

Chapter Five

Preventing Heart Attacks

Dr. Michael Kimball¹ appeared to be at the top of his game. At forty-four he had a thriving medical practice, a wonderful wife and three healthy children. With a thick shock of auburn hair graying slightly at the temples and a healthy glow from regular and rigorous exercise he was the picture of health and vitality. But, the old saying that things are seldom as they appear turned out to be true for Dr. Kimball.

In fact, on the day *it* occurred, too much happened for his heart to handle.

He was up early and knew he'd be lucky to be home before dark. He and his wife began their morning continuing an argument from the night before (which he knew was happening too frequently) about their teenage daughter whose school grades had inexplicably fallen, his schedule was jammed with morning procedures (he silently prayed they'd all be routine) and more afternoon office visits than he could hope to handle. Throughout the day, each time he managed a glance at his desk piled with foot-thick stacks of paper, the annoying case of heartburn he'd been hoping would go away ratcheted up a notch.

He was in an examination room explaining an upcoming cardiac procedure and trying to offer reassurance to a clearly terrified elderly male patient and his wife when his assistant knocked on the door and asked him to step outside for a moment. The look in her eyes signaled something was wrong.

Promising a quick return, he excused himself, closed the door behind him and heard his assistant say, "It's something about your father; your sister is on the phone in your office." He wondered what could possibly be wrong with his father as he strode nervously down the corridor. After all, his dad, who also happened to be his best friend, was the healthiest sixty-nine year old on the planet.

His sister's first words, "Dad's had a massive stroke and they're saying he

might not make it,” were like a stinging slap across his face. The rest of the words were only a jumble.

“You have to fly here right now. Mom says she doesn’t want to live if Dad doesn’t make it,” and a hysterical, “Can’t you do something, you’re a doctor”?

As he tried to calm his sister down and learn as much as he could about what had happened and what the doctors were doing, he glanced toward his office door and saw his assistant trying to get his attention and felt his pager buzz wildly. One look at the message on his pager and the look on his assistant’s face told him what was happening. One of his patient’s from a morning procedure was in critical condition and he was needed immediately.

He sternly told his sister that he was in the middle of a medical emergency and would call back as soon as possible, remembered to ask his assistant to explain his absence to his waiting patients and started mentally going over as many details as he could remember about the patient in trouble and that morning’s procedure.

1 The Doctor’s name has been changed to protect his privacy.

The hike between his medical office and the hospital was only a quarter mile but the faster he walked the greater the distance seemed to become. His mind was racing. He had a patient in trouble...his father was having a stroke...his wife was angry and disappointed...his sister was hysterical...what should he do first? As he approached the hospital’s back door doctor’s entrance he braced himself for the four flights of stairs and decided to run them. He’d fix the immediate problem first and then deal with everything else. After all, he fixed things for a living.

Dr. Kimball didn’t get to see and help his patient that day although he did make it to the Intensive Care Unit. Halfway up the stairs he tore his LAD (Left Anterior Descending) artery and suffered a massive heart attack. I was the cardiologist called in to help save Dr. Kimball’s life.

The Cardiologists Analysis: Torn

Some form of heart attack will strike nearly one million people in the US each year. Two-thirds of all people victimized by one won't have experienced any previous symptoms and gender doesn't grant immunity; heart attacks are an equal opportunity foe of both men and women.

The classic story you just read illustrates how a stressful life event can precipitate a fatal or nearly fatal cardiac event. Our character is *torn*, having to deal with two emergencies at once. Running to help a patient in need, he is faced with a simultaneous emergency requiring his immediate attention. The stress is overwhelming and creates a sudden flooding of toxic hormones causing his coronary artery to *tear*, leading to a massive heart attack.

The following paragraphs describe the evolution of a heart attack, told from the inside out of a blood vessel. This vantage point will help you understand the internal cascade of events that occur and better appreciate the toxic effects of stress on the heart.

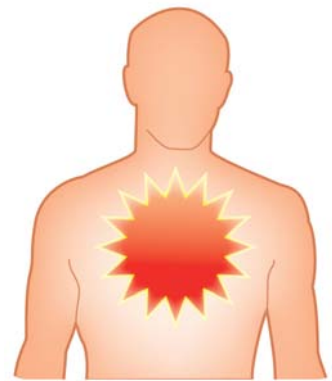
But first, Don't Get Burned By Heartburn

In my practice I've observed that people typically experience a pattern of both psychological and physical changes during a cardiac event.

Commonly, symptoms of chest discomfort are mistakenly attributed to a sour stomach, acid reflux, or gas. This misdiagnosis and minimizing of symptoms is part denial, "this can't be my heart", and part reality, as the heart, swallowing tube and stomach are in close proximity to each other.

The two organs most commonly affected by stress are the stomach and heart. In a recent survey, more than 50% of heartburn episodes were linked to stress. This is why the diagnosis of cardiac chest pain versus acid reflux is a common pitfall.

My strong advice is that if you have heartburn to first consider the "burning" as arising from your heart instead of your stomach. Seek professional help and if it turns out to be your stomach, good for you! I've seen the reverse situation too many times when people



ignore and minimize heartburn and miss an incredible life-saving opportunity.

*Stress has been linked to triggering heart attacks.
Stress has been linked to triggering acid reflux.*

Pain before a Heart Attack

The stuttering pain some people experience prior to a heart attack is known as *angina pectoris*, which in Latin, means, ‘pain in the chest’. Over time the artery develops a buildup of debris called plaque that partially obstructs flow and starves the heart muscle of oxygen.

Similar to an infant crying when hungry, the heart is thirsty for blood and cries out for nourishment by manifesting chest pain. Pain from heart disease varies widely. Some people have nausea, neck, back, jaw or even arm pain as the warning sign of a heart attack.

Yet, ironically, most people have no warning signs of an imminent heart attack whatsoever. This is why symptoms should be regarded as helpful smoke signals sent from a heart in distress. Consider yourself fortunate if you experience them. Any bodily clues should be regarded as extremely important and possibly even life-saving.

The patient in our story illustrates the denial commonly seen in patients in the throes of a threatening heart attack. He mistakenly chose to ignore the symptoms and attributed them to heartburn. Little was he willing to realize that these symptoms were red flags that should have been heeded. A dynamic process inside his coronary artery was occurring and his symptoms represented a bomb threatening to detonate.

Clogged Pipe: Blood Clots

In the case described, stress triggered a contained mini-explosion within the patient’s coronary artery. The sudden change in blood pressure and heart rate caused by the flooding of stress hormones, adrenaline and cortisol, caused an increase in wall stress leading to a local tear or rupture.

Blood vessels are also weakened by inflammation. The part of the plaque especially prone to tear is known as the shoulder. In this region of the plaque,

research has found high concentrations of immune cells which release destructive enzymes which weaken the plaque linking inflammation to plaque rupture.

These complications are chronic, slowly progressing and cumulative. Most commonly, soft plaque suddenly ruptures, causing the formation of a thrombus that will rapidly slow or stop blood flow (often within five minutes or less) leading to death of the tissues fed by the artery.

Stress has been shown to trigger plaque rupture or vessel tearing. Stress has been shown to increase inflammation, which is linked to plaque rupture.

The mini explosion inside Dr. Kimball's blood vessel led to a cascade of events causing his blood to become thick, sticky and prone to clot. Responding to a tear in the vessel wall, his body summoned his clotting system to repair the broken vessel.

Thrombosis is the formation of a clot inside a blood vessel obstructing the flow of blood through the coronary artery. This is similar to what happens when you apply pressure after cutting yourself shaving; a clot will form and the bleeding stops. When the blood vessel is completely blocked the heart muscle begins to die. This event is called a myocardial infarction. Unfortunately, blood clotting inside a coronary artery is problematic, because although it may fix the tear in the blood vessel, it clogs the pipe and obstructs blood flow. This process is known as coronary thrombosis. The blood supply to the heart muscle, now cut off, starves the heart muscle of oxygen causing a part of the heart to die—a process known as a heart attack.

Stress has been shown to increase blood clotting

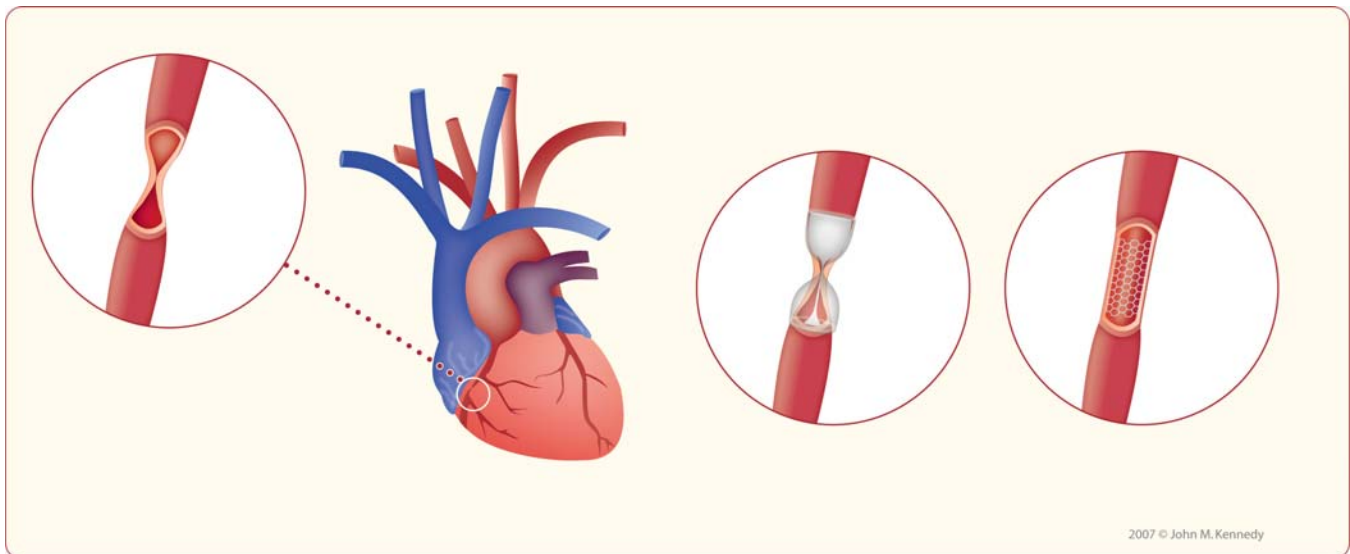
Restoring Flow

If recognized quickly, restoring blood flow to the damaged artery can minimize and sometimes completely avoid heart damage; like literally dodging a bullet. In an emergency situation, when a coronary artery is 100% blocked we know that a stent procedure to relieve the obstruction is the optimal therapy. In other situations coronary artery bypass grafting (pronounced cabbage) and medications are used to restore blood flow to the

thirsty heart muscle. The following describes each of these therapeutic options.

Lose the Waist: Angioplasty and Stents

Doctors refer to blockages in coronary arteries as being like an hourglass, apple core, or napkin ring. Common to all of these descriptions is a central narrowing or waist. In the cardiac catheterization laboratory, where blocked arteries are repaired the term “losing the waist” refers to removing the narrowing. Stents have been shown to be the best therapy for treating heart attacks. A stent is a small metal tube that provides scaffolding, reinforcement for the damaged blood vessel. They resemble the small spring you would find in a ball point pen. Positioned at the site of the blockage, the stent is pressed against the walls of the blood vessel under pressure, and presto, no more waist. The blood vessel is now fully opened and blood flow restored. For optimal results this procedure should be performed within 90 minutes of the patient’s arrival at the hospital.



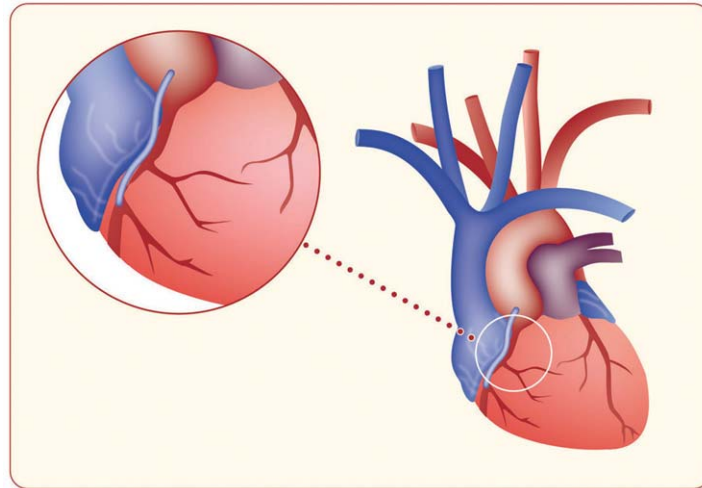
An Alternative Route: Bypass Surgery

Coronary bypass surgery creates a new pathway or an alternative route for blood flow around the blocked artery, allowing blood to reach the heart muscle again. A healthy blood vessel from either your leg or chest wall is used to restore blood flow. If you have multiple blockages then more than

one bypass is used.

Coronary artery bypass grafting (CABG) is the most common major operation performed in the world. Last year more than 500,000 CABG operations were performed in the U.S. That's a lot of cabbage.

This operation is offered to patients when angioplasty and stenting isn't possible.



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The Heart, Stress & Drugs

Effective medications proven to prevent first and second time heart attacks include; aspirin, beta blockers, statins, and ACE inhibitors. Interestingly, all of these drugs block at least one of the negative effects of stress.

Stress has been shown to increase heart rate and blood pressure, increase inflammation, increase constriction of blood vessels and increase inflammation.

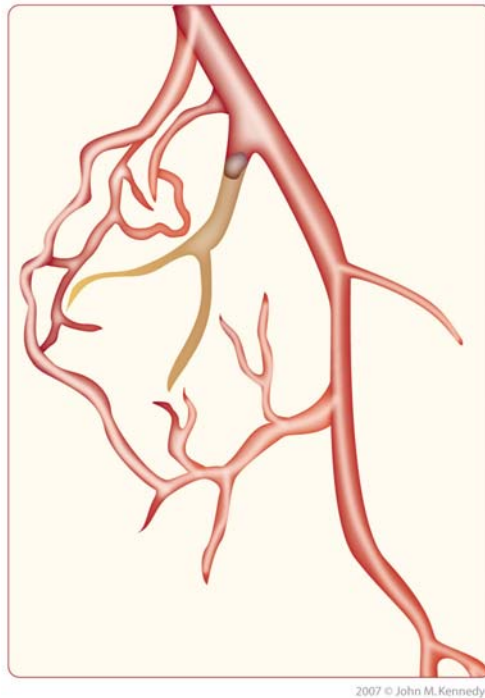
It is probably no coincidence that aspirin is a potent blood clot blocking drug and potent anti-inflammatory. Beta blockers blunt the affect of adrenaline and lower heart rate and blood pressure. ACE inhibitors lower blood pressure and decrease constriction of blood vessels and statins decrease coronary remodeling.

Data shows that these drugs decrease your risk of heart attack. If you have a family history of premature coronary artery disease or use tobacco, you should

probably be taking these drugs.

The Body's Natural Bypass: Collaterals

Coronary collaterals are “natural bypasses” which are alternative sources of blood supply the body forms in response to a blocked artery. Some patients have heart attacks but never lose any heart muscle function due to the development of these amazing natural bypass vessels. Unfortunately, not everyone has the ability to form collaterals. Large collateral arteries are present in up to one third of patients with coronary artery disease.



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Our Patient

The patient underwent emergency angioplasty and stenting of his LAD – referred to by doctors as the Widow Maker – and his life was saved.

Later when I spoke with him in ICU following the procedure he remained incredulous about what had happened and spoke the same words I've heard thousands of times, “I eat right, I exercise, how could this have happened to me, what more could I have done?”

I told him about a series of exercises that could have helped him tremendously and maybe even have prevented his heart attack. It's sad but true that most people are only ready to take preventative measures after having already been traumatized by a major upheaval or crisis in their life. Such was the case with

this patient; he was ready and willing to listen and learn.

Many months after his cardiac event I saw Dr. Kimball at the scrub sink seemingly preoccupied. I greeted him and asked how he was doing. He told me that he uses his time at the sink to do his BREATHE exercises and added that since he started using the techniques I'd taught him that's he's never felt better. He went on to say that he feels focused, relaxed and in control. Then, he gave me a big knowing smile and asked the question I'd been asked so many times before. "Doc," he said, "why didn't I start doing these exercises a lot earlier?"

Flow with it

In medical school doctors are taught how blood flows through the body in a process known as fluid dynamics and study the motion of fluid and how it moves through a tube.

Flow of any liquid can be smooth, consistent and unobstructed, like the flow of a beautiful river. This calm, free flow is known as laminar. On the other hand, flow can be fast, erratic, and chaotic with wild twists and turns and tortuous white water rapids.

Our heart, when working efficiently, has smooth laminar flow and when weak, turbulent flow. Using the BREATHE technique described on the following pages you will learn to tame the river of the heart and how to successfully navigate or avoid the stressful turbulent rapids in life. You will be able to flow freely through the river, reaching your destination safely and calmly.

It turns out that the entire workings of the heart can be simplified to a single simple concept; flow. The coronary arteries require adequate flow to provide the heart muscle with blood, the valves or doors connecting the chambers of the heart are controlled by forward flow and the electrical system of the heart requires the flow of an electrical current from top to bottom which causes the heart to contract. It follows then that the healing metaphors used for the heart should involve the simple concept of *flow*. Galen, the ancient Greek physician was an incredible visionary. He was right on the money with his concept to pneuma (breathe) and the relationship between the heart and brain. He was also spot-on with his use of the "river" metaphor to describe the heart and

vascular system.

*Flow with whatever may happen and let your mind be free.
Stay centered by accepting whatever you are doing.
This is the ultimate*

The cardiovascular system is a fluid-filled container composed of a series of long winding tubes, some large (like the Mississippi or the Nile) and some small like tiny brooks, creeks or rivulets.

The river, as Galen foreshadowed, and as novelists and poets for centuries have used as a symbol for life, will serve as the primary metaphor in the heart-healing exercises that follow.

The flow of the river is like the pattern of life; sometimes smooth, calm and serene, and sometimes turbulent, fast, curvy and unpredictable. The river is alive, breathing and dependent on the changes of season. In winter, river water is cold, levels are high, and flow rapid. And in the summer, levels are low and the water is warm and flows slower.

Like your heart, the river has a circulation. It collects water from mountain run-off, streams and creeks to form a single artery delivering its contents to the waterfall which acts like the heart providing the power source for the down-stream river. The water then flows from the waterfall to the main river which acts like the arterial system, delivering water to wildlife and vegetation. This is similar to the heart's arterial system which delivers blood to the vital organs.

This cycle of the river which maintains continuous flow is much like your cardiovascular system, collecting blood then delivering it in a constant rhythmic pattern. The river, like life, has rapids which act like stress--fast, unpredictable and turbulent.

The tools in this book will act as the rudder in your boat and help you navigate the rapids and enable you to predict what's around the bend. Ultimately, you will learn to BREATHE through the rapids so you can maximize time spent in the calm section of the river which will protect your heart and maintain flow. Just as the athlete imagines a perfect shot and then executes it, and as the opera

singer imagines singing a perfect aria, then performs it—you will learn to BREATHE and begin to experience a heart that flows like the river, powerful and strong.

B R E A T H E

The River Exercise

This exercise is for those with existing Coronary Artery Disease

Patients who have had angioplasty, stents, or bypass surgery will find this exercise useful, relaxing and extremely pleasurable. When doing this exercise, use the techniques described to help you develop a uniform and consistent practice. Practicing regularly, like toning your muscles in the gym, will help develop relaxation skills and entrain neural connections between your brain and heart. Throughout your exercise focus on the heart-healing metaphors and note how the symbols are curative and relate to your heart.

BEGIN

Begin your exercise in your warm, cozy and familiar place. Wear loose fitting clothing and get comfortable in your favorite chair or sofa. Always start your exercise by listening to the conversation. Remember your heart and brain are connected and in constant communication. Listen to your heart.

Take a deep breath in through your nose and out through your mouth. Exhale S L O W L Y to a count of seven. Notice that when you take in a deep breath your heart rate slightly increases and as you exhale your heart rate decreases. Take a few more breaths and notice this trend; in, your heart rate increases and out, your heart rate decreases. The more you practice the better you'll get at hearing your heart beat. This is excellent and proof that you are actively participating in the conversation. As you begin, focus on your heart and clear your mind of any other thoughts. Liken this exercise to working out different muscle groups at the gym. Instead of working your back, shoulders or biceps, look at this exercise as exercising and developing your heart-brain connection.

RELAX

Remember that the relaxation response is a state of deep relaxation which is opposite the fight-or-flight response. You can reach this state by deep breathing. It is comfortable, soothing and nurturing for your heart. Breathing in and out causes changes in heart rate (in through your nose and out through your mouth). When you take a breath in you're activating the "sympathetic nervous system" which causes your heart to speed up. When you exhale, count to seven, like the number of letters in BREATHE. This extended exhalation activates the parasympathetic nervous system and slows the heart rate by sending signals from your brain to your heart through a freeway called the vagus nerve. This fluctuation or variability of our heart rate is good for your heart—it is like gently applying the brakes to slow down the stress response.

ENVISION

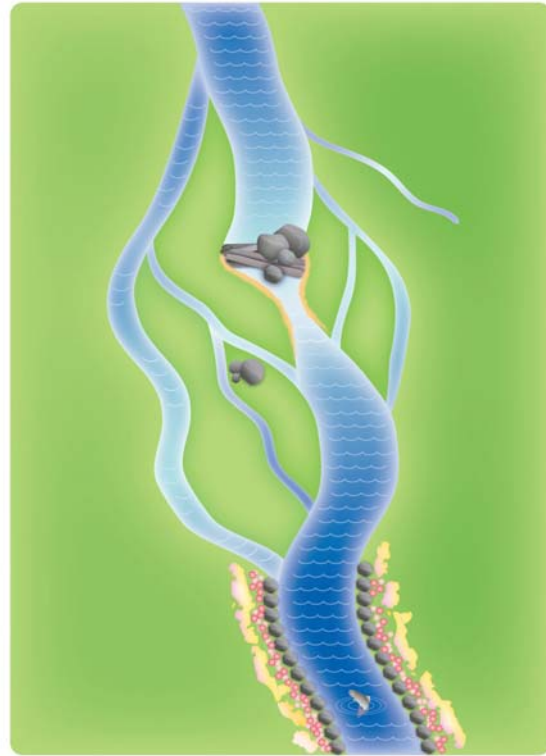
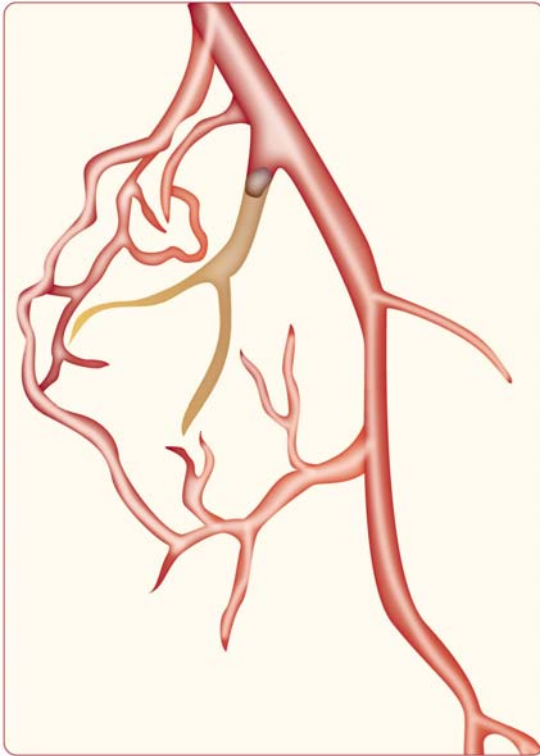
Pay special attention to the slate-lined walls of a beautiful flowing river, the new rivulets and water channels forming in front of you, the new growth which forms from the flow of water and the powerful rhythmic flow of the river. Notice how a constant flow is generated by the majestic waterfall in the distance. Feel the warm sun on your shoulders and think of how the clean, crystal clear water provides the life source for all of the beautiful vegetation and wildlife around you. Make a mental note and focus on each of the metaphors described in the exercise. Note the new rivulets and channels of flow created by the majestic river. Imagine the stability and strength of walls of the river and how flow is contained and directed perfectly within these walls.



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APPLY

Make a mental connection and apply how the smooth, slate-lined walls of the river are like the strong and sturdy walls of your reinforced and stented blood vessels. Imagine how the new rivulets and tributaries resemble new arterial growth and how the new sprouting and flowering vegetation represents new healthy heart muscle. Imagine how the waterfall, the power source, maintains constant flow of the river, and how this resembles your heart—constant, rhythmic and powerful. Observe the massive tree that shades the river and think of its thick, solid, multi-ringed base and how this is similar to the strong, stable walls of your coronary arteries.



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TREAT

View this exercise as a special treatment for yourself. You are deserving of this pleasurable and therapeutic time. The exercise is pleasurable, relaxing and rejuvenating. This is not a chore or task. Before long you will look forward to this work and liken it to runners who experience runners *high*.

Remember that this exercise, when performed correctly, is therapeutic and serves to decrease your heart rate, lower your blood pressure and lowers vascular tone. Research studies have proven these positive physiologic effects. The deeper and more relaxed you become the more protective and effective the therapy. Meditation and exercises such as the BREATHE technique are therapeutic in that they lower the levels of cardio-toxic hormones such as cortisol and adrenaline. This exercise increases heart rate variability (HRV). Low fluctuations of heart rate (low HRV) in patients has been associated with poor cardiovascular outcomes. Recall that guided imagery helps bolster the immune system, lower blood pressure and heart rate and decreases anxiety.

HEAL

When using the BREATHE technique, imagine the healing properties of relaxation. Your deep breathing helps you entrain the nerves connecting the brain and heart and has a calming and heart rate slowing effect. This exercise will reduce stress and make you feel better which will enhance healing in your body. It will allow you to downshift and for your engine to cool and to idle for a while. Imagine how the warm sun on your shoulders causes your blood vessels to dilate further improving flow and healing the previously injured muscle. Store the heart-healing metaphors in your memory so they can be quickly retrieved to help protect and heal your heart in a stressful situation.

END

As you end your BREATHE exercise, recall all of the heart-healing metaphors and summarize their significance and relationship to your healing heart. Remember the smooth slate walls of the river, the new rivulets, the broad base of the massive redwood tree and the powerful waterfall. As you end your exercise and become aware of your surroundings you feel energized. Your heart is strong, rhythmic and flows like the river, unobstructed.

B R E A T H E

The Path of Relaxation

This exercise is designed to prevent Coronary Artery Disease

This exercise will decrease stress and help prevent coronary artery disease. It is also extremely beneficial for reducing stress for the spouses, family and loved ones of those who have recently experienced a cardiac event. You and your cardiovascular system will thoroughly enjoy and appreciate this heart-healing exercise.

Use the BREATHE technique and apply the heart-healing metaphors to your heart. As you read along, focus on the sights, sounds and feelings and recall the teaching points about coronary artery disease outlined in the cardiologist's analysis.

Remember to focus on reversing the coronary remodeling process and imagine the walls of your arteries as stable and strong.

To help support your spouse, family member or loved one, I also recommend reading the exercise for those with coronary artery disease. It will broaden your understanding of the disease and help with providing empathy, compassion and support which are all essential for protecting and healing our hearts.

BEGIN

Begin your exercise in your warm, cozy and familiar place. Wear loose fitting clothing and get comfortable in your favorite chair or sofa. Always start your exercise by listening to the conversation. Remember your heart and brain are connected and in constant communication. Listen to your heart.

Take a deep breath in through your nose and out through your mouth. Exhale **S L O W L Y** to a count of seven. Notice that when you take in a deep breath your heart rate slightly increases and as you exhale your heart rate decreases. Take a few more breaths and notice this trend; in, your heart rate increases and out, your heart rate decreases. The more you practice the better you'll get at hearing your heart beat. This is excellent, and proof that you are actively participating in the conversation. As you begin, focus on your heart and clear your mind of any other thoughts. Liken this exercise to working out different muscle groups at the gym. Instead of working your back, shoulders or biceps, look at this exercise as exercising and developing your heart-brain connection.

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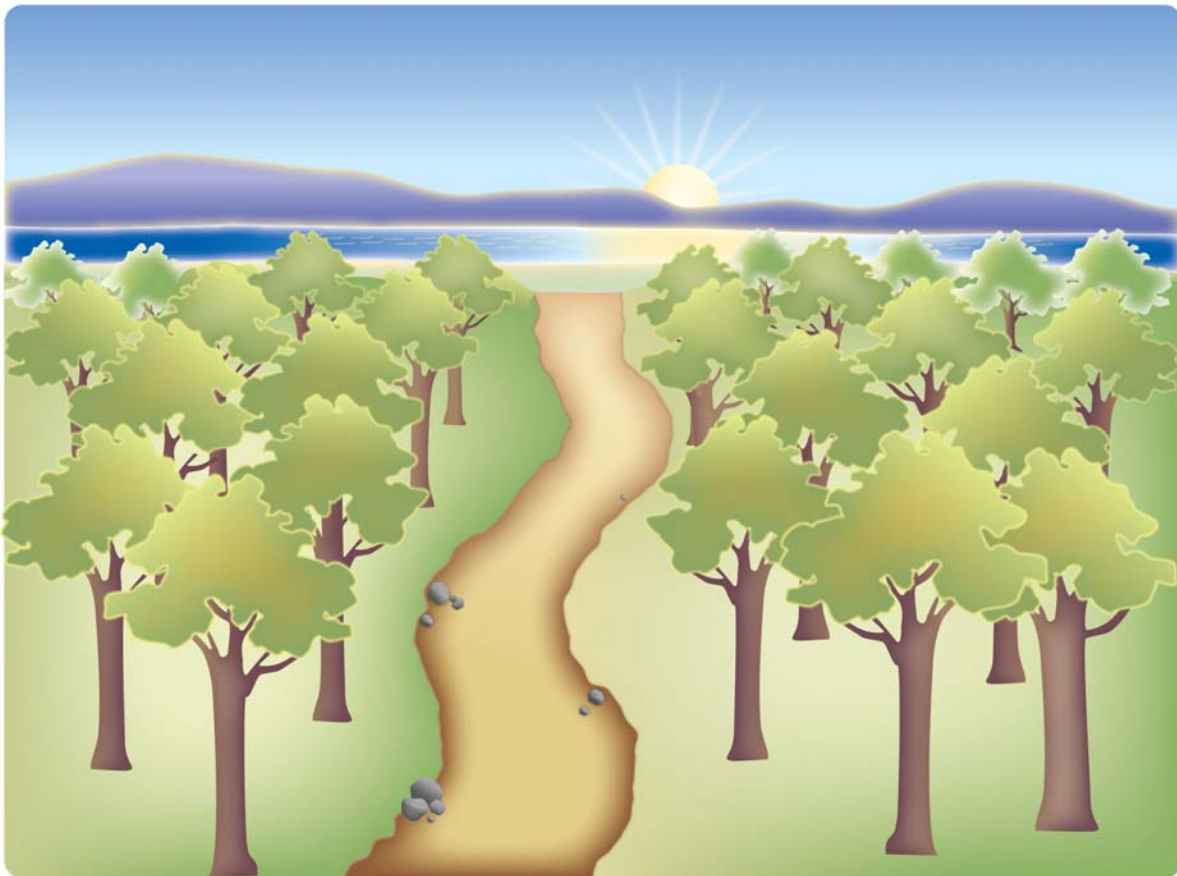
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ENVISION

Path to Relaxation & Flow

Imagine a beautiful hiking trail. It is very familiar to you. You recognize the sights, smells and sounds. It reminds you of a pleasurable experience from childhood. You feel warm, comfortable and relaxed. The trail is marked by walking stones that guide and draw you forward and with each step you feel more and more relaxed. You are breathing in through your nose out through your mouth. You are deeply relaxed yet alert and keenly aware of the sights and sounds around you. You feel the connection between your heart rate and breathing and hear the "conversation". The trail is clearly demarcated, lined by beautiful evergreen trees and a contrasting red adobe dust trail which is soft on your feet like fine, smooth powder. You feel drawn to the end of the trail where you see a flickering light caused by the sun's reflection off of water and hear a strong roar of running water. The end of the trail transitions from tall evergreen trees to knee-high grassy shrubbery which gives way to a lime green mossy perch at the foot of the majestic river. As you approach the end of the trail you sense a strong welcoming feeling. You feel as though you were invited to enjoy this beautiful, serene and calming place—a place to worship and heal your heart.



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APPLY

Make a mental connection and apply how the wide, smooth path is like your blood vessels. Imagine how the trees you pass resemble healthy arteries and how the vegetation represents your healthy heart. Listen to the sounds around you, the gentle breeze blowing the trees, the chirping of the birds and how the sound of the distant water resembles your heart; constant, rhythmic and powerful.

TREAT

View this exercise as a special treatment for yourself. You are deserving of this pleasurable and therapeutic time. The exercise is pleasurable, relaxing and rejuvenating. This is not a chore or task. Before long you will look forward to this work and liken it to runners who experience runners *high*. Remember that this exercise, when performed correctly, is therapeutic and serves to decrease

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In the next chapter we'll teach you about your heart's electrical system and how to prevent arrhythmias.