mouth when you chew; even if it's weird it's good for you. Sounds easy? Try it! Seek out foods that actually make you chew. Choosing that carrot over yogurt every now and then is a good idea.

2. Have your teeth checked out by your dentist on a regular basis. Tooth health is of utmost importance. If your teeth don't or can't come in contact with each other discuss it with your dentist or PT, it could have a bigger impact than just chewing. If you are missing teeth consider implants or at least partials. Start the dialogue with your dentist. It's not about vanity or cosmetics, it's about health.



## WATCH YOUR POSTURAL HABITS

The way our body is designed structurally, wired neurologically, and functions habitually is biased and imbalanced. When imbalances between the 2 sides of our body become pronounced there can be, and often is, a compensation that occurs to try and restore some semblance of balance. This can be natural and good or it can create problems. While we cannot change the structure we were gifted with, or the way our normal wiring is preset, we do have some control over our habits. The problem is they are habits. They are called habits because they have become unconscious ways we move or function. Once you become aware of them, they become obvious and you can start to change them. For example, if you always sit with your left leg crossed over your right and your right elbow resting on the armrest of your chair; that is a postural habit. Try the opposite. Cross your right leg over your left and put your left forearm on the chair. Feels weird doesn't it. It shouldn't. You may still prefer the first but you should be able to do the second. If you find you always stand with your weight on your right leg, put it on your left. If you drive with only your right hand, try driving with your left. The more you can utilize both sides of your body the less ingrained those habits will be.



If you can't seem to undo these habits, seeing a Physical Therapist trained to look at your body in this way may be a great way for you to be shown some of the habitual ways you hold yourself and learn some new activities and ways to help maintain your balance. The Postural Restoration Institute® (PRI) trains PTs and other health practitioners across the world to address these things. The Hruska Clinic utilizes the science outlined by PRI as the basis for

the clinical work we do. We were the first clinic in the nation certified as a Postural Restoration Certified Center. This science helps us explain why things in all these categories may be limited and how to address them effectively so that your body can regain its optimal efficiency. Sometimes the things that are limiting your ability to stay balanced and freely moving need specific attention. This could be addressed through integration with other practitioners such as dentists, eye doctors, foot doctors and physical therapists all working together to integrate your systems to relearn how to freely oscillate. This is what our clinic does for all of our patients. If you find you cannot retrain yourself with some of the above ideas, or if you need more assistance figuring out what may be limiting you contact our clinic to set up an evaluation with one of our physical therapists.



Restorative Physical Therapy Services

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1. The impact of shift work on the psychological and physical health of nurses in a general hospital: a comparison between rotating night shifts and day shifts: Paola Ferri;

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5028173/>