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The Breath of Life: The Importance of Ruah in Heart Rate Variability Training

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THE BREATH OF LIFE:
THE IMPORTANCE OF RUAH
IN HEART RATE VARIABILITY TRAINING

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THE BREATH OF LIFE:
THE IMPORTANCE OF RUAH
IN HEART RATE VARIABILITY TRAINING

A Dissertation Presented to the Faculty of
Perkins School of Theology
Southern Methodist University

in

Partial Fulfillment of the Requirements

for the degree of

Doctor of Ministry

by

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MDiv, Perkins School of Theology, SMU 2014

May 14, 2021

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ABSTRACT

Pamela E. White

DMin., Perkins School of Theology, SMU, 2021

The Breath of Life: The Importance of *Ruah*
in Heart Rate Variability Training

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The gift of life comes from God's *ruah*, not just at creation, but *ruah* continues to breathe within us throughout our lifetime, sustaining us and leading us back to wholeness and communion with God. God desires for us to live an abundant life that involves Christian community, but stress threatens to pull us in a different direction. The physiological arousal from the stress response causes us to go into a self-preservation mode, and this focus on self threatens to create a barrier that separates us from God and others. Most research is focused on the physical dimension, and as we begin to understand more about our physiology, we tend to view this from a medical perspective, giving less attention to the spiritual dimension. We develop a functional dichotomy and fail to recognize the ways that physical and spiritual health are inseparable and contribute to one another. Heart rate variability (HRV) training encourages physiological balance by reducing our stress responses, and breath is the driving force that increases variability through resonance and promotes health. Spiritual practices have long resulted in these same physiological benefits, but we have not had the technology and knowledge to understand them. Now that we understand more about what is happening physiologically, we cannot discard the importance of the spiritual dimension. Integrating a spiritual dimension to HRV training allows the truth of *ruah* to take on greater meaning. Although stress threatens to become a barrier, *ruah* constantly works against that, leading us to wholeness and joining us with God and others.

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Introduction

“I came that they may have life, and have it abundantly.”

-- John 10:10

Jesus said to them again, “Peace be with you. As the Father has sent me, so I send you.”

When he had said this, he breathed on them and said to them, “Receive the Holy Spirit.”

-- John 20:21

God created us in love and desires for us to live in wholeness. This is the foundational truth of our faith. But this is not just a doctrinal principal that begins to put boundaries on our beliefs in order to define our faith and distinguish it from other religions. This truth is something that resonates throughout our being and impacts each and everything we do. This is a truth that continues to unfold in meaning as we grow in our faith and come to experience a deeper communion with God. John 10:10 talks about Christ coming so that we can have life, not just life that involves existing, but life that is abundant. This is life that is so full that it is overflowing. We learn about this life that we are given in the second creation story. Genesis 2:7 says, “God formed man from the dust of the ground and breathed into his nostrils the breath of life; and the man became a living being.” God’s Spirit is life, and it is this Spirit that allows us to live the life we were created to live. Too often we settle for something less and we fail to embrace the life

that we are created to live. Abundant life is something we too often take for granted or fail to fully embrace. Christ came to show us this abundant life incarnate.

Living abundantly means recognizing the ways God's Spirit is within us, and through that Spirit we remain connected to the source of life. Furthermore, through this connection to the Divine, we are also connected to others. God created us to be in community with one another. Christianity is not a solitary religion but involves deep communion through the love of Christ that continuously calls us outside of ourselves to live in Christian community. In Genesis 2:18 God says, "It is not good that the man should be alone." But we fail to live into the communion, whether that means communion with one another or more importantly communion with God. Biblically speaking, we hear about this communion being broken very early on. Just after the creation narrative, Adam and Eve "heard the sound of the Lord God walking in the garden at the time of the evening breeze, and the man and his wife hid themselves from the presence of the Lord God among the trees of the garden."¹ Consciously or unconsciously, we have continued this pattern throughout time. We separate ourselves from God through our actions and through our inaction. This happens individually and as a society. Our actions do not match the faith that we proclaim.

We are baptized into the body of Christ and are to live in Christian community with one another. In 1 Corinthians 12:13 Paul teaches about this unity, saying, "For in the one Spirit we were all baptized into one body—Jews or Greeks, slaves or free—and we were all made to drink of one Spirit." Philippians 1:27 encourages, "live your life in a manner worthy of the gospel of Christ, so that, whether I come and see you or am absent and hear about you, I will know that

¹ Genesis 3:8

you are standing firm in one spirit, striving side by side with one mind for the faith of the gospel.”

But we struggle with this unity. Not only do we struggle with being connected to God and others, but we end up experiencing fragmented lives as well. Worldly views have us splitting off our spiritual lives as if they are something we can put on and take off like a seasonal wardrobe. “Many of us tend to confine our encounters with the Holy Spirit to the religious zone of our lives: worship moments, Bible study groups, and church conferences.”² We begin to have our “church life” and the “rest of life.” This can greatly limit our understanding of God’s presence in our lives. It can diminish our understanding of God to that of an entity that is only important at particular times and can prevent us from grasping the power of God’s spirit in the whole of our lives. “We don’t recognize the activity of the ever-present Spirit in our personal struggles or in our messy and muddled relationships or in our nine-to-five jobs with, all their stresses and strains or in the overwhelming social challenges that we face.”³

We can also begin to separate body and spirit into separate categories. But if it is *ruah* that gives us life, then God’s Spirit cannot be contained to just one part of our lives. “For the ancient Israelites—who did not separate spirit from matter or soul from body--life in this world was life in its fullness, and this earthly fullness of life was defined by [*ruah*], ‘breath.’”⁴ Ancient medicine looked beyond just illness and deformity and was interested in health and wholeness.⁵

² Trevor Hudson, *Holy Spirit Here and Now* (Nashville, TN: Upper Room Books, 2013), 15.

³ Hudson, 15.

⁴ Norman C. Habel and Peter L. Trudinger, *Exploring Ecological Hermeneutics* (Atlanta, GA: Society of Biblical Literature, 2008), 12.

⁵ Troy W. Martin, “Ancient Medical Texts, Newly Re-Discovered: The Medical Background of Biblical Breathing.” *Early Christianity* 1, no. 4 (2010): 2. <https://doi.org/10.1628/186870310793597097>.

Defining the problem

When we compartmentalize our lives in any way, it prevents us from recognizing the power of the Holy Spirit. We begin to lose the ability to integrate our lives. We can develop a dichotomy that says spiritual is important, but only in a particular realm. We begin to separate physical and spiritual. As our society grows in knowledge about our physical health and experiences beneficial advances in medical sciences, this creates a danger of constraining our understanding of overall health and well-being as being limited to the physical aspect. As a result, we give less attention to the spiritual dimension. We may proclaim that the spiritual is important, but limit this to a particular realm. As our society grows in knowledge about our physical health and experiences beneficial advances in medical sciences, this creates a danger of constraining our understanding of overall health and well-being as being limited to the physical dimension. This produces a struggle to integrate the physical and spiritual. As a result, Christians adopt a dualistic way of viewing body and spirit as separate entities instead of recognizing that these are inseparable. Physical health and spiritual health are intertwined and interdependent on each other.

I want to show that physical health and spiritual health are not only inseparable, but that they contribute to one another. It is my hope to provide a model for how to make this integration, encouraging ministers and others to do the difficult work of using a theological lens to help bridge this dualistic divide. This work could be especially important for chaplains or those working in the medical field, where scientific knowledge is often presented as being distinct from a spiritual dimension, despite the fact that these two are inseparable.

Defining Spiritual

As we talk about the spiritual dimension and the importance of integrating this with the rest of our lives, it is important that we clarify what is meant by the use of this term. Sometimes there is an overlap in the way that we use various terms. In common language we will sometimes talk about “the spirit that is within me,” and we are not referring to God’s Spirit, but instead to something broader. “Within this category, spirit often refers to an overall religious orientation or disposition toward the spiritual dimensions of reality and of human experience.”⁶ In this case, spirit is used generically as being “synonymous with religion or spirituality. In this usage, the breadth, depth, flexibility, and ambiguity of the words religion and spirituality are simply transferred over into the word spirit.”⁷

The words “spirit” and “spirituality” can also become a catchall category to talk about something that has nothing to do with any religious structure. “Today, while an increasing number of people are said to be ‘spiritual,’ as opposed to being merely materialistic, this sense and use of the word “spirit” has little or nothing to do with the Spirit who is attested to in scripture.”⁸

The best definition that I have found for the word ‘spiritual’ talks about this as being something that resides deep within us, but also identifies a connection with something beyond us. Many other definitions limit spirituality by defining this word within a particular religious

⁶ Amos Yong, *The Cosmic Breath: Spirit and Nature in the Christianity-Buddhism-Science Triologue* (Leiden, The Netherlands: Brill, 2012), 39.

⁷ Yong, 39.

⁸ J. M. Moritz, “The Emergence of Spirit in an Evolutionary Cosmos: Moving Beyond the Perceived Dichotomies.” *Canadian Journal of Pentecostal Charismatic Christianity*, 3, (2012): 108–116.

structure. But in the Encyclopedia of World Religions series, Ewert Cousins identifies a definition in the preface, and this lens is used throughout the series as they give in-depth information about various religious practices. Using this framework, they define spirituality as being, “That which is the innermost core of our human being which allows us to encounter the transcendent.”⁹ This definition works for my project as I talk about the duality that has developed between the physical and spiritual dimension. It is *ruah* at our innermost core that connects us with the transcendent presence of *ruah*, God’s Spirit that surrounds us and connects us.

My Vocational Journey

My vocational journey has involved different interactions with *ruah*, and in this project I am attempting to integrate some of this learning in order to create a fuller understanding of breath. I spent the first part of my vocational life in the field of psychophysiology. I was very interested in the mind-body connection and felt there was more to be learned in this area. I became a Licensed Professional Counselor and specialized in stress and anxiety, and also earned a certification from the Biofeedback Certification International Alliance as a biofeedback therapist. I spent many years in private practice, working with clients to help reduce the impact of stress. I also supervised therapists and trained other clinicians on the use of biofeedback equipment and the technology that is utilized in this treatment. This biofeedback equipment allows one to monitor physiological signals such as muscle tension, heart rate, skin temperature, skin conductance, breathing, and brain waves, and displays this information on a computer

⁹ Louis K. Dupré, Don E. Saliers and John Meyendorff, “Christian Spirituality: Post-Reformation and Modern,” in *Encyclopedia of World Religions* (New York: Crossroad, 1991).

screen. In addition to the raw signal, complex signal processing allows the display to be configured to include many other computations and data output. The primary purpose of feedback is to allow people to have more information about what is happening physiologically in their body. The word comes from *bio*, meaning “biology” and *feedback*, meaning to give information. In the same way that a mirror gives information about how one looks, biofeedback equipment gives information about what is going on within the body. By becoming more aware of physical responses, one can develop a new level of awareness and can begin to identify unhealthy patterns. This allows persons to begin to control this physiology on their own. Some symptoms that used to require medication can now be under one’s volitional control, reducing the need for medication.

Through my work with the equipment manufacturer, I had the opportunity to work with an international organization, the Biofeedback Federation of Europe, and helped to develop training modules for a specific area of biofeedback called heart rate variability (HRV). As a part of this process, I was able to work with some of the top researchers in this field and attend international conferences where I had the opportunity to present and also learn about the broad application of HRV. I began to use this modality more in my own private practice and witnessed the benefits from HRV training.

During my time as a therapist, I began to hear whispers of a call to ministry, something I had initially discerned in my late teen years but had never fully explored. Eventually, I attended seminary and went through the ordination process in The United Methodist Church. Although I initially tried to continue my private practice at the beginning of seminary, I came to realize that I needed to set this part of my vocational identity aside in order to fully embrace my call to pastoral ministry. But along the way, I continued to have the sense that at some point these two

paths would converge. I continued to stay current with the renewals as a Licensed Professional Counselor license and also my certification in biofeedback, becoming a Senior Fellow with this organization.

After many years in congregational ministry, I was able to witness a different side of the stress that impacts us all. Not only does it impact our physical lives, but it impacts our relational ability as well. I watch people during stressful times move away from church and isolate themselves from one another. I recognized that stress could have an even greater impact than I initially realized. I started to bring in some of the teachings from my years in the counseling field, and I was curious to explore more about the spiritual dimension of stress and anxiety. I knew the power of breath to change physiology. And now I was interested in looking at the spiritual dimension of this as well. For my doctoral work, I felt these two applications of my vocation were preparing me to do some research on breath and to explore ways to integrate the physiological learning that I had gained during my years as a therapist with the pastoral experience from my years in ministry.

Context

Context adds an interesting element. During the time I was working on this project there were two major events in our society that called attention to the importance of breath.

In June of 2020, George Floyd was held down by a police officer while he cried out, “I cannot breathe.” Bodycam footage shows this being repeated more than 25 times. Unfortunately, this wasn’t the first time this phrase was used by a Black man who was being detained by police. In 2014 Eric Garner’s last words were a desperate plea for air, stating “I can’t breathe.” This cry became associated with the Black Lives Matter movement. In the summer of 2020, protests

erupted throughout the country and the marches echoed the same phrase, "I can't breathe." This was a cry against the basic element of life that was being taken away unjustly. But this also became a phrase to express the pain in our society. I considered the problem at the heart of this injustice. Yes, there was the physical harm that was done individually to these people who were treated unfairly by police officers. But this also served to uncover a deeper pain. The repeating of this phrase, "I can't breathe," began to represent the pain of minority communities. Not only had life been taken away unjustly, but they were expressing the pain of feeling they could not live life abundantly because of the oppression they had experienced. We were definitely not a society who was unified. Minorities began to feel even more oppressed as these protests appeared across the nation. Racial slurs became more prevalent as some people were unable to adopt an empathetic viewpoint and instead were judgmental and dismissed the fact that we had a deeper problem. This further exacerbated the pain of minorities and divided our communities. We were in great need of racial reconciliation. And this phrase about breathing was not only a motto for this movement, but it also illuminated the disconnection from one another and expressed the pain of injustice. The showed the ways we fail to live life abundantly.

During this same season, breath was given attention in another important arena. COVID-19 had spread throughout our world and this dreadful virus was causing all of us to attend to our breath in new ways. Masks became the norm. We learned how breath could be a dangerous carrier of this virus. We became leery of being too close to one another, attempting to avoid the breath of someone else. From a medical standpoint, we paid close attention to our breathing. The slightest wheeze or chest congestion created anxiety and caused us to worry. We waited on pins and needles until we were able to be tested and receive our results, which in the beginning could sometimes take up to two weeks. Stress increased all around us. Masks restricted our airflow. We

became disconnected and isolated. We couldn't visit our family and friends. We adjusted our normal activities like church, and school, and work, and anything else that involved groups of people. Retail stores and restaurants fell under new guidelines to close or limit occupancy. I know most of us lived through this and I am not sharing anything new. But my purpose of recounting this is to point out the irony that the two things I was researching, breath and stress, were both impacted greatly by this global pandemic. We were reminded of the importance of breath and the ways that our breath can be impacted when we are not healthy. And our stress levels definitely rose to a level that was almost unbearable at times. On a different level, we were definitely not living life abundantly.

These two events pointed to the power of breath and the way that breath and life are inseparable. Through this time, we became a society that held our breath in many ways. Too often, this is how we go through life. Especially when we face a time that is challenging. Our breath impacts our physiology, and our breath is also impacted by our stress responses. But I also know that scripture teaches that the Holy Spirit both gives and sustains life. I have experienced the power of the Holy Spirit in my own life. But I have to admit that I often take it for granted. I'm not always approaching life with an open heart that is connected to God and others. However, the truth is that this does not limit God's work. Despite the ways that I may create barriers in my own life, God faithfulness endures. *Ruah* is the gift of life that we receive and *ruah* is the Spirit that surrounds us, and leads us, and sustains us.

I know the power of HRV training to bring about physiological balance and reduce our stress responses. I also know the power of the spiritual truths of God's presence given to us through *ruah*. This paper is an attempt to integrate these two realities, to see if they can each lend something to the other, magnifying their individual impact.

The focus of this paper will not be to prove the efficacy of HRV as a measure, but instead it will merely explain the concept enough to understand the important role that breath has in regulating the balance between the sympathetic and parasympathetic nervous systems.

The integration of these disciplines through the exploration of breath is thought to be unique. While attention has been given to the integration of body and spirit, I can find no evidence of this being done through the measure of HRV. Scholarly work exists on HRV and the physical/health benefits of physiological balance. Scholarly work exists on the interpretation of *ruah* and *pneuma* from a Biblical perspective, tying this to the breath of life that comes from God. But there does not seem to be a place where the medical science of HRV overlaps with the theological understanding of breath.

This research will reveal more about the miracle of creation and how we are equipped by God with a sympathetic and parasympathetic nervous system. These systems regulate physical arousal and the body's stress response. Learning how to reduce the unhealthy physical symptoms from stress can allow us to more fully connect with God once we are in a more balanced state. We honor God by taking care of our bodies and remaining healthy. It is my hope that through the power of *ruah*, we can learn to embrace this gift of breath that connects us and gives us life.

Chapter 1 The Holy Spirit and *Ruah*

Wesleyan theology talks in great length about the way that God's Spirit continues to work within us to transform us. This is not seen as a one-time event, but something that continues throughout our whole lives. When we are ordained as pastors in The United Methodist Church, we are asked several questions about our United Methodist theology. One question that we are asked is, "Do you believe that you will be made perfect through Jesus Christ?" And the answer is, "Yes!" Not "yes," because of what I am doing, but "yes, with God's help, this is possible." Because of the ways that God's Spirit continues to work within us, we grow to be more Christlike. We grow towards perfection. We look around and realize we are surrounded by brokenness. It is only through the grace of God that healing can take place. Only God can heal this brokenness and unite us all through God's perfect love. The Holy Spirit is active in leading us day to day as we grow in our faith and as we are transformed, reclaiming the image of God.

The Holy Spirit was very active in my call to ministry. I know it was the Holy Spirit that continued to place this whisper in my life that had me considering a new application of my vocational call. It began as a small tug or urging through a series of small events. For example, while listening to sermons I began to hear stirrings of the call I had felt in my teens. When I was at Stephen Leader training, we were split into groups of laity and pastors for lunch one day, and I had an overwhelming sense that I was sitting in the wrong room and really should be going to the pastor's luncheon. During my personal devotional and quiet times, I began to receive messages that directed me towards ministry. While listening to pastor friends talk about their job, I felt a strong emotional pull, wishing I could participate in activities such as being with individuals on the spiritual journey through important times in life, like during hospital visits or family deaths, and wanting to have the chance to prepare sermons and administer sacraments.

Throughout this time, I kept saying that at some point I needed to clear some space in my way too busy life to devote a large chunk of time to “listening” and trying to get some clarity on what I was hearing. Week after week I'd hope that maybe the next week would be a better time to make some space for that. The stirring finally became “loud” enough that it brought me to my knees. I felt a sense of dissatisfaction with where I currently was, coupled with extreme turmoil and unsettledness. I can now see it was like the earth being plowed in preparation for a new crop. It was time to really look at this and quit running. I finally got still to listen and devote the time I needed to talk with pastors and others in my life, and I got the clear message that I needed to investigate the possibility of some type of ministry.

Then the most amazing thing happened. After one particular conversation where this was becoming clear, I continued to argue with God in my mind for a few hours. While I was doing dishes that evening, I continued debating all the different aspects of why I wasn't fit for ministry and why I was not supposed to consider seminary. I heard my phone chime saying I received a text message. When I looked at the phone number, I could see it was an unfamiliar number. I thought it was strange, but I opened it to see what the text said. There was only one word that appeared: “HEED.” I immediately felt this energy that is unexplainable in human terms, and I knew what the message meant for me.

The next day, I called the unknown phone number back to try to make sense of the message. I talked to a young man who said he had just gotten a new Blackberry, and it had a phone number that was very close to mine. He apologized and said he was trying to send a test text message from his cell phone to his new device and mis-dialed the number. When I asked him, what made him type what he did as the text message, he said he had no idea what he had typed. He said he had pressed some random keys and his phone had text recognition and must

have turned the letters into a word. Amazing. I was eventually able to see the ways that the Holy Spirit was leading me to a new vocation. I became more aware of the power of the Holy Spirit, and this opened my eyes to more expressions of God's Spirit in our midst.

I share my call to ministry as just one illustration of that ways that the Holy Spirit leads us in our faith life. As a pastor I have the honor or hearing these kinds of stories from others as well, and I am confident that the Holy Spirit is active in our midst in so many ways that we fail to recognize. In fact, in my cultural context we don't really give much attention to the power of the Spirit. As much as Christians claim the Holy Spirit as an important person of the Trinity from a doctrinal perspective, we don't always apply this same emphasis when we live out our faith. Western Protestantism has been accused of giving more attention to the doctrine of Christology and less to that of the Holy Spirit. I recognize this imbalance in my own interactions with others in pastoral ministry.

The Gifts of the Spirit

Throughout our Christian journey, we seek to recognize and understand the gift that is ours through Christ. The gift of salvation is something that continues to unfold and to take on deeper meaning. But we miss a huge element of this salvation if we limit our understanding of this to Christ's action on the cross. This salvation continues in our lives as the Holy Spirit leads us to wholeness. Our understanding of the Holy Spirit is often focused on the New Testament writings that shape much of our understanding of this work. But this understanding cannot be separated from the revelation that is shared in the Old Testament. Despite the prevalence of the

word *ruah*, there has not been ample focus on the ways this word is used throughout scripture and we seem to lack a general understanding of a definition.¹⁰

God's breath shared through the outpouring of the Spirit that changes us. Joel 2:28 proclaims this power. "I will pour out my spirit on all flesh; your sons and your daughters shall prophesy, your old men shall dream dreams, and your young men shall see visions."¹¹

We were created in the image of God, and that image is love and perfection. In our humanness we have fallen away from this, but God's love is persistent and unceasing. God's Spirit is active in bestowing this grace. God's love is at work in our lives from the beginning and never ceases to be. We tend to focus on the work of the Holy Spirit as being present in particular moments, such as at Pentecost. But the "Holy Spirit is continuously at work in all of our lives, from our very beginnings, in every encounter, in our daily work, in our communities, indeed throughout the whole universe."¹²

God's presence is never-ending in our lives. Scripture proclaims this truth over and over, but there are two major events in the Christian calendar that regularly remind us of this truth: Christmas and Pentecost.¹³ On Christmas Eve we celebrate the fact that God becomes incarnate and is present in a new way through the baby in the manger. This changed everything. However, the action of Pentecost is perhaps equally important but receives much less attention. The Spirit is poured out on all flesh. Once again, God is present in our lives in a new way. While there are

¹⁰ John R. Levison, *A Boundless God: the Spirit According to the Old Testament*. Grand Rapids (MI: Baker Academic, a division of Baker Publishing Group, 2020), 4.

¹¹ Joel 2:28

¹² Trevor Hudson, *Holy Spirit Here and Now* (Nashville, TN: Upper Room Books, 2013), 15.

¹³ Amos Yong, *The Cosmic Breath: Spirit and Nature in the Christianity-Buddhism-Science Dialogue* (Leiden, The Netherlands: Brill, 2012), 37.

some protestant denominations that lean into the gifts of the Spirit more fully, the mainline denominations where I have worshiped and served fail to fully grasp the gravity of this event.

Ruah in Scripture

Our first encounter in scripture with *ruah* comes in the second verse of the Bible. “In the beginning when God created the heavens and the earth, the earth was a formless void and darkness covered the face of the deep, while a wind from God swept over the face of the waters.”¹⁴ In God’s first creating act we see *ruah* present. The translation of the word here can sometimes lead us to diminish this to a wind that God activated in creation, but this is much greater. In Genesis 1:2 we encounter *ruah* “not as a created substance but as an aspect of the divine being.”¹⁵ Even though the English language doesn’t have an exact translation that captures the depth of this word, we try anyway. And sometimes this contributes to our misunderstanding of the strength and power of *rûah*, and the importance of *rûah* as a force in our lives. The use of *rûah* in Genesis 1:2 “illuminates the strength of ambiguity: spirit is wind, wind is spirit. To divide natural from supernatural, material from spiritual, is to ignore the cue in the first words of scripture. Wind and spirit are indistinguishable from each other in this first appearance of the word *rûah*.”¹⁶

¹⁴ Genesis 1:1-2

¹⁵ Norman C. Habel and Peter L. Trudinger, *Exploring Ecological Hermeneutics* (Atlanta, GA: Society of Biblical Literature, 2008), 15.

¹⁶ John R Levison, *A Boundless God: the Spirit According to the Old Testament* (Grand Rapids, MI: Baker Academic, a division of Baker Publishing Group, 2020), 20.

This creating power continues in the second creation narrative where scripture talks about the breath of life that comes from God. “Then the Lord God formed man from the dust of the ground, and breathed into his nostrils the breath of life; and the man became a living being.”¹⁷

It is this breath that continues to breathe within us today. This was not just a onetime act at creation and then God withdrew God’s presence. This same Spirit lives and breathes in each of us. Although *ruah* is sometimes translated as ‘wind’, Levison cautions that we “should not take that to mean mere wind.... If it is wind, it is God’s wind.” Even though we don’t understand everything about God’s creating power, scripture helps to reinforce this truth for us. “Just as you do not know how the breath comes to the bones in the mother’s womb, so you do not know the work of God, who makes everything.”¹⁸ Scripture reminds us of the ways that God’s Spirit is active in giving life. Psalm 104 summarized this truth. “When you hide your face, they are dismayed; when you take away their breath, they die and return to their dust. When you send forth your spirit, they are created; and you renew the face of the ground.”¹⁹ In scripture we find a Spirit that is active and ever-present. Jack Levison has written extensively on the presence of the Holy Spirit and he describes that in scripture, “The spirit was a force to be reckoned with, an impulse to which, mere humans capitulated, a source of daily breath and an uncontainable outside power.”²⁰

This creating power is not limited to the Old Testament. In John 20 when Jesus ‘breathes’ the Spirit, this passage intentionally points back to the creation narrative in Genesis 1; “just as

¹⁷ Genesis 2:7

¹⁸ Ecclesiastes 11:5

¹⁹ Psalm 104:29-30

²⁰ John R. Levison, *Fresh Air: the Holy Spirit for an Inspired Life*. (Brewster, MA: Paraclete Press, 2012), 9-10.

God breathed the breath of life into humankind, so now Jesus ‘breathes’ the divine breath of life into the disciples.”²¹

In scripture, breath is understood to not only give life at creation, but to also sustain life. “‘Breath’ is the primary signifier of life in biblical thought: its presence indicates life; its absence death.”²² In Job, chapter 27, we hear Job talking about the integrity that he is dedicated to maintaining as he goes through this difficult time. In the same way that we might utter the phrase “as long as I shall live,” in verse 3 Job states the same sentiment in this way: “as long as my breath is in me and the spirit of God is in my nostrils...”²³ This is significant because it shows the matter of fact understanding that it is God’s Spirit that breaths within us and sustains us. This is not presented as a profound revelation or something that anyone else finds shocking. In this narrative it seems to be taken by others as a well-known fact. This understanding is not limited to scripture. Israel’s poetry also expresses the keen awareness that life’s end is concurrent with the loss of God’s spirit-breath.²⁴ As we learn more about physiology and understand the mechanics of breath, we seem to have lost this connection to the spiritual element.

Job 12:10 expresses the confidence that God gives us life through our breath. “In his hand is the life of every living thing and the breath of every human being.”²⁵ But scripture not only shows that *ruah* is the source of life at creation, it also reminds us that there is no life outside of

²¹ Marianne Meye Thompson, *The Holy Spirit and Christian Origins: Essays in Honor of James D.G. Dunn* (Grand Rapids, MI: Eerdmans, 2005), 71.

²² Norman C. Habel and Peter L. Trudinger, *Exploring Ecological Hermeneutics* (Atlanta, GA: Society of Biblical Literature, 2008), 12.

²³ Job 27:3

²⁴ John R. A. Levison, *Boundless God: the Spirit According to the Old Testament* (Grand Rapids, MI: Baker Academic, a division of Baker Publishing Group, 2020), 23.

²⁵ Job 12:10

the life given by God through *ruah*. Job’s friend Elihu proclaims the power of God to give us life: “If he should take back his spirit to himself, and gather to himself his breath, all flesh would perish together, and all mortals return to dust.”²⁶ At funerals we proclaim the reality that our life cycle is limited and that only God knows how long *ruah* will live and breathe within us. But one day “...the dust returns to the earth as it was, and the breath returns to God who gave it.”²⁷

Ruah in Worship

I am reminded that our church community declares the work of the Holy Spirit almost every Sunday, even if our eyes are not open to perceive the presence. My local congregation recites the Apostles Creed regularly as our affirmation of faith. And I am not sure that we recognize the power of what we claim. This creed is organized by three sections that recount our understanding of each person of the Trinity. It begins by claiming the creating power of “God, the Faither Almighty.” In the second section, we name the work of “Jesus Christ, his only Son, our Lord.” And the third section says,

I believe in the Holy Spirit,
the holy catholic church,
the communion of saints,
the forgiveness of sins,
the resurrection of the body,
and the life everlasting.²⁸

Sappenfield points out the importance of this list of items as not being a catchall category for other miscellaneous things related to our faith, but instead he says, “This is a list of how the

²⁶ Job 34:14-15

²⁷ Ecclesiastes 12:7

²⁸ Apostles Creed, *The United Methodist Hymnal: Book of United Methodist Worship* (Nashville, Tenn.: United Methodist Pub. House, 1989): #881.

Holy Spirit lives in our lives. These are the routine activities of grace that God's people have been inhaling and exhaling since the second chapter of Genesis.”²⁹ But too often we take God’s grace for granted. Although these words are recited each week in worship, we remain blind to the power of the spirit in our lives. “In the Old Testament *rûah* brings to life, animates, creates, and *transforms*. This is particularly (but not exclusively) so when the text speaks of “the spirit of God” (*rûah elohim*) or “the spirit of the Lord” (*rûah Yhwh*).”³⁰

The Translation of Ruah in the Old Testament

The word *ruah* is used frequently throughout scripture and often translated as breath in English. If one reads a common English translation, the word ‘breath’ is found several times throughout the Bible. A wordsearch reveals that ‘breath’ is found 109 times in the NRSV, and 79 times in the NIV. But this is only part of the story. You have to go back to the original Hebrew to realize the prevalence of the word *ruah*, which occurs 394 times in the Old Testament, but it is translated in various ways including breeze, breath, wind, or spirit.³¹ Levinson claims that “English simply cannot shoulder the breadth of meaning that the original languages can.”³² There are other biblical concepts that we consider foundational and give much more attention or focus as we study and apply these words. Some of these pivotal terms appear much less frequently than the word *ruah*.

These key nouns punctuate the pages of the Jewish Scripture:

²⁹ William J. Sappenfield, “The Paradox of Breathing.” *The Living Pulpit* 25, no. 3 (2016): 18.

³⁰ Dierdre Dempsey, “Rûah elohim: Wind, Breath, or Spirit?” *The Bible Today*, 210.

³¹ David G. Firth, *Presence, Power, and Promise: the Role of the Spirit of God in the Old Testament* (Downers Grove, IL: IVP Academic, 2011), 16.

³² John R. Levison, *Fresh Air: the Holy Spirit for an Inspired Life* (Brewster, MA: Paraclete Press, 2012), 15.

bārākā: blessing, occurs 71 times
šabbāt: Sabbath, occurs 111 times
kābôd: glory, occurs 200 times
tôrâ: Torah, teaching, or law, occurs 223 times
šālôm: shalom, peace, well-being, or simply hello!, occurs 237 times
ḥesed: mercy or covenant faithfulness, occurs 249 times
bərît: covenant or agreement, occurs 287 times³³

The difficulty in translating the word *ruah* probably contributes to our misunderstanding of the importance of this truth and causes us to diminish the concept. Habel suggests that these various translations present a deeper problem, saying that these interpreters “have introduced into the Bible a dramatic divide between spirit and matter, between body and soul, between human and nonhuman, which was not part of the biblical worldview and which has drawn an unbiblical divide between human beings and their environment.”³⁴

Dempsey points out that Psalm 104 gives us a great example of the ways that *ruah* is translated differently.³⁵ “You make the clouds your chariot, you ride on the wings of the wind [*ruah*], you make the winds [*ruhot*] your messengers... When you hide your face, they are dismayed; when you take away their breath [*ruah*], they die and return to their dust. When you send forth your spirit [*ruah*], they are created; and you renew the face of the ground.”³⁶ In this one passage the same Hebrew word is translated three different ways. This exemplifies the complexity of this word and the challenges in interpreting.

³³ John R. Levison, *A Boundless God: the Spirit According to the Old Testament*. Grand Rapids (MI: Baker Academic, a division of Baker Publishing Group, 2020), 1.

³⁴ Norman C. Habel and Peter L. Trudinger, *Exploring Ecological Hermeneutics* (Atlanta, GA: Society of Biblical Literature, 2008), 17.

³⁵ Dierdre Dempsey, “Rûah elohim: Wind, Breath, or Spirit?” *The Bible Today*, 208.

³⁶ Psalm 104:3b-4;29-30

Another good example of the difficulty in interpreting can be seen by choosing a verse that contains *ruah* and look at it in several different English translations. Habel says that Genesis 1:2 connects atmospheric winds with God’s breath, but KJV and RSV use the word “spirit,” the NRSV says “wind,” several other translations including the NIV, NLT, and The Message go one step further than the KJV and RSV by capitalizing ‘Spirit,’ thus “granting *rûah* a special independent, spiritual status.”³⁷

Although we read these words in the different translations as being a totally different translation, there is some commonality between these words. We can see the association. “The connection between ‘wind’ and ‘breath’ seems natural to us even today and appears, for example, in our common expression for having the ‘wind [actually the ‘breath’] knocked out’ of a person, through a physical blow or fall, or in the term ‘winded’ for a runner who is ‘out of breath.’”³⁸ “This range of meaning found in the Hebrew word *rûah* is also echoed in the Latin word *spiritus*, which is translated sometimes as “breath,” sometimes as ‘spirit.’”³⁹ The Greek translation of this same word is *pneuma* and Firth points out that we can see a connection to some of our English words like ‘*pneumonia*.’ Additionally, we can see our English word *spirit* present in some words related to breath like ‘*aspirate*,’ ‘*aspirator*’ and ‘*aspiration*.’⁴⁰

³⁷ Norman C. Habel and Peter L. Trudinger, *Exploring Ecological Hermeneutics* (Atlanta, GA: Society of Biblical Literature, 2008), 17.

³⁸ David G. Firth, *Presence, Power, and Promise: the Role of the Spirit of God in the Old Testament* (Downers Grove, IL: IVP Academic, 2011): 29.

³⁹ Dierdre Dempsey, “*Rûah* elohim: Wind, Breath, or Spirit?” *The Bible Today*, 210.

⁴⁰ David G. Firth, *Presence, Power, and Promise: the Role of the Spirit of God in the Old Testament* (Downers Grove, IL: IVP Academic, 2011), 29.

Pneuma in the New Testament

We have talked about the difficulty of finding a single meaning of *ruah* in the Old Testament, and this challenge continued into the New Testament where the same word is translated into Greek as *pneuma*. Levinson analyzed the number of occurrences of *pneuma*, and his percentages help us recognize the prevalence of this word in particular books. “For every thousand words he writes, Paul refers to *pneuma* 4.78 times in his letter to the Romans, 5.85 times in 1 Corinthians, and a whopping 8.05 times in Galatians—nearly 1 percent of the words in this letter.”⁴¹ He goes on to talk about the use of this word by the Gospel writers, saying that

“In the Gospel of Matthew, *pneuma* makes up just over one (1.03) in a thousand words—one-tenth of a percent. In the Fourth Gospel [John], the word *pneuma* occurs just 1.53 times out of every thousand words. Luke’s Gospel contains 1.85 occurrences out of a thousand—surprisingly low, given that it is often identified as the Gospel of the Spirit. In the Gospel of Mark, *pneuma* occurs 2.03 times out of a thousand.”⁴²

But he goes on to identify a further challenge with the English translation. While Paul’s usage generally refers to the Holy Spirit, the usage of this word in the Gospels is also used to refer to “unclean spirits”⁴³

There is much that we don’t understand about the Holy Spirit. But what we do understand is that *ruah* is an important source of life. *Ruah* never shows up the same way in our lives. As soon as we have an expectation and try to box in *ruah*, we will find that this power is even greater and more complex than we can imagine. “Many find Him rushing upon them like a torrent...But in others He works in a very different way: He designs His influence to infuse,

⁴¹ John R. Levison, *An Unconventional God: the Spirit According to Jesus* (Grand Rapids, MI: Baker Academic, a division of Baker Publishing Group, 2020), 1.

⁴² Levison, 1.

⁴³ Levison, 2.

Sweet, refreshing, as the silent dews...He will continue (as He has begun) to work in a gentle and almost insensible manner.”⁴⁴

A scriptural study that reveals the Holy Spirit on the pages of the Bible is wonderful. But as Christians we have to take this truth beyond that realm. God’s Spirit is not something to just be studied from an intellectual perspective. God’s Spirit gives us life and must remain an active force in our lives. Our ignorance of this presence does not change its reality. But it changes our ability to more fully connect with God’s presence. It changes our ability to recognize the power of *ruah* in our lives.

⁴⁴ John Wesley, *Letters: “to Mary Cooke”* (VII, 298).

Chapter 2 Stress Physiology

Stress is present in our lives and manifests itself in many different ways. It seems that none of us are immune to the effects of stress. One of my earliest memories of lasting anxiety came from being called upon to read from a book out loud in elementary school. We were reading *Alice in Wonderland*, and I read a section about the Dodo bird. But instead of reading it correctly, I talked about the doo-doo bird. The class erupted in laughter and I was humiliated. You can imagine the fun that 4th graders had with that mistake! This impacted my ability to read aloud in class or any other setting for the rest of my life. If I knew I was about to have to speak out loud, I wanted to have the chance to look ahead and be very sure that I knew what words were coming, and I was not caught off guard by any of them. But the more interesting thing was not how this impacted me mentally, but how I responded physiologically. My breathing would become shallow and rapid; my voice would become shaky; my muscles tensed. I got the feeling of butterflies in my stomach and my hands would tremble. This was not just a pattern that happened once, but it was a pattern that was repeated over and over whenever I faced a similar situation.

Although I did eventually overcome my fear of public speaking, I found this same reaction at other times from other stressful events. As I took on more and more responsibility in my life, I found that the pressures and stress mounted. I felt the weight of deadlines, financial pressures, and the expectations of others. My stress response began to manifest itself differently. Instead of being something that was only heightened in a moment, I found myself at times living with a constant level of stress.

I have since learned that this is the case for many of us. Mounting pressure creates the feeling of stress in our lives. This is exhibited physiologically. As I started to study stress, I found it interesting that this is not something unique to our current society. I began to collect writings on this topic. “‘But the present world is a different one. Grief, calamity, and evil cause inner bitterness...there is disobedience and rebellion...Evil influences strike from early morning until late at night...they injure the mind and reduce its intelligence and they also injure the muscles and the flesh.’ Interesting enough, this writer lived 4600 years ago in China, even though his observations appear contemporary.”⁴⁵

Another favorite quote of mine comes from St. Teresa of Avila that was written in the 16th century.

How is it God, that you have given me this hectic busy life when I have so little time to enjoy your presence? Throughout the day people are waiting to speak with me, and even at meals I have to continue talking to people about their needs and problems. During sleep itself I am still thinking and dreaming about the multitude of concerns that surround me. I do all this not for my own sake, but for yours. To me my present pattern of life is a torment; I only hope that for you it is truly a sacrifice of love. I know that you are constantly beside me, yet I am usually so busy that I ignore you. If you want me to remain so busy, please force me to think about and love you even in the midst of such hectic activity. If you do not want me so busy, please release me from it, showing others how they can take over my responsibilities.⁴⁶

This reminds me of the fact that even though our stressors have changed, the reality of having external stimuli that place demands on us is not new. The problem of feeling the weight of outside expectations can place a strain on us that impacts our ability to connect with God.

⁴⁵ Herbert Benson and Miriam Z. Klipper. *The Relaxation Response* (New York, NY: William Morrow, 2001): 11.

⁴⁶ Saint Teresa of Avila, *The Complete Works of Saint Teresa of Jesus*, trans. Edgar Allison Peers (Sheed & Ward, London, 1946), 21.

Another quote related to this is popularly attributed to St. Francis de Sales in the form of a warning. I have had this quote come up more than once from people who want to talk about the difficulty of stress and the religious implications of it. “Anxiety is the greatest evil that can befall a soul except sin. God commands you to pray, but He forbids you to worry.” Although he did write on this topic, he never said this exact quote. But the fact that this is something that people hear as a truth is troubling. I find it quoted on social media from time to time, and people have brought this to me as a pastor and wondered about how to integrate the reality of concerns and worries in their lives with the religious mandate to not worry.

I believe that worry is a part of our nature. So, let me be clear that I do not share this quote in order to heap guilt on those of us who suffer from stress or anxiety (which would encompass each and every human being!) But I share all of these quotes in order to illustrate the fact that this is not something new. We think our challenges are new to our current age, but by these quotes we can see that we are not the first society to struggle in this way.

I have spent some time pondering the phrase attributed to de Sales, which references the biblical passages that tell us not to worry. I believe the attempt to articulate the command against worrying points to an essential element about stress and anxiety. It isn't the feeling of stress or anxiety that is a sin. Our feelings and emotions are not anything that God has ever placed judgement upon. God meets us in those places of need, in the deep valleys and dark nights that can feel like they stretch on for unbearable periods. God meets us where we are.

In Psalm 139 we are reminded that we cannot hide from God. “O Lord, you have searched me and known me. You know when I sit down and when I rise up; you discern my thoughts from far away. You search out my path and my lying down, and are acquainted with all

my ways. Even before a word is on my tongue, O Lord, you know it completely.”⁴⁷ These thoughts and feelings are not a surprise to God, who knows us more intimately than we know ourselves. Scripture doesn’t have anything to say directly about Jesus’ worry and stress, but we do know that he experienced human emotion. “Jesus wept.”⁴⁸ Therefore, I would guess that he also knew something about the pressure of our existence. One example might be the times it talks about Jesus being around large crowds and needing to get away. He might have even experienced the physiological stress response.

So, if these experiences are universal and the outside pressure can be a constant in our lives, then why is it that we find the prohibition against worry?

I spent years as a clinical therapist who worked with stress-related disorders and during this time I bristled against the biblical mandate against worry and anxiety. In some ways, it can be heard like God is telling us it is a sin to have heart problems or breast cancer. That is utterly ridiculous.

Once I entered pastoral ministry, I began to view this from another perspective and was able to recognize a deeper issue. Based on what I knew about the body’s response to stress, I was aware of the physiological changes that cause us to go into self-preservation mode. The fight-or-flight response creates thousands of changes throughout our bodies for that one purpose of self-preservation in the face of danger. While this makes sense from a physiological perspective, there hasn’t been enough focus on what this does to us spiritually.

If our whole existence is about communion with God and one another, then it stands to reason that stress and anxiety pull us in another direction. As much as our Christian teaching

⁴⁷ Psalm 139:1-4

⁴⁸ John 11:35

calls us to lift up our head and look beyond self to see the needs of others, stress causes us to change our focus for survival. The self-focused edge of self-preservation in the face of a weighty stressor can create blinders that keep us inwardly focused. This can work against living out our call to love others. Jesus was asked about the greatest commandment and his answer reminds us that we are called outside of ourselves. “‘You shall love the Lord your God with all your heart, and with all your soul, and with all your mind.’ This is the greatest and first commandment. And a second is like it: ‘You shall love your neighbor as yourself.’ On these two commandments hang all the law and the prophets.”⁴⁹ Stress can keep us from living out our call.

But perhaps a bigger consequence of this posture is the way stress can keep us from relying on and trusting in God. Jesus teaches about this in Matthew 6:25-35. Jesus is saying that he expects his followers to put forward energy into things that give meaning to life. To receive and participate in God’s abundance. It is so easy to get focused on our own needs and sometimes this happens at the expense of noticing the other needs that surround us. But we are called to be active in bringing about God’s kingdom. We are called to participate in God’s justice work. Jesus models that we should speak up for those who don’t have a voice and notice the ones on the margins. This means having eyes like Jesus. Stress can prevent us from participating in this work. But when we keep our perspective in the right direction, we not only see the needs around us, but because of our participation in God’s work and the connection that this brings, this perspective can also help us to remove the excessive worry that can result from a life separated from God.

Everything we have including our own life is a gift from God and is sustained by God. High levels of stress can cause us to turn inward and can sever our connection with God’s

⁴⁹ Matthew 22:37-40

presence, that is the very breath and air around us and within us. We view stress as a physiological and behavioral challenge, but we don't notice the ways it impacts us spiritually. This compartmentalization diminishes the importance of a spiritual dimension and God's presence in our lives.

Other religions teach on the same problems as well. In Buddhism, the word *dukkha* is used to talk about the suffering that is present in our human condition. Buddhist teachings say this originate from the false assumption of a separate self. "Ignorance is the belief in the *I, me, mine* standing vis-a-vis the world out there--and not cognizant of our fundamental interconnectedness with everything else."⁵⁰ The aim is to extinguish *dukkha* by getting rid of the dis-ease in our lives. This is done by an "eightfold Path, consisting of right seeing, right thought, right speech, right action, right livelihood, right effort, right mindfulness, and right concentration."⁵¹ This description of *dukkha* is akin to the state of sin that is talked about in Christianity. "Sin is a state of separation, or alienation, from God."⁵² We can see how our stress reactions can create this state of separation. Habito goes on to describe that separation from God is seen on three different levels. This includes "alienation from our fellow human beings," a state of "alienation from the natural world," and the ways we are "alienated from our own selves."⁵³ In this way, we can see that stress can be a huge contributor in all of these arenas.

I believe the real problem is not the presence of worry, stress or anxiety. The problem is the behavior that results from this state and the way it impacts our Christian journey. While

⁵⁰ Ruben L. F. Habito, *Healing Breath Zen for Christians and Buddhists in a Wounded World* (Boston, MA: Wisdom Publications, 2006), 15

⁵¹ Habito, 15.

⁵² Habito, 16.

⁵³ Habito, 17.

God's sanctifying grace transforms us to become more Christlike, stress can work against our recognition of this and threatens to disconnect us from God and others. This stress response is not limited to our physical dimension, but it spills over into all areas of our life, preventing us from living holistically. To partition this off as simply a physical problem denies the importance of our integrated lives.

God has created us and desires wholeness in our lives. Even in the face of stress, God equips us with healthy coping responses. In order to understand more fully this resource, it is essential to understand more about our physiological response to stress.

Defining Stress

In general conversation words such as stress, anxiety and worry are often used interchangeably, but they all have a slightly different meaning. The word *anxiety* often refers to the psychological condition associated with extreme worry or panic. *Worry* is often used to talk about the mental state of dwelling on hardship or difficulties. In this writing I will use the word *stress* to talk about the challenges, pressure, strain, and tension that we face and the ways this impacts us physiologically, emotionally, behaviorally, and spiritually.

The origins of the word *stress* can be traced to the to the 14th century, with an influence from other languages including the French word for distress, *destresse*, and the Latin word for compress, *strictus*.⁵⁴ At that time it was used to refer to hardship or adversity, but by the 16th

⁵⁴ Paul M. Lehrer, Robert L. Woolfolk, and Wesley E. Sime, *Principles and Practice of Stress Management* (New York, NY: Guilford, 2009), 6.

century the definition began to evolve. It was used to talk about “subjecting an entity (a material thing, a bodily organ, mental faculty) to stress or strain; to overwork, fatigue.”⁵⁵ While this does have an edge of our present day understanding, the definition and use of this word continued to evolve. “In the 19th century, *stress* became a precise scientific term employed within physics, used to refer to force applied to objects that could potentially result in deformation or strain.”⁵⁶

Stress has become such a part of our lives that we often use this word without thinking of its precise meaning. We often assume that others understand our usage from our same perspective, but this can present problems. “Everyone knows what it means, but it defies precise definition. Stress is defined as a response, or set of responses, to a stressor. Conversely, a stressor is that which elicits stress responses. Clearly the definitions are circular.”⁵⁷

Today we often use the word as a noun to refer to the group of responses that we experience from a particular event (I am feeling a lot of stress today). But we also use it as a verb to talk about an overall condition we are experiencing (You are stressing me out). And to further confuse things, we sometimes use it as a noun in a different way, talking about an activating event itself (That new job is a stress). To help clarify my usage in this project, I will generally use the word stress to talk about our reactions and the overall experience of events, and I will call the activating event a “stressor.”

⁵⁵ Lehrer, 6.

⁵⁶ Lehrer, 6.

⁵⁷ John T. Cacioppo, *Principles of Psychophysiology: Physical, Social, and Inferential Elements* (Cambridge: Cambridge Univ. Press, 1995): 216.

Stress Research

As difficult as it is to agree on a definition, it is even more difficult to study stress. A huge contributor to this is the fact that we all perceive the same stressor differently. This means that what is stressful to me may not impact you in any way. And to further complicate things, when we do experience something as stressful, we all react to the same stressor differently.

Recent advances have helped us to understand more about the various ways we respond to stress. Most of our current theories are built on the breakthrough research of two clinicians, Walter Cannon and Hans Selye. Their groundbreaking research has led to a whole new discipline that is dedicated to looking at the ways individuals respond to stress. The study of stress developed a new field that brings together behavioral sciences, physiology, psychiatry, and biomedical engineering to a discipline called psychophysiology.⁵⁸ This field has a “unique focus on relations between central and peripheral nervous system responses and behavior, cognition, and emotion in human beings.”⁵⁹

Fight-or-flight

Walter Cannon’s research radically changed our understanding of stress. “Although he used the term *stress* infrequently, he originated our modern biomedical concept of stress.”⁶⁰ Cannon identified a group of symptoms that are common in response to a stress, and he coined the term *fight or flight* response.⁶¹ He shared his finding in his 1915 book, *Bodily Changes in*

⁵⁸ John T. Cacioppo and Richard E. Petty, *Social Psychophysiology: a Sourcebook* (New York: Guilford Press, 1983), x.

⁵⁹ Cacioppo, x.

⁶⁰ Paul M. Lehrer, Robert L. Woolfolk, and Wesley E. Sime, *Principles and Practice of Stress Management* (New York, NY: Guilford, 2009), 6-7.

Pain, Hunger, Fear and Rage.⁶² Cannon understood this to be a healthy physiological response that allowed the body to protect itself.⁶³ He was able to explain how this response began in the limbic system and these adaptive responses allowed short-term response to danger. The problem, however, is that the stressors we face are often not of a physical nature. Whereas our ancestors may have needed to flee from a lion or be ready to fight another predator, our stressors are of a different nature. Job change, relational problems, impending deadlines, or a rising debt are just a few examples of the stressors we face today. We are “located in a complex contemporary world in which physical danger is minimal, yet [we are] equipped with an antiquated reptilian response system disposed to mobilize the organism for fight-or-flight even though, for most contemporary threats, neither fleeing nor combat is a viable option.”⁶⁴ Cannon’s next breakthrough was in his book *The Wisdom of the Body*,⁶⁵ where he described the concept of homeostasis and the way that “all cells, tissues, and organs maintain a static or constant “steady-state” condition in their internal environment.”⁶⁶

⁶¹ W. B. Cannon, *Bodily Changes in Pain, Hunger, Fear and Rage* (New York, NY: D. Appleton & Company; 1915), 24.

⁶² Walter Bradford Cannon, *The Wisdom of the Body* (New York: W.W. Norton & Co., 1967).

⁶³ Robert M. Sapolsky, *Why Zebras Don't Get Ulcers: the Acclaimed Guide to Stress, Stress-Related Diseases, and Coping* (New York, NY: Henry Holt and Co., 2004), 12.

⁶⁴ Paul M. Lehrer, Robert L. Woolfolk, and Wesley E. Sime, *Principles and Practice of Stress Management* (New York, NY: Guilford, 2009), 7.

⁶⁵ Walter Bradford Cannon, *The Wisdom of the Body* (New York: W.W. Norton & Co., 1967).

⁶⁶ F. Shaffer and J. Venner, “Heart Rate Variability Anatomy and Physiology,” *Biofeedback*, 41(1) (2013): 5, <https://doi.org/10.5298/1081-5937-41.1.05>.

Selye

Hans Selye's research had a huge impact on this field of knowledge with the release of his classic book *The Stress of Life* in 1956. He defined stress in this way: "Stress is the nonspecific response of the body to any demand, whether it is caused by, or results in, pleasant or unpleasant conditions."⁶⁷ To him, stress was not something that is avoidable but something that everyone experiences as a part of their everyday life. "Stress is not even necessarily bad for you; it is also the spice of life, for any emotion, any activity causes stress. But, of course your system must be prepared to take it. The same stress which makes one person sick can be an invigorating experience for another."⁶⁸

It was Selye's work that moved the concept of stress and our response from something that was in the laboratory to something that was more accessible to the average person. His biggest contribution was the identification of the general adaptation syndrome (G.A.S.) that further describes three stages of response to stress. The first stage is called the alarm stage.⁶⁹ This is similar to the fight-or-flight response described by Cannon. It involves the recognition and response to an emergency or threat.⁷⁰ In the second stage, that he termed the adaptive-resistance stage,⁷¹ the concept of homeostatic processes is important as they help the body recover from the

⁶⁷ Hans Selye, *The Stress of Life* (New York: McGraw-Hill, 1984), 74.

⁶⁸ Selye, xv.

⁶⁹ Selye, 38.

⁷⁰ Paul M. Lehrer, Robert L. Woolfolk, and Wesley E. Sime, *Principles and Practice of Stress Management* (New York, NY: Guilford, 2009), 7.

⁷¹ Hans Selye, *The Stress of Life* (New York: McGraw-Hill, 1984), 38.

response and return to a pre-arousal state.⁷² The final stage was named the exhaustion stage.⁷³

This is what we have recently called “burnout” state, when the excessive demands deplete our resources by being stuck in an extension of the alarm stage and prevent us from recovering to a pre-arousal state.⁷⁴

Individual Responses

The contribution of these researchers has allowed the field of research to blossom in the past few decades. The fundamental identification of the fight-or-flight response has provided a foundation for expanding this concept to recognize a variety of responses. There is no one template for how someone will respond, and these individual differences contribute to the difficulty of drawing a direct link from the stressors that impact us to the responses they create in our lives. One example of this complexity is the set of responses that have been labeled as ‘freeze-hide’ and can appear to be a completely opposite response from traditional stress symptoms.⁷⁵

In my clinical work, one of our regular practices was to include an initial assessment that gave us an idea of how a person responds individually to stress. Before beginning any biofeedback training, we wanted to get a baseline reading to find out where an individual began at rest, and how he/she reacted to a stressor. We obtained this information by hooking an individual, up to modules that monitored heart rate, skin conductance (the amount of moisture on

⁷² Paul M. Lehrer, Robert L. Woolfolk, and Wesley E. Sime, *Principles and Practice of Stress Management* (New York, NY: Guilford, 2009), 7.

⁷³ Hans Selye, *The Stress of Life* (New York: McGraw-Hill, 1984), 38.

⁷⁴ Paul M. Lehrer, Robert L. Woolfolk, and Wesley E. Sime, *Principles and Practice of Stress Management* (New York, NY: Guilford, 2009), 7.

⁷⁵ Lehrer, 7.

their skin), peripheral hand temperature, muscle tension, and breathing. The individuals began with a ten-minute relaxation period. They were then given a few stressors that were each followed by another relaxation period. For the first stressor, they were told that somewhere within the next minute they would hear a loud noise. The individuals were told they would not be harmed by the noise, and after they heard it, they were to return to relaxing. Towards the end of that minute-long period, we would make a loud sound by flipping the clip on a clipboard. With this stressor, we were able to see two things. During the anticipatory time we saw the stress response while they waited for the noise. We then were able to see the reaction to the loud noise, and in the following period of relaxation we could gauge whether they were able to return to a relaxed state. The next stressor was a mental stressor where they were told to count backwards from 100 by sevens as fast as they could for one minute, in order to see how far they could get. In the relaxation period that followed this, we were able to see whether they could return to baseline. The final stressor involved asking them to think about a stressful event for a minute, and then they went back to relaxation where they attempted to return to baseline.

Following this assessment, we reviewed the results with the individuals. We were able to see how they were reactive to stress. Some people exhibited this more with muscle tension, while others exhibited a significant change in their breathing. Still others showed a primary reaction in a skin conductance rise that failed to ever return to baseline. People generally exhibited stress reactions in many of these modalities, and the individual profile showed our varied responses. This demonstrated the way the body responds to a demand and was also a good illustration of the ways the stress response can build up over multiple recurring stressors as the clients physiological arousal overlapped into the recovery periods. This initial assessment also gave us something to use as a reference after engaging in training. The individuals could go back and

look at their initial reactions and see how much progress they have made. We could see that their initial shallow breathing was replaced by deep diaphragmatic breathing, and skin temperature in the stressful range was replaced by the ability to warm their hands with relaxation. Through training, the individuals began to gain control over their physical reactions.

Stress Physiology

Robert Fried equates education on stress physiology to the knowledge of automobiles. “After all, you don’t need to know how an internal combustion engine works in order to drive your car. But you do need to know how to start it, how to steer, how to fuel it, and how to stop it...and, don’t forget, where to park it!”⁷⁶ This is a great analogy for our understanding of stress. In order to keep the stress response from being something that is out of our control, it is helpful to gain a basic understanding of what is happening physiologically.

Coming from this perspective, there are some basic concepts of our stress response that are important to understand. In response to encountering a stressor, the body’s main response occurs in the autonomic nervous system. This is different from the voluntary nervous system, which is consciously controlled. When you want to raise your arm, stomp your foot, or turn your head, the voluntary is activated to let you perform these actions. But there are other responses that happen more automatically, and these are controlled by the autonomic nervous system.

⁷⁶ Robert Fried, *Breathe Well, Be Well: a Program to Relieve Stress, Anxiety, Hypertension, Migraine, and Other Disorders for Better Health* (New York, NY: John Wiley, 1999), 4.

Sympathetic and Parasympathetic Nervous System

The autonomic nervous system is divided into two different branches, the sympathetic and the parasympathetic nervous system. The actions of these two systems can be explained metaphorically to say that the sympathetic nervous system is like the accelerator on an automobile, and the parasympathetic nervous system functions as the braking system.

The sympathetic nervous system helps us respond to a stressor. The nerves of the sympathetic nervous system originate in the brain and flow into the spine, and “branch out to every organ, every blood vessel, and every sweat gland in your body.”⁷⁷ When a stressor is encountered, it is the sympathetic branch of the autonomic nervous system that releases stress hormones such as noradrenaline into the bloodstream and this causes the acceleration of other biological processes.⁷⁸ Following the release of stress hormones, “within seconds, norepinephrine is released from nerve endings and binds to postsynaptic receptors, and epinephrine leaves the adrenal medulla to circulate in the blood.”⁷⁹

⁷⁷ Robert M. Sapolsky, *Why Zebras Don't Get Ulcers: the Acclaimed Guide to Stress, Stress-Related Diseases, and Coping* (New York, NY: Henry Holt and Co., 2004), 23.

⁷⁸ Robert Fried, *Breathe Well, Be Well: a Program to Relieve Stress, Anxiety, Hypertension, Migraine, and Other Disorders for Better Health* (New York, NY: John Wiley, 1999), 19.

⁷⁹ Paul M. Lehrer, Robert L. Woolfolk, and Wesley E. Sime, *Principles and Practice of Stress Management* (New York, NY: Guilford, 2009), 19.

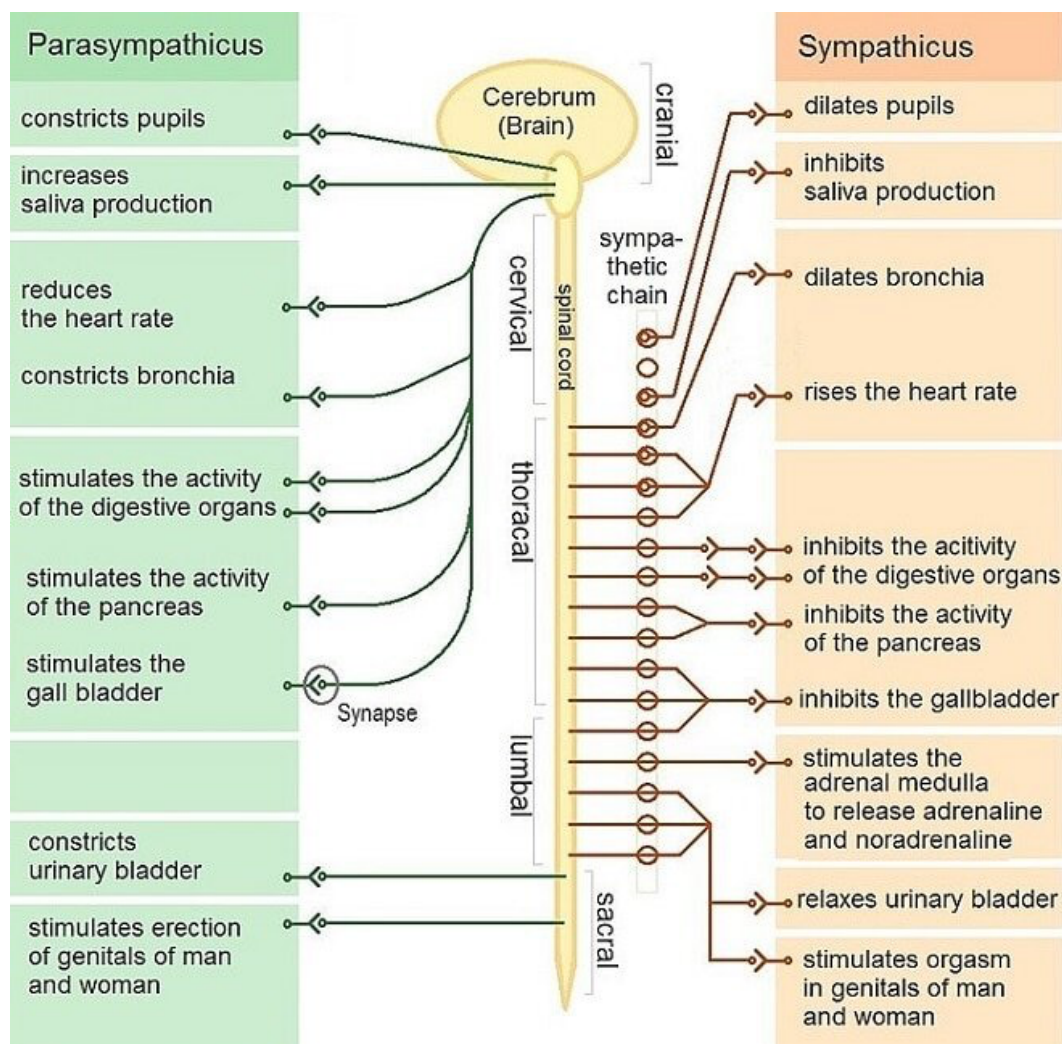


Figure 1. Sympathetic and Parasympathetic Nervous System.

Source: Neil A. Campbell, Jane B. Reece: *Biologie*. Spektrum-Verlag Heidelberg-Berlin 2003, ISBN 3-8274-1352-4.

The parasympathetic nervous system is the opposing branch of the autonomic nervous system. “It is the parasympathetic branch that restores the physiological balance for energy conservation by returning all the accelerated functions back to normal levels.”⁸⁰

⁸⁰ Robert Fried, *Breathe Well, Be Well: a Program to Relieve Stress, Anxiety, Hypertension, Migraine, and Other Disorders for Better Health* (New York, NY: John Wiley, 1999), 19.

The autonomic nervous system is created so that both of these systems cannot be activated at the same time.⁸¹ With a stressor the sympathetic system is activated, and then the parasympathetic system kicks in to calm the stress response. For example, the sympathetic system increases heart rate, inhibits digestion and diverts blood flow to the larger extremity muscles. When the parasympathetic system kicks in, it decreases heart rate, slows breathing and restores blood flow throughout the body.

Perception

It is important to recognize the impact that our own thoughts have a stress response. “Stress often begins with how you think. And how you think determines how you feel—both emotionally and sometimes physically as well.”⁸² Stress researchers have shown that although the fight-or-flight response originated as a result of the need to respond to a physical stressor, most of our stressors are no longer physical. Regardless, our body continues to react the same way. This means that mental stressors still create strong physical reactions.

In order to explain the power of thought as it relates to stress, I often used an example that involved a snake. Since most people are fearful of snakes, this example was effective in talking about the power of perception. I tell people to pretend in their mind that they are walking across their backyard and they come across a great big, long snake that is in their path. I ask them to consider how their body would react. Individuals would talk about breathing that was

⁸¹ Robert M Sapolsky, *Why Zebras Don't Get Ulcers: the Acclaimed Guide to Stress, Stress-Related Diseases, and Coping* (New York, NY: Henry Holt and Co., 2004), 24.

⁸² Joan Borysenko and Larry Rothstein, *Minding the Body, Mending the Mind* (Cambridge, MA: Da Capo Press, 2007), 268.

shallow and rapid, and muscles that would tense. They also talked about their hands shaking and the butterfly feeling they got in their stomach. These are some examples of the fight or flight response as our body is getting ready to run from the snake, or the brave ones might be looking for a shovel in order to attack the snake.

Next, I tell them to pretend that they turn their head away for a second and then turn back to look at what they thought was a snake, and I tell them that they then realize that it was only a garden hose. But the question is, did that matter? No. It did not matter whether it was an actual snake or not. The body *perceived* that it was a snake, and therefore the body *reacted* to this stressor. Of course, there are some people who are not scared of snakes and would not have this reaction. Stating that fact allows us to illustrate the different stress reactions among each individual. “Conditioning is a powerful bridge between mind and body. The reason is that the body cannot tell the difference between events that are actual threats to survival and events that are present in thought alone.”⁸³

This explains why we struggle so much in our current society with stressors. Although we no longer face the same physical threats, the mental stressors can be just as debilitating. “Most people experience stressful situations as time-consuming and mentally exhausting. Cognitive energy is devoted to thinking about the stressor and how it will affect oneself and loved ones.”⁸⁴ This can be exhausting and can deplete the body of the energy that is needed to sustain the stress response. “Perception of challenges from the environment within the context of

⁸³ Borysenko, 362.

⁸⁴ Paul M. Lehrer, Robert L. Woolfolk, and Wesley E. Sime, *Principles and Practice of Stress Management* (New York, NY: Guilford, 2009), 19.

awareness of personal ability occurs constantly, focusing attention and directing behavior, motivating the organism.”⁸⁵

Coping Skills

“Stress pervades human existence, from the prenatal period to birth until the end of life. The brain is hardwired to perceive experiences, to identify them as negative, neutral, or positive, and to react to them.”⁸⁶ We have a choice as to how we react once we have encountered a stressor. Granted, the initial stress response is often automatic and out of our control. But we can control what happens next. It is easy to get caught in a stress cycle. Demands or stressors have an impact on us, and we choose whether we engage an effective coping response, or whether we engage in non-effective coping. Non-effective coping leads to continued stress symptoms, which impacts other areas of our life including relationships, our home life, our job and other areas. This, in turn, further increases stress and perpetuates the cycle. Figure 2 illustrates this process.

⁸⁵ Lehrer, 19.

⁸⁶ Lehrer, 16.

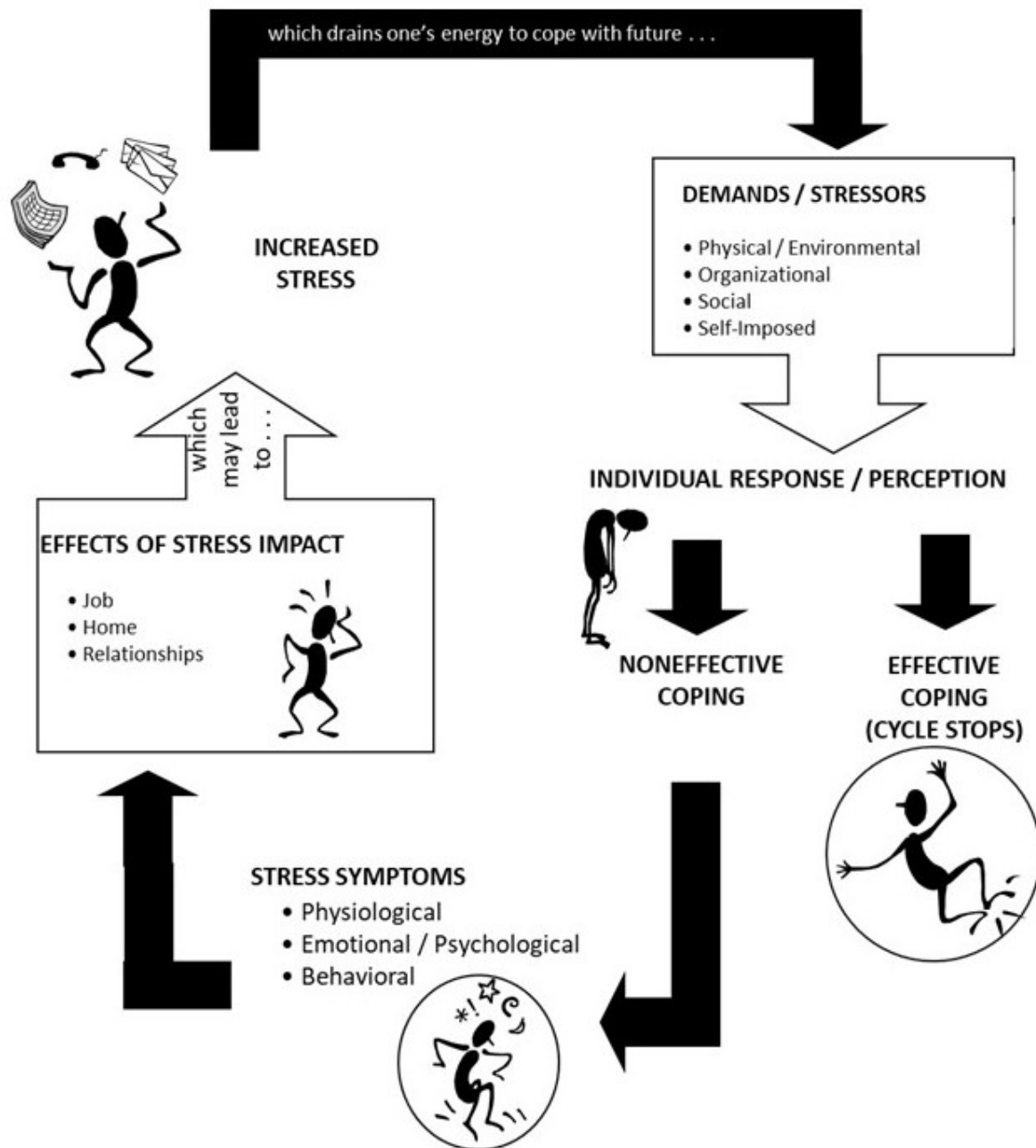


Figure 2. Coping skills.

Source: Author.

Therefore, the key to dealing with stress involves the coping response. An ineffective coping response can contribute to the buildup of the stress arousal, and an effective coping response can give us a chance to recover physiologically.

Figure 3 shows the results of these two different coping responses. In each of these illustrations, the individual is faced with three different stressors, represented by the lightning bolt. In the first example, the individual begins in a physiologically balance state. A stressor occurs, for example, they cannot find their keys, and that results in physiological arousal. They are now operating at an increased level. Because of not finding their keys, they are late for work, and they encounter another stressor when they hit traffic, which further increases their physiological arousal. And then when they get to work, their boss reprimands them, further increasing their physiological response. In Figure 3 one can see the graphical representation of this series of events as the stress response climbs.

In the second example, the individual has the same three stressors. After the first stressor, you see the physical arousal is escalated to the same level as the first example. But instead of remaining at this aroused level, the individual engages in some kind of healthy coping response that then decreases them back to baseline. They encounter the second stressor and have the same level of arousal, and healthy coping skills returned them to baseline again. After facing the third stressor they react but are once again returned to baseline. One can see the huge difference in arousal levels at the end of the three stressors.

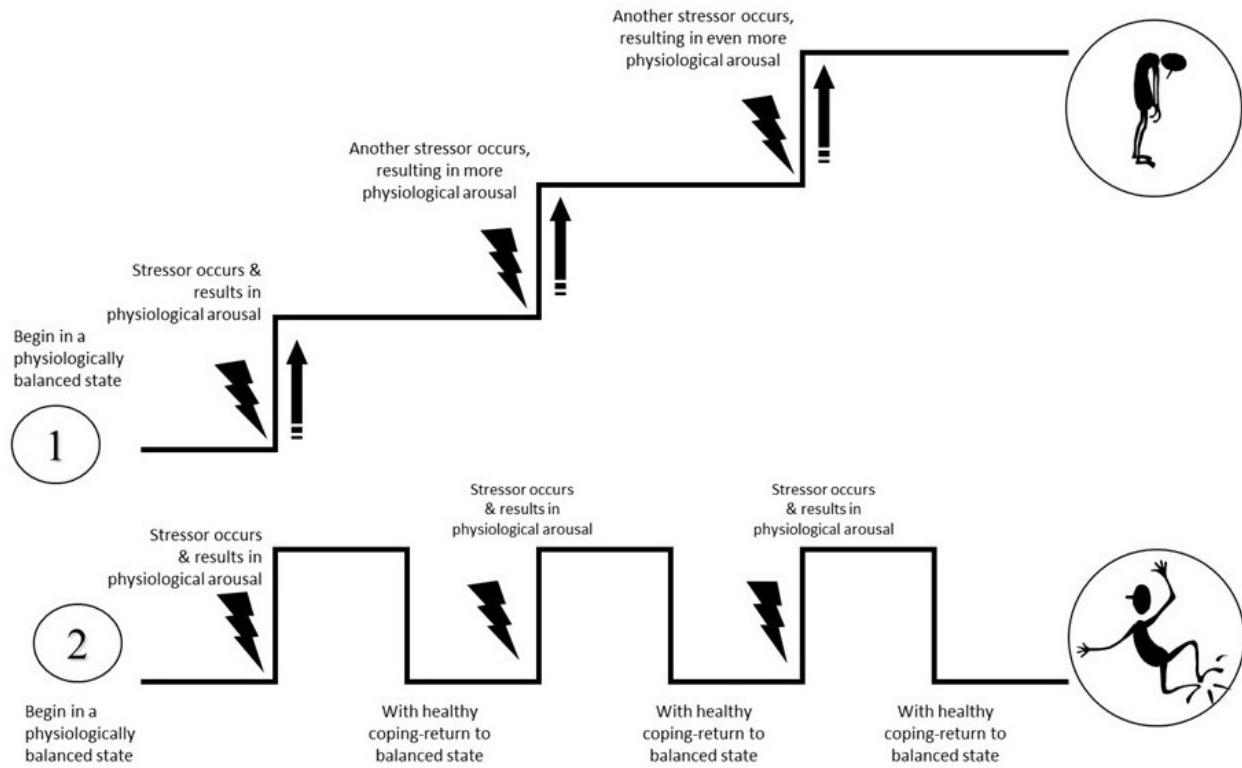


Figure 3. Response to stressors.
Source: Author.

Comparing these examples one can see the importance of a healthy coping response. “The person’s ability to judge the demands of the environment, to select the stimulus that requires attention and apply skills based on his or her own capabilities, determines the appropriateness of the behavioral and emotional response.”⁸⁷ There are many coping responses that we use when stressful demands come our way. Figure 4 lists some examples of healthy and unhealthy responses.

⁸⁷ Lehrer, 20.

Healthy:

- Sleep
- Communication
- Support Systems
- Exercise
- Laughter
- Self-talk
- Assertiveness training
- Time management
- Organization
- Cognitive restructuring
- Goal Setting
- Leisure/Recreation/hobbies
- Problem solving

- Nutrition
- Shoulder rolls-forward & Backward
- Shoulder shrugs/drops
- Neck stretch-side to side & Forward
- Breath counting
- Diaphragmatic Breathing
- The quieting response
- Meditation
- Relaxation response
- Visualization

- Guided imagery
- Autogenic phrasing
- Progressive muscle relaxation
- Biofeedback

Unhealthy:

- Aggression
- Worry
- Anxiety
- Alcohol
- Drugs
- Cigarettes
- Over/under eating
- Dumping
- Depression

Figure 4. Healthy and unhealthy responses.

Source: Author.

While there are many different systems in the body that are impacted by stress, I want to focus on two important aspects that end up influencing all the other stress reactions. This is the respiratory system and the cardiovascular system. Our breathing and heart rate can tell us a lot about whether our internal stress response is activated or not. And these two systems interact with one another in important ways.

Chapter 3 Breath Physiology

Physiologically, we know that breath is essential to life. And Biblically speaking, we know that it is God’s breath that gives us life and it is God’s Spirit that breathes within us. “Breathing is the foundational experience of human relationship with God. It is more than necessary to sustain life, it is the gift of life. Inhaling and exhaling, two separate and contradictory acts, are what we have received from God to live as God’s creatures.”⁸⁸

But in our modern-day, post-enlightenment society we seem to compartmentalize these truths. “We think that we have to leave our material day-to-day lives behind and enter the so-called ‘spiritual’ world of church activities to experience the Holy Spirit. The consequences of this dual approach are tragic. We develop a split spirituality and usually end up living double lives.”⁸⁹ We seem to have a dichotomy that says the spiritual is important, but only in a particular portion of our lives.

As we began to understand more about our physiology, we seem to view from a medical perspective and have in many ways dropped the spiritual dimension. “Breath is not mere breath. Spirit is never mere spirit. *Rûah* is not mere *rûah*. The spirit in a mortal is no less than the breath of the Almighty; the spirit-breath in a human being, in other words, does not belong to the mortal but to God.”⁹⁰

However, we have moved away from the ability to integrate and seem to have moved towards dichotomies. “In a culture that capitalizes on catch phrases like ‘evolution versus

⁸⁸ William J Sappenfield, “The Paradox of Breathing.” *The Living Pulpit* 25, no. 3 (2016): 16.

⁸⁹ Trevor Hudson, *Holy Spirit Here and Now* (Nashville, TN: Upper Room Books, 2013), 15.

⁹⁰ John R Levison, *A Boundless God: the Spirit According to the Old Testament* (Grand Rapids, MI: Baker Academic, a division of Baker Publishing Group, 2020), 22.

creation,' 'soul versus body,' 'mind verses brain,' and so on, dichotomies abound on all sides and one is often left wondering whether science and religion have anything constructive or edifying to say to one another.⁹¹

But they do have something to say to one another. Just because our scientific knowledge has grown, that doesn't mean we have to leave behind spiritual truths. These learnings can take on an even greater truth by integrating our growing body of scientific knowledge with a deeper truth that comes from our spiritual reality. "Breath is the symbol of God's intimacy and presence in the human person. And that breath, which has meaning in itself, can, as a symbol, open us to an even greater experience, and in contemplative practice, open us and dispose us to action of the Spirit in us."⁹² We cannot discount the importance of this spiritual dimension.

This is particularly true when it comes to our understanding of breath and our body's reaction to stress. But in order to consider the spiritual depth of this process, we must first understand some of the physiology of these systems.

Physiology of Breath

We seem to have a common understanding that breath is an important factor when it comes to stress. Parents commonly tell their children to stop and take a deep breath and count to 10 in order to settle down. In order to quiet the mind to go to sleep a common technique is counting our breaths. But we may not fully understand why these practices are helpful. Recent scientific advances have helped us to understand even more about the physiology of breath. The

⁹¹ J. M. Moritz, "The Emergence of Spirit in an Evolutionary Cosmos: Moving Beyond the Perceived Dichotomies," *Canadian Journal of Pentecostal Charismatic Christianity*, 3, (2012): 108.

⁹² Joseph J. Piccione, *Receiving God and Responding in Breath Meditation* (New York, NY: Herder & Herder, 2020), 25.

word respiration is used to talk about the rhythmic contraction and expansion of the upper body that occurs when air flows in and out of the lungs. In my clinical practice as a biofeedback therapist, I was able to monitor clients' breathing by placing a device around their chest and another around their abdomen. This allowed us to see a breath pattern displayed on a computer screen, with breathing represented as a curve, going up as the air flowed in with inhalation and down as the air flowed out with exhalation. While this is rhythmic, the ratio between inhale and exhale isn't always equal. In a healthy breath pattern the inhale is about 40% of the wave, and the exhale is about 60%.⁹³

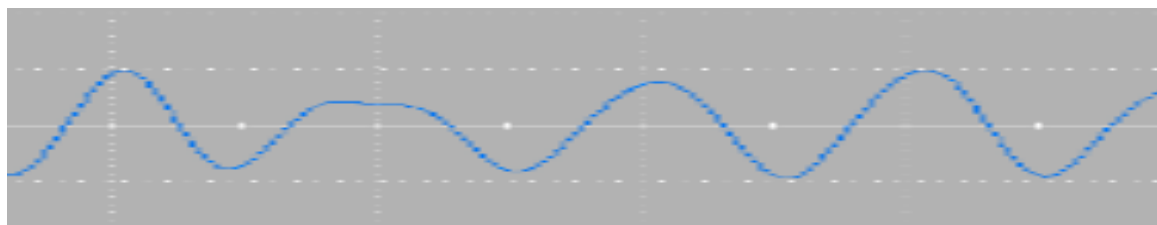


Figure 5. Screenshot of a client's breathing.
Source: Author.

Oxygenation of the Blood

With each inhalation, the body receives a fresh supply of oxygen. After the oxygen is circulated throughout the body, the waste is exhaled as carbon dioxide (CO₂).⁹⁴ Within the lungs there are small air sacs called alveoli. These alveoli are surrounded by capillaries that help with the exchange of gases.

⁹³ Paul M. Lehrer, Robert L. Woolfolk, and Wesley E. Sime, *Principles and Practice of Stress Management* (New York, NY: Guilford, 2009), 292.

⁹⁴ Lehrer, 292.

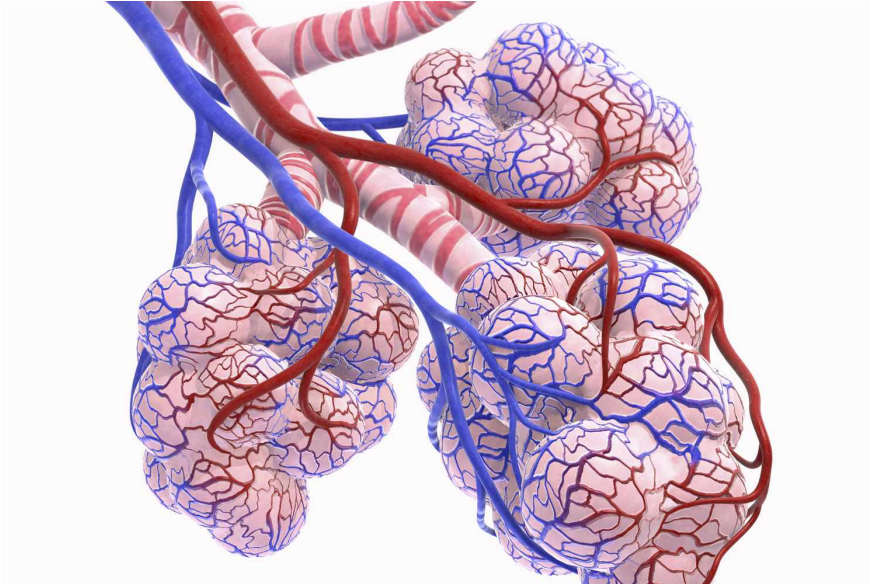


Figure 6. Function and Disorders of the Alveoli: Minute Structures of the Lung Vital to Respiration.

Source: Lynne Eldridge, MD March 11, 2021. <https://www.verywellhealth.com/what-are-alveoli-2249043>.

As the oxygen molecules move into the alveoli, they enter the blood stream via the capillaries. When the red blood cells pass by, they pick up oxygen that is then circulated through the body. This oxygen provides fuel for cells throughout the body in our tissue and muscles. As the blood distributes oxygen to these cells, the cells in turn give off waste products and these are then returned through the blood stream to the alveoli in the form of CO₂.⁹⁵

⁹⁵ James Nestor, *Breath: the New Science of a Lost Art* (New York, NY: Riverhead Books, an imprint of Penguin Random House LLC, 2020), 73-74.

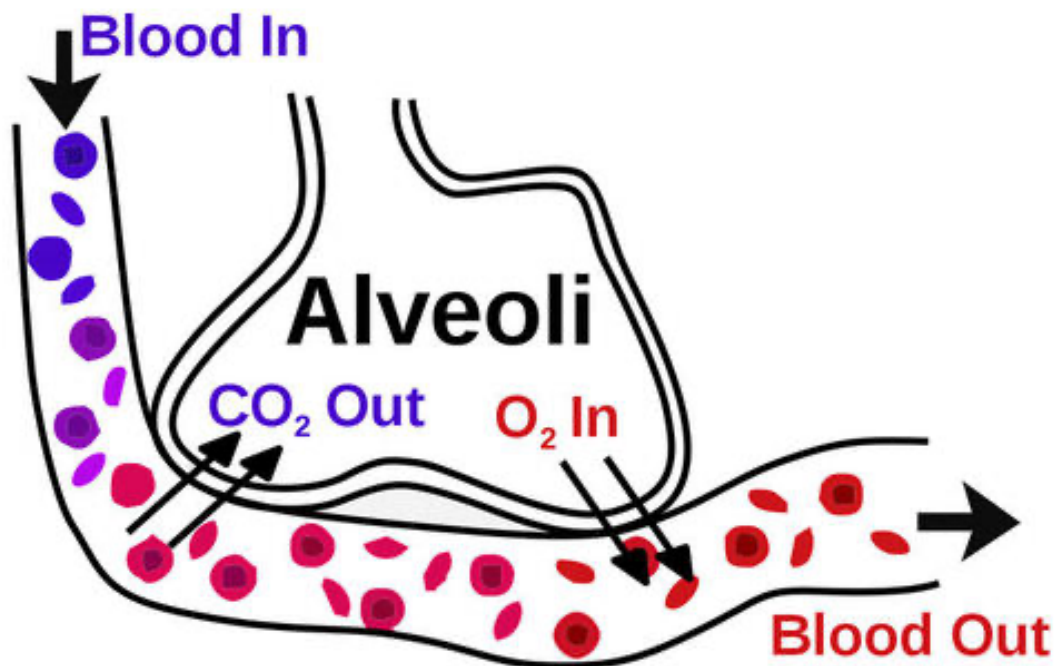


Figure 7. Breathing: The processes of ventilation, gas exchange, and gas transport.

Source: CK-12. <https://www.ck12.org/biology/breathing/lesson/Processes-of-Breathing-MS-LS/>

When the body requires more energy, breathing intake increases to bring in more oxygen to fuel the blood cell, and more CO₂ is produced as waste. But as we change breath volume and breath rate, it is important to maintain a proper balance of these gases. Dysfunctional breathing can result in either hypoventilation or hyperventilation. Hypoventilation results from insufficient breathing that can result from chronic obstructive pulmonary disease (COPD) or other lung disease. Labored breathing causes there to be less oxygen intake and this can result in increased CO₂. The opposite problem occurs with hyperventilation when the breaths are too large for the needs of the body. This results in too much oxygen intake and in decreased CO₂.⁹⁶

⁹⁶ Paul M. Lehrer, Robert L. Woolfolk, and Wesley E. Sime, *Principles and Practice of Stress Management* (New York, NY: Guilford, 2009), 292.

Breathing through the nose helps facilitate a healthier respiration cycle. When air enters through the nasal cavity, the air is cleaned and conditioned.⁹⁷ The septum, that is the wall separating our two nasal cavities, is lined with small hairs that filter the air as it passes by.⁹⁸ Turbinates are small bulblike structures in the nasal cavity that cause the air to swirl on the way to the trachea. This encourages air filtration and also helps to warm the air before it enters the lungs.⁹⁹

While we now understand the importance of breathing through the nose, this practice encountered in most forms of yoga “was intuitively discovered long before the very essential functions of the nose in healthful breathing was scientifically determined.”¹⁰⁰ The Ebers Papyrus is one of the oldest medical texts that exists, dated back to 1500 BCE, and it details the importance of using the nostrils instead of the mouth for the process of breathing.¹⁰¹ “A Chinese Taoist text from the eighth century AD noted that the nose was the ‘heavenly door,’ and that breath must be taken in through it. ‘Never do otherwise,’ the text warned, ‘for breath would be in danger and illness would set in.’¹⁰² Although scientific knowledge at that time had not advanced to the point of describing all of the physiology of the respiration process, a deeper knowledge seems to have existed about the importance of healthy breathing.

⁹⁷ Robert Fried, *Breathe Well, Be Well: a Program to Relieve Stress, Anxiety, Hypertension, Migraine, and Other Disorders for Better Health* (New York, NY: John Wiley, 1999), 20.

⁹⁸ Fried, 20.

⁹⁹ Fried, 20.

¹⁰⁰ Fried, 22.

¹⁰¹ James Nestor, *Breath: the New Science of a Lost Art* (New York, NY: Riverhead Books, an imprint of Penguin Random House LLC, 2020), 45-46.

¹⁰² Nestor, 45-46.

Healthy Breath Patterns

A healthy breath pattern engages the diaphragm, causing the abdomen to expand for a full, deep breath. The diaphragm is a large muscle that separates the chest cavity from the abdominal cavity. With inhalation, the diaphragm contracts and flattens, expanding the lungs for inhalation. The diaphragm relaxes with exhalation, pushing air out of the lungs. “This up-and-down movement occurs within us some 50,000 times a day.”¹⁰³

At birth we are wired to utilize the diaphragm, and this can be seen by watching a sleeping baby’s stomach rise and fall as he/she sleeps peacefully. “In my mother tongue, Tagalog, the word *pahinga* means ‘to let breathe’; it also means ‘to rest’ or ‘repose.’ Zen masters point that the most natural way to breathe is like a sleeping newborn baby. Its whole being is given over to each breath in a most natural way—a way that we have to relearn as adults.”¹⁰⁴ But over time our breathing can begin to shift. Activation of the sympathetic nervous system causes quicker, shallow breathing. This often translates to greater use of the thoracic muscles, and the shoulders become active in the breath cycle, lifting the rib cage to provide room for the lungs to expand. This takes more effort, works against gravity, and overworks the trapezius and other muscles in this area. “A typical adult engages as little as 10 percent of the range of the diaphragm when breathing, which overburdens the heart, elevates blood pressure, and causes a rash of circulatory problems.”¹⁰⁵ We often think of evolution to mean progress through the concept of “survival of the fittest,” but it actually just means a change. In many ways we are

¹⁰³ Nestor, 45-46.

¹⁰⁴ Ruben L. F. Habito, *Healing Breath Zen for Christians and Buddhists in a Wounded World* (Boston, MA: Wisdom Publications, 2006), 42.

¹⁰⁵ James Nestor, *Breath: the New Science of a Lost Art* (New York, NY: Riverhead Books, an imprint of Penguin Random House LLC, 2020), 61-62.

engaging in dysevolution as we take on traits that are detrimental to our health and we are passing these onto the next generation.¹⁰⁶

Paying attention to your breath is one of the most important things you can do to reduce arousal from stress. “When breathing loses its natural rhythm, a chain of biochemical events inside your body can be set in motion, which can increase the frequency and severity of discomfort and symptoms. Therapeutic breathing can lessen these.”¹⁰⁷ Research shows that we can restore balance and reduce long-term stress symptoms by changing our pattern of breathing, not only improving our physical health but also improving our mental health and relational health.¹⁰⁸ Instead of allowing our breath pattern to just function as a response to other influences, an important shift can happen if we are able to recognize the advantages of volitional control of our breath.¹⁰⁹ Research shows that focusing on one’s breathing can increase the feeling of calmness and give a feeling of emotional control as it increases the synchrony within the brain.¹¹⁰

You can easily check on your own breath pattern by lying flat on your back and placing one hand on your chest on one hand on your abdomen. Bring your attention to your breathing and notice the movement of your hands. Ideally, the hand on the abdomen will rise with inhale and fall with exhale, while the hand on the chest stays relatively still. “If both hands are rising and falling more or less simultaneously in a shallow motion as you breathe, you are chest-

¹⁰⁶ Nestor, 12-13.

¹⁰⁷ Robert Fried, *Breathe Well, Be Well: a Program to Relieve Stress, Anxiety, Hypertension, Migraine, and Other Disorders for Better Health* (New York, NY: John Wiley, 1999), 195.

¹⁰⁸ Richard P Brown and Patricia L. Gerbarg, *The Healing Power of the Breath: Simple Techniques to Reduce Stress and Anxiety, Enhance Concentration, and Balance Your Emotions* (Boston, MA: Shambhala, 2012), 91.

¹⁰⁹ Moran Cerf, “Neuroscientists have identified how exactly a deep breath changes your mind,” *Quartz*. November 19, 2017. <https://bit.ly/2QaIr4d>.

¹¹⁰ Cerf.

breathing. If your abdomen moves in and your chest moves up when you inhale, and the opposite happens when you exhale, you are reverse-breathing.”¹¹¹

Spiritual Breath Practices

Breath practice has benefits that go beyond physical health and breathing meditation can help us to integrate the spiritual dimension.¹¹² After all, breath is our most fundamental spiritual practice. But in many ways, we have lost this important dimension. The increased knowledge in areas such as oxygen and CO₂ seem to have somehow diminished our deeper understanding of breath. With anthropocentric blinders on, we seem to construct a narrative that puts humans even in charge of their very breath. Holistic health calls us to reclaim this integrated perspective. “In biblical thought, the air humans breathe is God’s breath. In the first place, breath is given to humans by God.”¹¹³

Especially in our current society where stressors seem to come at us non-stop from all directions, taking the time to re-learn healthy breathing is important. This can be useful to quiet the mind at times like the beginning of the day when we wake with a constant stream of thoughts and worries. Use this as an opportunity to practice a few minutes of relaxed diaphragmatic breathing, using it as a time to “return to God in ourselves. Checking electronic messages in bed can wait a few minutes; breathing prayer and spiritual orientation to the day comes first.”¹¹⁴

¹¹¹ Robert Fried, *Breathe Well, Be Well: a Program to Relieve Stress, Anxiety, Hypertension, Migraine, and Other Disorders for Better Health* (New York, NY: John Wiley, 1999), 17.

¹¹² Joseph J. Piccione, *Receiving God and Responding in Breath Meditation* (New York, NY: Herder & Herder, 2020), 26.

¹¹³ Norman C. Habel and Peter L. Trudinger, *Exploring Ecological Hermeneutics* (Atlanta, GA: Society of Biblical Literature, 2008), 16.

Breath as a Christian prayer practice encourages awareness of the ways we receive the breath of God's Spirit and the ways this enlivens all of our actions. "Breathing within Christian spiritual awareness is both the symbol of reception and of response. It emerges within the ancient Christian prayer traditions of the Eastern and Western Churches and in intersectional dialogue with Asian spiritual and wisdom traditions."¹¹⁵ B. K. S. Iyengar is an Indian yoga teacher who was very ill as a child and confined to his bed until restoring his health by learning about breath through yoga practices. Before dying at the age of 95, he wrote that "the yogi's life is not measured by the number of his days, but the number of his breaths."¹¹⁶

"The startling depth of that intimacy is reinforced by two sides of the same coin: breathing into and receiving. Jesus's breathing into and the disciples' receiving the Spirit are the same occurrence, occupying the same brief moment in time. Jesus's breathing into, in other words, is tied to their breathing in."¹¹⁷ St. Ignatius lead a prayer practice that involved breathing, giving instruction in his third method of prayer to use each breath cycle as a time to pray using "one word of the Our Father," so that this prayer stretched out and was said word by word between each breath.¹¹⁸ Many traditions recognize the importance of breath in connection through spiritual exercises.

¹¹⁴ Joseph J. Piccione, *Receiving God and Responding in Breath Meditation* (New York, NY: Herder & Herder, 2020), 26.

¹¹⁵ Piccione, 3.

¹¹⁶ James Nestor, *Breath: the New Science of a Lost Art* (New York, NY: Riverhead Books, an imprint of Penguin Random House LLC, 2020), 104.

¹¹⁷ Levison, John R. *An Unconventional God: the Spirit According to Jesus* (Grand Rapids, MI: Baker Academic, a division of Baker Publishing Group, 2020), 190.

¹¹⁸ Ruben L. F. Habito, *Healing Breath Zen for Christians and Buddhists in a Wounded World* (Boston, MA: Wisdom Publications, 2006), 41.

Integrating Knowledge

In the same way that God's grace comes to us continually, no matter what we seem to do to block it, God's Spirit continues to be present in us and through us by the gift of breath. Although we cannot do anything to block it, increased arousal from stress can block our experience of this presence. But the reality is that there is nothing we can do that will change the truth that God's Spirit is within us. I invite us to rest in this truth for a minute. Through breath, we are connected to God. Through breath, we have the gift of life, given to ALL, given to us by God's Spirit.

Doctrinally, Christians recognize the Holy Spirit, the third person of the Trinity, as taking an active part in all of God's work. The Holy Spirit is active to reveal God's creating power. Day to day we are sustained and renewed by the Holy Spirit in our lives, leading us and guiding us in all that we do. God's Spirit offers the gift of salvation.

As I have studied the physiology of breath, I recognize that these same actions happen internally as well. This breath, *ruah*, helps to create by giving us oxygen that fuels each and every cell in our bodies, rejuvenating us and allowing us to thrive in this world God has created. *Ruah* sustains us through the rhythmic circulation process providing nutrients, also ridding us of toxic waste in our bodies. After a strenuous workout, *ruah* renews the torn down muscle fibers. If salvation is wholeness, then *ruah*, offers this gift by balancing our systems and helps us to operate in a physiologically balanced state. We have a physical manifestation of God's salvific presence through this simple act of breathing. We are able to tap into this at anytime, anywhere. God is more present than our very breath and the beat of our heart. And by giving attention to this process, we can begin to open ourselves to recognize what God is doing in the rest of our life.

Chapter 4 Heart Rate Variability Biofeedback

Biofeedback Basics

It has been established that stress can have a detrimental impact on both our physical and spiritual health. A further problem that results from this is the fact that we can become so accustomed to operating at a high level of arousal that we fail to notice the activation of our sympathetic nervous system and the resulting symptoms. “Awareness of our conditioning is the first step toward unlearning attitudes that have outlived their usefulness. Such awareness opens our ability to respond to what is happening now rather than reacting out of a conditioned history that may be archaic.”¹¹⁹ Even if fight, flight, or freeze responses occur automatically, we now know that we have the ability to self-regulate and change our reactivity when we face challenges that we perceive as stressors.¹²⁰ Biofeedback is an important tool that helps to increase awareness and give one control over processes that were once thought to be outside of our volitional control.

As I began research for this project, I was surprised to find the name of someone I knew as one of the fathers of my field of applied psychology and biofeedback had published an article on the benefit of this modality in my seminary’s journal. It was an interesting merging of my vocational fields that seemed to pave the way for the research I felt called to explore. In this article from 1986, Elmer Green shared the importance of this emerging field and tried to explain

¹¹⁹ Joan Borysenko and Larry Rothstein, *Minding the Body, Mending the Mind* (Cambridge, MA: Da Capo Press, 2007), 369.

¹²⁰ R., McCraty, M., Atkinson, W. A., Tiller, G., Rein, and A. D. Watkins, “The effects of emotions on short-term power spectrum analysis of heart rate variability,” *The American Journal of Cardiology*, 76(14) (1995): 1092. [https://doi.org/10.1016/S0002-9149\(99\)80309-9](https://doi.org/10.1016/S0002-9149(99)80309-9).

the relevance of this for clinical therapy and overall health. “Inside-the-skin information that was previously known only to the hypothalamus and other deep-brain structures is fed back to the cortex via outside-the-skin biofeedback devices. This feedback tells the cortex how to change its visualization so as to bring about changes in the physiology.”¹²¹ He goes on to talk about the benefits of having access to this physiological information, allowing the cortex to visually see and not just have to imagine the changes brought on by the changes in the autonomic system. “Thus, biofeedback implements, at least partially, the dictum ‘Know thyself.’”¹²² Having access to physical information is important, but it facilitates other growth towards wholeness as well. For some people who engage in biofeedback therapy, this can lead, “often unexpectedly, to transpersonal experience, to a far deeper knowing of themselves.”¹²³

This ability that we have as humans to regulate and control physiological activity is something that sets us apart from most other animals, “controlling emotions, deciding to stay awake despite being tired, or suppressing thoughts. These abilities are not trivial, nor do humans share them with many animals.”¹²⁴ This is especially true when we consider our respiratory activity. “Animals do not alter their breathing speed volitionally; their breathing normally only changes in response to running, resting, etc.”¹²⁵ Scientists have worked to understand why

¹²¹ Elmer E. Green, “Biofeedback, Consciousness, and Human Potential.” *Perkins Journals* 39 (2) (1986): 22–31, 27.

¹²² Green, 27.

¹²³ Green, 27.

¹²⁴ Moran Cerf, “Neuroscientists have identified how exactly a deep breath changes your mind,” *Quartz*. November 19, 2017. <https://bit.ly/2QaIr4d>.

¹²⁵ Cerf.

humans are able to regulate their breathing and how we access this and other processes that are not normally under our conscious control. Biofeedback has given us a key to unlock this process.

Until very recently neurophysiologists believed that there could be no volitional control over the activities of visceral organs, the functioning of these organs being under the control of the autonomic or "involuntary" nervous system. This "knowledge" of anatomy and neurophysiology was later to be proven wrong, or at least incomplete, leading to extensive clinical work on what is today called biofeedback.¹²⁶

Biofeedback works because individuals are able to take the information that is being given to them and volitionally make changes in their physiological responses. "In addition to wanting to know, humans have another important attribute. We want to be able to *make things happen*, at will. This is our Western orientation, and it seems to have usefully accelerated world evolution. For us as individuals, if we are able to synthesize appropriate knowledge and put it to use, we both understand and can make things happen."¹²⁷

In the years I worked as a therapist, I witnessed the power of this treatment. I have watched individuals identify healthy response patterns, and I have seen clients recognize how their body responds to their emotions. I sometimes used biofeedback as an adjunct to talk therapy. As we were discussing a relational issue that is troubling them, I would look over at the monitor and notice a physical response. By calling their attention to this reaction, it would help them to understand the power of their thoughts on their physiology.

Another example of biofeedback success involved my work with a teenager who is suffering from stress anxiety. By using deep breathing in becoming aware of physiological changes, she was able to grow in her ability to have healthier coping skills. She was able to

¹²⁶ R. S. Lazarus, "On the primacy of cognition," *American Psychologist*, 39 (2) (1984): 127, <https://doi.org/10.1037//0003-066x.39.2.124>.

¹²⁷ Elmer E. Green, "Biofeedback, Consciousness, and Human Potential." *Perkins Journals*, 39 (2) (1986): 23.

identify the stressful feelings earlier, and as a result, healthy coping mechanisms allowed her to return to baseline and prevented symptoms from escalating as they had in the past. She was able to develop a feeling of control over her physical reaction, and these automatic responses stopped getting in the way of her mental functioning. She was able to focus on test questions more fully, and this resulted in higher achievement.

A third example of my use of biofeedback was its application in a performance setting. I had the opportunity to work with a well-known pop singer. This individual appeared to be very confident on-stage during concert. But in therapy she revealed that the stress response was often debilitating for her. By practicing some diaphragmatic breathing and understanding more about her body's stress response, she developed the ability to control the stress that she experienced before going on stage. She was able to use these techniques as she re-engaged in public performances and touring.

These are just a few examples of the benefits of biofeedback. In each of these cases, they used a specific kind of biofeedback called heart rate variability training. This involves looking at breath patterns and realizing the way that this impacts other physiological systems, specifically heart rate patterns. This is the particular form about feedback that I want to look at for this project. Because of the importance of breath in this modality, I think it has implications beyond the physical benefits.

HRV Biofeedback

As my interest in HRV training grew, I began to work with other clinicians to establish protocols and training screens for a new application of biofeedback training in the area of HRV. In learning more about the physiological processes that impacted HRV and using HRV

biofeedback with my clients, I soon realized that HRV training held the power to make an immense difference in our lives. This modality helps to create autonomic balance. “Heart rate variability (HRV) biofeedback appears to have profound effects across systems: cardiovascular, respiratory, behavioral, and gastrointestinal. It also improves athletic performance.”¹²⁸

But even then, I did not fully grasp the potential of HRV training. I was in the box of limiting my knowledge to the physiological, emotional, and behavioral realm. It wasn't until I entered pastoral ministry that I began to realize the huge gap that is present when we do not include teaching on a spiritual realm as a part of this training. I am an ordained elder in The United Methodist Church, so my research and application of this comes through a Christian lens. But I believe that the connection of breath and spirit, the *ruah* that we find in the Old Testament writings, is a universal truth that is present in other religions as well. However, before we can dig deeper into the spiritual aspect, it is critical to understand some of the basic physiological principals.

Importance of HRV

With advances in technology and signal processing, we improved our ability to acquire information about physical processes and the way that our physical states changed over time. This allowed us to further recognize the way the body responds to stress and started to give us the ability to have control over it. Heart rate variability is one such example. “HRV originally was considered to be error variance that prevented researchers from discerning valid signals of

¹²⁸ P. Lehrer, “How Does Heart Rate Variability Biofeedback Work? Resonance, the Baroreflex, and Other Mechanisms,” *Biofeedback*, 41(1) (2013): 26. <https://doi.org/10.5298/1081-5937-41.1.02>.

cardiac activity.”¹²⁹ But as we became more aware of how various physiological processes interacted and influenced one another, it became obvious that HRV was valuable in giving us information about our overall health.

By monitoring heart rate, blood pressure, breathing, and other vital functions, we can see that biological processes are more complex than originally thought and we can see that they contain variability “even during ‘steady-state’ conditions. “These observations have led to the understanding that healthy physiologic function is a result of continuous, dynamic interactions between multiple neural, hormonal, and mechanical control systems at both local and central levels.”¹³⁰ Researchers were able to begin to identify some important patterns. What originally looked like random fluctuations has now taken on meaning. We now know that the variability that was detected in the heart rate is the result of many different mechanisms working together to regulate cardiovascular activity.¹³¹ Important patterns can be identified that give information about one’s levels of physiological arousal and overall health. “Everything in the world both has rhythm and also depends on rhythm.”¹³² This is especially true when it comes to HRV.

By monitoring the beat-to-beat changes in the heart rate, we can see that patterns begin to emerge. Research has shown that these patterns vary based on how we feel and what we are experiencing. Throughout the body there are afferent nerves that send information to the brain.

¹²⁹ A. L. Wheat and K. T. Larkin, “Biofeedback of Heart Rate Variability and Related Physiology: A Critical Review,” *Applied psychophysiology and biofeedback* (2010): 229, <https://doi.org/10.1007/s10484-010-9133-y>.

¹³⁰ F. Shaffer, et al. “A healthy heart is not a metronome: an integrative review of the heart’s anatomy and heart rate variability,” *Frontiers in Psychology* (2014): 5, <https://doi.org/10.3389/fpsyg.2014.01040>.

¹³¹ A. L. Wheat and K. T. Larkin, “Biofeedback of Heart Rate Variability and Related Physiology: A Critical Review,” *Applied psychophysiology and biofeedback* (2010): 229, <https://doi.org/10.1007/s10484-010-9133-y>.

¹³² Robert Fried, *Breathe Well, Be Well: a Program to Relieve Stress, Anxiety, Hypertension, Migraine, and Other Disorders for Better Health* (New York, NY: John Wiley, 1999), 3.

These sensory pathways exist from the heart to the brain. The brain receives different signals based on the heart rate patterns.

We have long associated the heart and emotions. This has been expressed in poems and other literature and has also been captured through music and song. “Expressions such as ‘heartfelt,’ ‘heartbroken,’ ‘heart throb,’ ‘heart aches,’ ‘heartburn,’ ‘heart of the matter,’ and ‘connecting heart to heart’ reveal the connection between heart and emotion and the central place our heart plays in our lives. That place was displaced when medicine turned from a holistic to a mechanistic approach.”¹³³ When we began to understand more of our physiology and developed medicine to control particular aspects of our responses, we lost a greater holistic understanding. We reduced the function of the heart to that of a mechanistic pump that circulated blood throughout the body, and in many ways, we assumed we had gained control of it. “It could be repaired, transplanted, re-piped, stented, and medicated, and its abnormal rhythms could be paced or shocked back to normalcy.”¹³⁴ Heart disease is generally understood as something that can be controlled with proper medication, weight loss, lower cholesterol and a healthy diet. While these things are important, there are other factors that contribute to overall health.

Although emotions have been connected to the heart, the medical community has not given this enough attention. “There is mounting evidence that anxiety, anger, depression, and stress play significant contributing roles in cardiac diseases.”¹³⁵ HRV biofeedback has the power to address not only the physiological symptoms that result from heart disease, but it can

¹³³ J. B. Newman, “Heart Disease: From Psychosocial to Pathophysiological to Treatment with Biofeedback—An Overview,” *Biofeedback*, 41(1) (2013): 39. <https://doi.org/10.5298/1081-5937-41.1.03>

¹³⁴ Newman 39.

¹³⁵ Newman 39.

also reduce the difficult emotions that often exacerbate cardiological issues. Researchers believe that by learning to increase HRV, a person can grow in his/her ability to manage stress and this in turn can reduce the risk of developing many stress related disorders.¹³⁶ “The magnitude and complexity of HRV signify the ability to adapt to physiological changes, and low HRV increases susceptibility to stress and disease.”¹³⁷ The goal with HRV training is to increase the variability, signifying the ability to better respond to and recover from stressors.

HRV Physiology

Our hearts beat approximately 100,000 times a day and this sets a rhythm for our body. As the main pump in our body that activates other physiological processes, our hearts beat around 2.5 billion times in an average lifespan.¹³⁸ It is vital to keep this pump healthy and to assure it is working efficiently. A cardiologist is the medical specialist that usually focuses on heart health. But because of the recognition of the role the heart has in the stress response, other specialists have begun to give attention to this physiological function as well. Through HRV biofeedback, therapists are able to show improvement in heart function. Before we can fully explain the benefits of HRV training, we must first cover some basics about the way the heart is monitored and understand a little more about our physiology.

Whereas the medical community used to assume that a healthy heart would have a steady rhythm, we now know that the time-span between beats can vary greatly, both at rest and during

¹³⁶ A. L. Wheat and K. T. Larkin, “Biofeedback of Heart Rate Variability and Related Physiology: A Critical Review,” *Applied psychophysiology and biofeedback* (2010): 229, <https://doi.org/10.1007/s10484-010-9133-y>.

¹³⁷ Wheat, 229.

¹³⁸ F. Shaffer, et al. “A healthy heart is not a metronome: an integrative review of the heart’s anatomy and heart rate variability,” *Frontiers in Psychology* (2014): 1, <https://doi.org/10.3389/fpsyg.2014.01040>.

activation. “The normal resting sinus rhythm of the heart is highly irregular during steady-state conditions rather than being monotonously regular, which was the widespread notion for many years. *A healthy heart is not a metronome.*”¹³⁹ By monitoring the heart and displaying each heartbeat on a monitor, one can recognize the changes in these patterns that result from changes in the heart rate.

In HRV biofeedback, heart rate is monitored by either a photo-plethysmograph or an electrocardiogram (EKG). A photo-plethysmograph is placed on a client’s finger and monitors the heart rate by looking at changes in the blood volume pulse. An EKG involves electrodes placed on the chest and receives electrical signals from the heart. While an EKG provides more accurate information about the heart signal, a photo-plethysmograph generally gives adequate information for HRV training and is much easier to use in the clinical setting and also for home use.

Because of the advances that have been made in technology and medical equipment, HRV training is much more accessible to the average person. There are home devices that monitor heart signals and process this information through algorithms that help interpret physiological activity. One example is the heart monitoring function on the Apple Watch. Another example is the HRV monitoring programs that use the camera on cell phones to look at blood volume pulse to detect heart rate. Other manufacturers offer photo-plethysmographs that can be plugged into a cell phone. These advances have made HRV training much more accessible to the average person since they don’t require expensive clinical systems.

¹³⁹ F. Shaffer, et al: 5.

Physiology of the Circulatory System

The heart is a muscle that is responsible for circulating blood throughout the body. In the previous chapter, we talked about the importance of the breath cycle for circulating oxygen throughout the body. In order to understand more about the way that stress and anxiety impact this process, we must review some basic heart physiology. The heart has four chambers, composed of two atria and two ventricles. The contraction of these chambers makes it possible for blood to circulate, moving to the lungs for oxygenation and throughout the body to supply important nutrients to every cell in the body.¹⁴⁰

Blood enters the heart and travels through the right atrium. From there, blood moves into the right ventricle. The ventricles are larger cavities that comprise most of the heart's volume. Blood is then pumped from the right ventricle and leaves the heart to travel to the lungs where it travels through a series of capillaries and where it is oxygenated.¹⁴¹

¹⁴⁰ E. N., Marieb and K. Hoehn, *Anatomy and physiology* (San Francisco, CA: Benjamin Cummings, 2011): 332.

¹⁴¹ Marieb, 332.

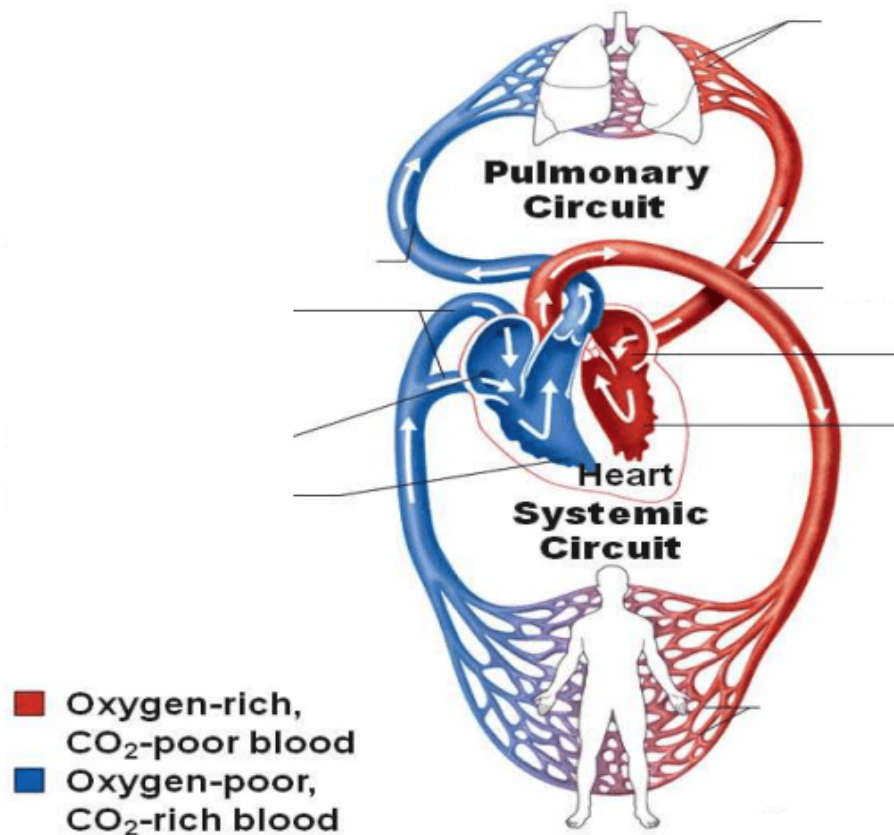


Figure 8. The cardiac cycle.

Source: Droual. <https://bit.ly/3dSHVjz>

The oxygenated blood then travels back to the heart and enters the left side of the heart into the left atrium. From there it is pumped into the left ventricle. The pumping action of this left ventricle sends the blood into the aorta and to the rest of the body.¹⁴²

This process is repeated continuously to create a continual flow of blood throughout the lungs and the rest of the body.

¹⁴² Marieb, 332.

Blood Pressure

Blood pressure is a complicated measure, but a cursory understanding would be helpful to see the ways it impacts HRV. Blood is circulated throughout the body by the pumping action of the heart. Heart health is measured by determining the contraction of the ventricles. There are two phases of the cardiac cycle, systole and diastole. Systole occurs when the ventricle contracts, and diastole is ventricular relaxation. “During systole, blood pressure (BP) peaks as contraction by the left ventricle ejects blood from the heart. Systolic BP is measured during this phase. During diastole, BP is lowest when the left ventricle relaxes. Diastolic BP is measured at this time.”¹⁴³

The Baroreflexes

The baroreflexes have been found to have an impact in heart rate variability. These are mechanisms that help to control blood pressure. The stem ‘baro-’ comes from the Greek word for ‘pressure.’¹⁴⁴ These pressure receptors are located in the neck, in the aorta, and the carotid artery. There are stretch receptors located in these large blood vessels. When blood pressure increases, these arteries stretch and the baroreflexes are triggered. These baroreflexes help to regulate heart rate. When the baroreflexes detect an increase in blood pressure, they cause the heart rate to decrease. Conversely, if the blood pressure decreases, they will signal heart rate to increase. By triggering the heart rate to increase or decrease, they impact the amount of blood that is flowing through and thus attempt to regulate the blood pressure. “However, because of inertia in the

¹⁴³ F. Shaffer and J. Venner, “Heart Rate Variability Anatomy and Physiology,” *Biofeedback*, 41(1) (2013): 1, <https://doi.org/10.5298/1081-5937-41.1.05>.

¹⁴⁴ P. Lehrer, “How Does Heart Rate Variability Biofeedback Work? Resonance, the Baroreflex, and Other Mechanisms,” *Biofeedback*, 41(1) (2013): 27. <https://doi.org/10.5298/1081-5937-41.1.02>.

blood supply, there is a delay of several seconds between changes in HR and changes in blood pressure. Thus, the baroreflex effects on HR represent a ‘negative feedback’ system with a constant delay.”¹⁴⁵ HRV training has been proven to help with heart health by increasing baroreflex gain, signaling the neuroplasticity that is present in the baroreflex.¹⁴⁶

Autonomic Influence on Heart Rate

We have briefly reviewed the heart rate signal and the important cardiovascular physiology. The next step is to understand how this relates to the activation of the autonomic nervous system that occurs in the stress response. Remember that the autonomic nervous system is divided into the sympathetic and parasympathetic branches. The sympathetic nervous system can be summarized as turning on the body’s stress response, and the parasympathetic nervous system turns off this response, seeking to restore balance.

When applied to heart function, the sympathetic branch of the autonomic nervous system increases the heart’s action, while the parasympathetic branch acts as a brake, slowing the action of the heart. It is the release of epinephrine and norepinephrine by the sympathetic nervous system that influences heart rate and causes heart rate to increase. Conversely, the parasympathetic system releases acetylcholine, slowing heart rate. The balance between this throttle and brake system causes ongoing oscillations. This oscillation is responsible for the rise and fall in heart rate that is observed in heart rate variability training. “In a healthy human heart, there is a dynamic relationship between the PNS and SNS. PNS control predominates at rest,

¹⁴⁵ Lehrer, 27.

¹⁴⁶ Lehrer, 28.

resulting in an average HR of 75 bpm. The PNS can slow the heart to 20 or 30 bpm, or briefly stop it.”¹⁴⁷

While we have been aware of the physiological influence of these two branches of the autonomic nervous system, HRV training begins to look at this reactivity in a new way. Most of the focus was on the activation of the sympathetic nervous system. New research has started to look at the importance of the parasympathetic nervous system to reduce that stress response. “The emphasis on the sympathetic nervous system in cardiology has recently shifted to a view recognizing the extraordinarily protective role that the (parasympathetic) vagus nerve plays in prevention and rehabilitation of heart muscle and pacemaker function.”¹⁴⁸ HRV training is built around the activation of this vagus nerve and the benefits this has for restoring physiological balance.

Vagus Nerve

The vagus nerve is the 10th cranial nerve, and it is the inhibitory pathways to the heart and lungs.¹⁴⁹ While the vagus nerve impacts many systems in the body, the most obvious activity can be seen in the way it slows the heart. “The vagus nerves are the primary nerves for the parasympathetic system and innervate the intrinsic cardiac nervous system and project to the SA node, AV node, and atrial cardiac muscle.”¹⁵⁰

¹⁴⁷ F. Shaffer, et al. “A healthy heart is not a metronome: an integrative review of the heart’s anatomy and heart rate variability”, *Frontiers in Psychology* (2014): 3, <https://doi.org/10.3389/fpsyg.2014.01040>.

¹⁴⁸ Gevirtz, R. The Nerve of That Disease: The Vagus Nerve and Cardiac Rehabilitation. *Biofeedback*, 41(1) (2013): 32, <https://doi.org/10.5298/1081-5937-41.1.01>.

¹⁴⁹ Gevirtz, 32.

¹⁵⁰ F. Shaffer and J. Venner, “Heart Rate Variability Anatomy and Physiology,” *Biofeedback*, 41(1) (2013): 2, <https://doi.org/10.5298/1081-5937-41.1.05>.

When the vagus nerve is activated, it acts as a brake and slows heart rate. This is activated by the parasympathetic nervous system. When the sympathetic nervous system is activated, the brake of the vagus nerve is released, and heart rate increased. “In a healthy individual, the HR estimated at any given time represents the net effect of the neural output of the parasympathetic (vagus) nerves, which slow HR, and the sympathetic nerves, which accelerate it.”¹⁵¹

“In recent years in cardiac rehabilitation, there has been a shift in emphasis from interventions that reduce chronic sympathetic activation to a more balanced view that includes activation of the parasympathetic system, especially the vagus nerve.”¹⁵²

Breathing influences this vagal activity. With inhale, the sympathetic nervous system is activated, and heart rate will increase. With exhale, the parasympathetic nervous system is activated and heart rate decreases. “An increase in HR can also be achieved by reduced vagal activity or vagal block. Thus, sudden changes in HR (up or down) between one beat and the next are parasympathetically mediated.”¹⁵³ This is a different perspective than the prior one that focus on the sympathetic activation. This new research on the vagus nerve has allowed us to grasp the power of the parasympathetic nervous system. Additionally, this has allowed us to realize that certain processes that used to be only controlled by medication can now be under our volitional control. Breathing practices have a greater importance as researchers realize the impact this has

¹⁵¹ F. Shaffer, et al. “A healthy heart is not a metronome: an integrative review of the heart’s anatomy and heart rate variability” (2014): 2, <https://doi.org/10.3389/fpsyg.2014.01040>.

¹⁵² Gevirtz, R. “The Nerve of That Disease: The Vagus Nerve and Cardiac Rehabilitation.” *Biofeedback*, 41(1) (2013): 32, <https://doi.org/10.5298/1081-5937-41.1.01>.

¹⁵³ F. Shaffer, et al. “A healthy heart is not a metronome: an integrative review of the heart’s anatomy and heart rate variability”, *Frontiers in Psychology* (2014): 2, <https://doi.org/10.3389/fpsyg.2014.01040>.

on other physiological processes. It also helps to explain the physical benefits that have been experienced for centuries from spiritual prayer practices that involved breathing.

Understanding the HRV Signal

To measure HRV, one begins by detecting each heartbeat.¹⁵⁴ Heart rate is the number of heart beats per minute. While this number does tell us something about how fast the heart is beating, it does not tell us anything about the individual beat to beat pattern. It is helpful to have an average of how fast the heart is beating, but HRV looks at the patterns that occur from the individual beats. “Heart rate variability (HRV) is the fluctuation in the time intervals between adjacent heartbeats.”¹⁵⁵

Biofeedback equipment can monitor heart rate and display it on a screen so that an individual can visually see his/her heart rate. Most often, this is displayed and calculated as an Interbeat-Interval (IBI). The IBI is calculated as the time between one r-wave and the next in milliseconds. The r-wave can be seen in figure 9 as the upward spike at the top of the EKG signal. By calculating the time between each of these spikes, one can determine the IBI. Figure 9 shows a heart rate signal displaying. The IBI would be figured by calculating the time between each of the upward spikes.

¹⁵⁴ K. C. Bilchick and R. D. Berger, “Heart rate variability,” *Journal of Cardiovascular Electrophysiology* (2006): 691.

¹⁵⁵ F. Shaffer, et al. “A healthy heart is not a metronome: an integrative review of the heart’s anatomy and heart rate variability,” *Frontiers in Psychology* (2014): 1, <https://doi.org/10.3389/fpsyg.2014.01040>.



Figure 9 EKG signal.

Source: Screenshot from author's computer.

This information is processed and displayed in real-time in graphic form. In order to understand the signal that is being displayed, I want to walk through a step-by-step explanation using illustrations.

Understanding the Heart Rate Variability Display

Assume that each dot in figure 10 represents a heartbeat. One can see that some dots are closer together, showing a faster heartbeat, and some of them have more space, signifying a slower heartbeat.

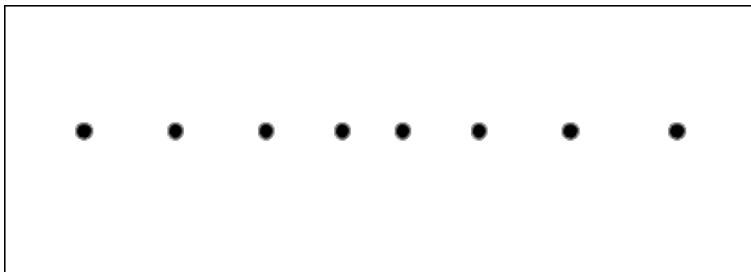


Figure 10. Representation of heart beats.

Source: Author.

These heartbeats from figure 10 will be used to help explain how the equipment processes and displays the heart rate signal. The first step is to look at the distance between the first and second heartbeat. The computer then calculates the time between each of these beats and basically says that if the heart continued to beat at this rate, it would be a heart rate of 60

beats per minute. The next gap is analyzed to result in an average heart rate of 62, then 64, and so on. In figure 11, one can see that although the average heart rate for this short period would be 62, there is quite a bit of fluctuation between each individual beat.

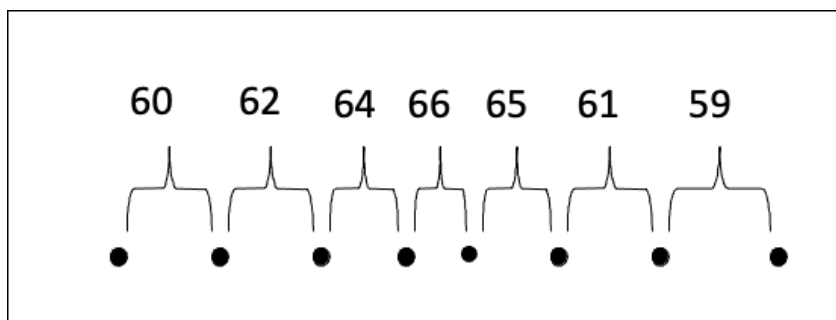


Figure 11. Heart Rate for Individual Beats.

Source: Author.

If this information was placed on a graph, it would look something like the pattern that can be seen in figure 12. You can begin to see the ways that the heart rate increased and then decreased.

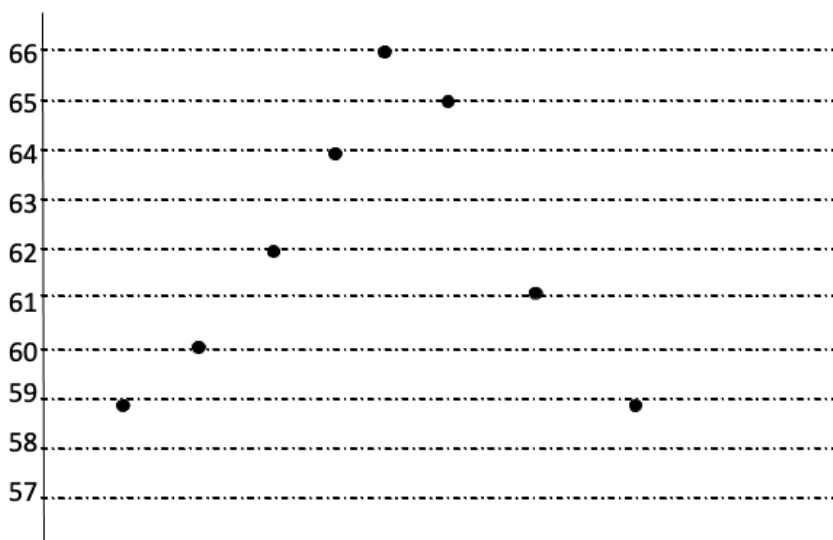


Figure 12. Heart Beats plotted on graph.

Source: Author.

Figure 13 begins to look like what the HRV signal would look like in HRV biofeedback. With the time domain across the bottom, in active monitoring the line would remain steady until the next heartbeat is detected, and it would then move to the proper place on the graph to express the heart rate for that individual beat.

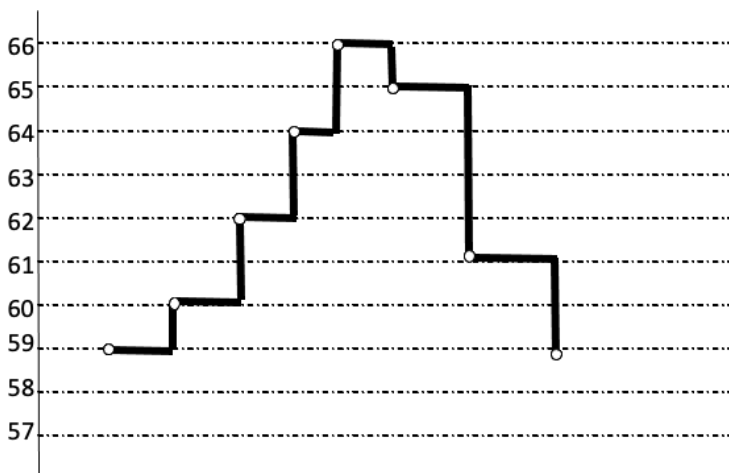


Figure 13. Replication of Heart Rate Biofeedback Signal.
Source: Author.

Respiratory Sinus Arrhythmia (RSA)

When looking at figure 13, you could begin to see a pattern where the heart rate rhythmically goes up and down. These are oscillations that occur from the influence of breathing and heart rate that create a ‘Respiratory Sinus Arrhythmia’ (RSA). “Respiratory sinus arrhythmia (RSA) is the variation in heart rate that accompanies breathing.”¹⁵⁶ Whereas the word arrhythmia is often thought of to be something one wants to avoid, in the case of RSA, this variation signals

¹⁵⁶ P. M., Lehrer, E., Vaschillo, and B. Vaschillo, “Resonant frequency biofeedback training to increase cardiac variability: Rationale and manual for training.” *Applied Psychophysiology Biofeedback*, 25(3) (2000): 177. <https://doi.org/10.1023/A:1009554825745>.

balance. Because of this throttling and braking action of the sympathetic nervous system and parasympathetic nervous system, the heart rate increases during inhalation and decreases during exhalation. Using biofeedback equipment, one can see the way that the breath and heart rate patterns mirror one another.

Breathing and HRV

Figure 14 shows a breath pattern. One can see the line going up as one inhales, and down upon exhale. This creates a wave-like pattern.

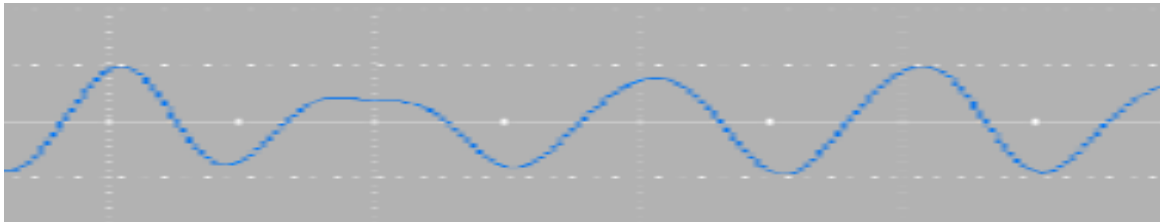


Figure 14. Breath pattern.

Source: Screenshot from author's computer.

In figure 15, one can see the heart rising and falling in a similar pattern. The heart rate increases and decreases rhythmically.

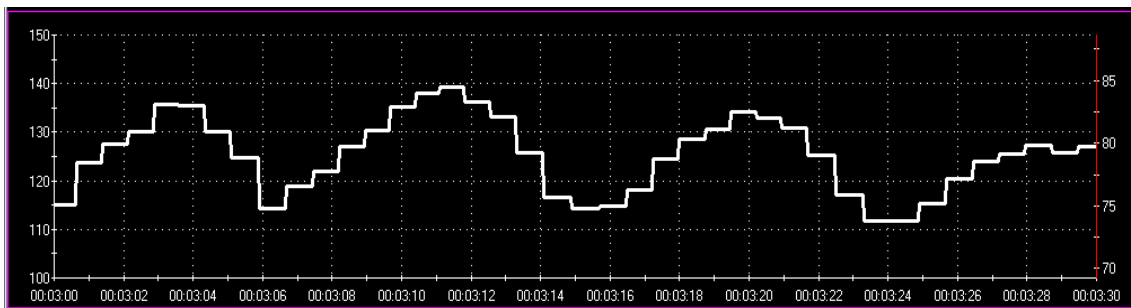


Figure 15. RSA Pattern.

Source: Screenshot from author's computer.

In HRV training these two signals are displayed together and one can see the rise and fall of the breath in sync with the heart, as it is shown in figure 16.

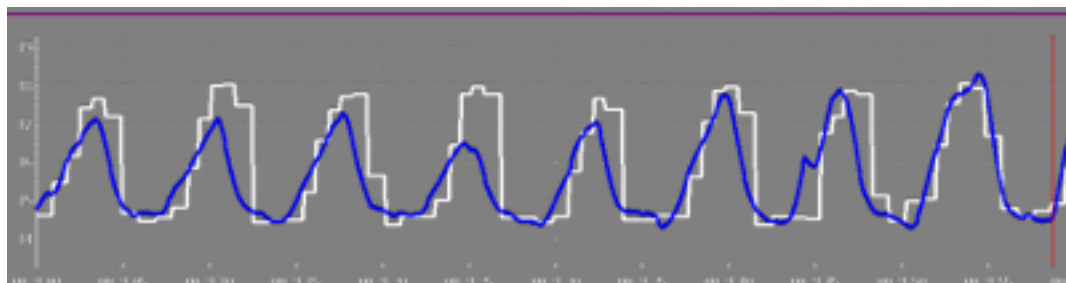


Figure 16. Breathing with RSA Pattern showing Coherence.
 Source: Screenshot from author's computer.

Coherence

When one is able to engage in a healthy breathing pattern, a distinct oscillatory pattern begins to emerge so that the breath and the heart rate begin to follow the same pattern. This is called coherence. “Coherence always implies connectedness, correlations, stability and efficient energy utilization.”¹⁵⁷ For example, a medical professional assesses whether someone's thoughts or speech is coherent by making a determination as to whether or not that person's words fit together well and make sense, or whether there are ideas that don't seem to fit together. “In physics and physiology, the term coherence is used to describe the degree of synchronization between different oscillating systems. This type of coherence is called cross-coherence which occurs when two or more of the body's oscillatory systems, such as respiration and heart

¹⁵⁷ R. McCraty and F. Shaffer. “Heart rate variability: New perspectives on physiological mechanisms, assessment of self-regulatory capacity, and health risk.” *Global Advances in Health and Medicine*. GAHM LLC. (2015): 1090. <https://doi.org/10.7453/gahmj.2014.073>.

rhythms, become entrained and operate at the same frequency.”¹⁵⁸ This is what we see with HRV training. This coherence is important for overall health. “RSA is sometimes used as index of parasympathetic tone.”¹⁵⁹

Autonomic Balance

Medical research has traditionally pointed to the sympathetic branch of the autonomic nervous system (ANS) as being the major cause of cardiovascular disease. Although from an evolutionary perspective the activation of the fight-or-flight response has been present to sustain life in the face of a threat, modern life has changed this. Researchers have assumed that the constant activation of the sympathetic nervous system has been the main cause of cardiovascular disease. But current research has revealed the importance of a balance between sympathetic nervous system and parasympathetic nervous system. Resilience is the ability to recover from something, and resilience is increased by exercising these systems. “When a person is highly adaptable, their system undergoes less wear and tear during the challenges and stresses of everyday life.”¹⁶⁰ A healthy system exhibits the ability to dynamically change. “An important indicator of the health status of the regulatory systems is the capacity to respond to and adjust the

¹⁵⁸ McCraty, 1090.

¹⁵⁹ P. M., Lehrer, E., Vaschillo, and B. Vaschillo, “Resonant frequency biofeedback training to increase cardiac variability: Rationale and manual for training.” *Applied Psychophysiology Biofeedback*, 25(3) (2000): 177. <https://doi.org/10.1023/A:1009554825745>.

¹⁶⁰ Richard P. Brown and Patricia L. Gerbarg, *The Healing Power of the Breath: Simple Techniques to Reduce Stress and Anxiety, Enhance Concentration, and Balance Your Emotions* (Boston, MA: Shambhala, 2012): 192.

relative autonomic balance to the appropriate state for the context the person is engaged in at any given moment.”¹⁶¹

HRV is an indicator of overall health because it is an indicator of physiological balance, showing the balance between the parasympathetic nervous system and sympathetic nervous system. “In a healthy heart, there is a dynamic balance between sympathetic nervous system (SNS) and parasympathetic nervous system (PNS) influences.”¹⁶² The question becomes whether heart rate is able to dynamically respond. HRV training increases a person’s ability to regulate heart rate so that it responds to the task at hand, increasing when dealing with a challenge but then decreasing at rest. There are numerous clinical conditions associated with an inability of a physiological self-regulatory system to adapt to the current context and situation associated with numerous clinical conditions.¹⁶³ “Stress resilience is the capacity to recover and rebound from challenging events. Everyone has the capacity to increase their stress resilience. We just need to turn up the healing, recharging parts of the nervous system and tone down the overreactive part of the system.”¹⁶⁴ Therapies that seek to increase autonomic balance by

¹⁶¹ R. McCraty and F. Shaffer. “Heart rate variability: New perspectives on physiological mechanisms, assessment of self-regulatory capacity, and health risk.” *Global Advances in Health and Medicine*. GAHM LLC. (2015): 1089. <https://doi.org/10.7453/gahmj.2014.073>.

¹⁶² F. Shaffer, et al. “A healthy heart is not a metronome: an integrative review of the heart’s anatomy and heart rate variability” (2014): 16, <https://doi.org/10.3389/fpsyg.2014.01040>.

¹⁶³ R. McCraty and F. Shaffer. “Heart rate variability: New perspectives on physiological mechanisms, assessment of self-regulatory capacity, and health risk.” *Global Advances in Health and Medicine*. GAHM LLC. (2015): 1089. <https://doi.org/10.7453/gahmj.2014.073>.

¹⁶⁴ Richard P. Brown and Patricia L. Gerbarg, *The Healing Power of the Breath: Simple Techniques to Reduce Stress and Anxiety, Enhance Concentration, and Balance Your Emotions* (Boston, MA: Shambhala, 2012): 192.

increasing parasympathetic dominance and decreasing sympathetic tone will improve the prognosis on an individual.¹⁶⁵ This is one example of the application of HRV training.

¹⁶⁵ Gevirtz, R. The Nerve of That Disease: The Vagus Nerve and Cardiac Rehabilitation. *Biofeedback*, 41(1) (2013): 32, <https://doi.org/10.5298/1081-5937-41.1.01>.

Chapter 5 Integration

Increasing HRV

“The seasons are a rhythm, ocean tide has a rhythm, your brain has rhythm, your heart rhythmically and so on. All kinds of things in your body pulsate rhythmically.”¹⁶⁶ HRV training seeks to increase this oscillatory rhythm in order to increase physiological balance and promote health.

The goal of HRV training is to increase the RSA pattern. Resilience is exhibited in the ability to respond dynamically in the activation of the parasympathetic nervous system and sympathetic nervous system. Through training, the client seeks to increase variability of the heart rate, meaning that the rhythmic oscillations will begin to increase to show bigger waves. This occurs because of a property called resonance.

Resonance

A system has resonant properties when a feedback relationship is created by two processes or functions that interplay against each other in a feedback loop. I often experience one example of this on Sunday mornings during our microphone checks at church. When the operator at the soundboard is messing with the settings and not paying attention, a staff member will walk over to the speaker with a microphone in their hand and a shrill high noise reverberates through the sanctuary. The feedback is unsettling and annoying. This occurs because the waves

¹⁶⁶ Robert Fried, *Breathe Well, Be Well: a Program to Relieve Stress, Anxiety, Hypertension, Migraine, and Other Disorders for Better Health* (New York, NY: John Wiley, 1999), 3.

from the microphone enter a feedback loop with the speaker. We work quickly to correct the feedback and separate the two systems.

But not all sources of resonance have a negative connotation. In the case of HRV training, we seek the benefit of resonance to help increase the HRV signal. With the RSA pattern, one can see how breathing and heart rate interplay on one another. Resonance occurs when these two systems begin to be in phase. Research shows that there is a resonant frequency for each person. This is the time when the heart rate and the breathing become in sync and begin to interact on one another. If you think of the way that a bell resonates and the sound reverberates, the same thing happens within our physiological system.

The quality in resonance is important to the concept of HRV training, because this is what allows the variability to increase to improve physiological health. And this is the point that I have been working toward during this entire project. The key component to increasing HRV, increasing overall health and increasing the body's ability to mitigate stress, is the breath.

Breathing brings balance to our lives.

Ruah that brings life

This shouldn't surprise us. God gives us the breath of life and it is God's Spirit that sustains us. But it is fascinating to see the ways that breath influences each and every cell in the body through this interaction with breath rate and heart rate. Physiologically, this is important. But we miss an important dimension if we stop there.

Ezekiel 37 talks about the land of dry bones. The only thing that can bring these dry, brittle bones back to life is the power of God's breath, *ruah*. "Thus says the Lord God to these

bones: I will cause breath [*ruah*] to enter you, and you shall live.”¹⁶⁷ This relationship between breath and renewal is critical. God promises to open our graves and bring us up.¹⁶⁸ And the power to accomplish this comes from *ruah*. “I will put my spirit within you, and you shall live.”¹⁶⁹

“In Ezekiel 37, God’s life-giving breath restores the people to life as well as to their proper relationship to and acknowledgment of their God.”¹⁷⁰ This is the power of breath, given to us by God. When we look at the breath dimension of HRV training and see it only as a physiological response, we are further contributing to this divide between body and spirit. HRV training becomes much more than a training modality when we can embrace the fulness of this truth. HRV training has the power to not only restore physiological balance in our lives, but it can also connect us to God and others in deep ways. This passage in Ezekiel makes it clear that God is the source of our breath. But there is another important truth within these verses. Verse 6 says that “[I will] put breath in you, and you shall live; and you shall know that I am the Lord.”¹⁷¹ The completion of the loop is that, because of our recognition of the gift that is ours through breath, through *ruah* we further recognize who God is. You shall know that I am the Lord. God’s presence is manifest through *ruah*, and *ruah* continually calls us to deeper communion with God, into deeper revelation.

¹⁶⁷ Ezekiel 37:5

¹⁶⁸ Ezekiel 37:13

¹⁶⁹ Ezekiel 37:14

¹⁷⁰ Marianne Meye Thompson, *The Holy Spirit and Christian Origins: Essays in Honor of James D.G. Dunn* (Grand Rapids, MI: Eerdmans, 2005): 71.

¹⁷¹ Ezekiel 37:6

God's sanctifying grace is at work in our lives, bringing us to wholeness. All of God's actions are to restore us as we seek to reclaim the image of God that was present at creation and we grow to be more Christlike. 2 Corinthians talks about this process of growth. "And all of us, with unveiled faces, seeing the glory of the Lord as though reflected in a mirror, are being transformed into the same image from one degree of glory to another; for this comes from the Lord, the Spirit."¹⁷² There are many different ways we can say this theologically, but in the end they all point to the same action. God's restorative power is at work in our lives. "As we live lives fully attuned with the Breath, it becomes the guiding power in our lives. We then experience the gift of healing. In our own small ways, each of us is empowered to become of this Breath in its work of healing a wounded Earth."¹⁷³

Resonant Frequency

Related to HRV training, resonance occurs when one finds the right breath rate for oneself individually and one is able to identify one's own resonant frequency. Once one begins to practice breathing at this rate, HRV increases. The breath becomes the push for the other systems and physiological resilience improves.

Think of swinging on a swing set. I used to enjoy swinging when I was younger. But I really enjoyed swinging when my dad was around to push me on the swing. Within a few oscillations back and forth, with his pushes I was sailing toward the blue sky. My friends would try to give me a push on the swing at recess and it was fun, but they never had the power that my

¹⁷² 2 Corinthians 3:18

¹⁷³ Ruben L. F. Habito, *Healing Breath Zen for Christians and Buddhists in a Wounded World*. Boston (MA: Wisdom Publications, 2006), 55.

dad had. In fact, when they pushed me, it almost seemed that I slowed down more. But when my dad pushed, he knew just how to do it so that I swung higher and higher. Yes, one factor was that he was bigger and stronger than they were. But the most important factor was that he knew just the right time to push. He would wait until I swung back; his hand would move with me, and then just as the motion turned and started to go in a new direction, he would give me a good strong push, and the momentum and gravity had me sailing along. I would eventually be swinging so high that I felt I was going to make a full loop around that swing set! And it took just a little bit of effort from my dad to keep me going at this rate. Once the push and the swing got in sync, it was easy to keep the same pattern going.

This action can help us understand the ways that HRV training works. Each person has an ideal breath rate where resonance occurs in the interplay between heart rate the breathing. “When scientists tested people at all possible breathing rates, they found that there is an ideal breath rate for each person, somewhere between three and a half and six breaths per minute for adults using equal time for breathing in and breathing out, a sweet spot where the HRV is maximized and the electrical rhythms of the heart, lungs, and brain become synchronized.”¹⁷⁴ This causes the variance between the minimum and maximum heart rate to be increased. “When participants voluntarily produced maximal-amplitude heart rate oscillations, they were triggering resonance in the cardiovascular system. This was analogous to putting a speaker in front of a microphone, where only a resonance-frequency squeal can be heard, blotting out all other sound frequencies, the ‘Larsen’ effect.”¹⁷⁵

¹⁷⁴ Richard P. Brown and Patricia L. Gerbarg, *The Healing Power of the Breath: Simple Techniques to Reduce Stress and Anxiety, Enhance Concentration, and Balance Your Emotions* (Boston, MA: Shambhala, 2012): 235.

¹⁷⁵ P. Lehrer, “How Does Heart Rate Variability Biofeedback Work? Resonance, the Baroreflex, and Other Mechanisms.,” *Biofeedback*, 41(1) (2013): 26. <https://doi.org/10.5298/1081-5937-41.1.02>.

Identifying Resonant Frequency

In clinical practice, I would work with clients using HRV training to try to identify their individual resonant frequency. This can vary from person to person, but I found that this is usually in the range of five to seven breaths per minute. Identifying this resonant frequency would involve having the client engage in several minutes of breathing at various frequencies in order to see how the heart rhythms line up with the breath pattern. Using spectral analysis, I could look at the frequency distribution and determine when clients are breathing at their resonant frequency, which promotes physiological balance.

This work is most effectively done by working with a biofeedback clinician, but there are other ways to engage in the practice of trying different breath rates. While you would not have the visual feedback for the heart, you can still identify which breath rate feels most natural, and over time you can intuitively identify the right breath rate for you based on the physiological signals of relaxation and overall feeling of balance.

The key to increasing HRV is to engage in paced breathing at a consistent pace. When you find your resonant frequency, this will ensure that your cardiovascular and circulatory systems are working together in sync and will create larger fluctuations in RSA oscillations.

Paced breathing can be helpful, even if you are not monitoring heart rate. Breath pacers can facilitate this process. One such option is the EZ-Air breath pacer created by the Biofeedback Federation of Europe.¹⁷⁶ This pacer allows the user to set various parameters such

¹⁷⁶ Biofeedback Federation of Europe, "Try our Breath Pacer E-Z-AIR PLUS!" (n. d.), <http://bfe.org/try-our-breath-pacer-ez-air-plus/>.

as inhalation/exhalation ratio and change breath rates to create a visual display that one can follow when practicing relaxed breathing.

Another effective practice involves using music to pace breathing. My clients often found this to be easier to use as it promoted a more complete relaxed state. There is a level of alertness that is necessary to visually track a breath pacer. But these musical resources allow people to close their eyes and potentially reach greater levels of relaxation. One effective resource to help with this utilizes musical pieces created by a clinician that play musical scales at various breath rates. Wayne Martin has created relaxation tracks that one can download, that have music at different breath rates with ocean sounds in the background.¹⁷⁷ These simple guides can help facilitate relaxed, steady breathing. The intent is for one to inhale as the musical notes go up the scale, and to exhale as then go back down. These musical compositions have been effective in helping someone identify a comfortable relaxed breath rate. One suggestion is to begin at a pace of 6 breaths per minute and try breathing for several minutes. Over time, you will determine if this pace feels too fast or too slow. You can then adjust half step up or down and try another breath rate until identifying one that seems to be comfortable and produces relaxation. After several sessions of practicing paced breathing, it is common for the breath rate to decrease as one learns to better engage the diaphragm and utilize one's lung capacity.

As our general society is beginning to identify the benefits of deeper, slower breathing, there are more options becoming available to the general public that help with training. Even the Apple Watch includes an application for breathing. If this application is turned on, the user will be periodically reminded throughout the day of the need to breath in order to restore balance.

¹⁷⁷ Wayne Martin, LCSW, "Psychophysicologist, Therapeutic Resources," <https://www.waynemartinlcsw.com/resources>.

The settings in the app allow the breath rate and length of practice session to be adjusted. These types of applications are making this practice more widely available to more people.

Other Practices Exhibit the Importance of Breathing

We now have the ability to understand these principles because of modern technology, but this is not a new concept. “The notion that salutary health effects can be obtained by breathing at particular rates has been with us for many centuries. Slow breathing underlies many of the Eastern meditative techniques, including yoga and Zen. HRV biofeedback systematizes these findings and makes them readily learnable in very little time.”¹⁷⁸ When Buddhist monks chant the popular mantra, ‘Om Mani Padme Hum,’ they do so at the rhythm of six seconds per phrase, pausing to inhale for six seconds in order to ready themselves for the next phrase.¹⁷⁹ While they are not focusing on the changes that are happening internally, this is putting the cardiovascular system and respiration in sync, increasing physiological balance. Practitioners have trusted their intuition as they have engaged in these spiritual practices throughout the ages. Now scientific knowledge gives us a window into the changes that are being created physiologically. But we are at great risk of diminishing this to merely another medical treatment if we discount the importance of the spiritual dimension in this process.

Healthy breath patterns make a difference on a much greater level than we realized.

¹⁷⁸ Paul M. Lehrer, Robert L. Woolfolk, and Wesley E. Sime, *Principles and Practice of Stress Management* (New York, NY: Guilford, 2009), 234.

¹⁷⁹ James Nestor, *Breath: the New Science of a Lost Art* (New York, NY: Riverhead Books, an imprint of Penguin Random House LLC, 2020), 82.

But these rhythms have surrounded us for centuries. “The traditional chant of Om, the ‘sacred sound of the universe’ used in Jainism and other traditions, takes six seconds to sing, with a pause of about six seconds to inhale.”¹⁸⁰ Yogis also use rhythmic breathing to help improve oxygen saturation and stamina.¹⁸¹ When monitored while saying the rosary prayer, it was found that people engaged rhythmic breathing at approximately six breaths per minute and this produced increased in their HRV.¹⁸² Other prayers and spiritual practices such as saying the Lord’s Prayer also have a rhythmic function that encourage steady breathing at a slow rate. “The Eastern disciplines of Yoga, QiGong, and Zen all involve slow breathing. Masters of these techniques tend to teach people to modulate their respiration rate to the needs and pace of their own bodies.”¹⁸³ Many Eastern disciplines have practices with the same impact. One of the most widely known Kundalini yoga chants, “the sa ta na ma chant,” also uses the six second rhythm.¹⁸⁴ There is a technique called khechari, which is an ancient Hindu tongue pose that was practiced for both physical and spiritual health benefits where the tongue is placed in the soft palate of the roof of the mouth while taking slow breaths that end up also being six seconds long.¹⁸⁵ “Japanese, African, Hawaiian, Native American, Buddhist, Taoist, Christian—these

¹⁸⁰ Nestor, 82.

¹⁸¹ Paul M. Lehrer, Robert L. Woolfolk, and Wesley E. Sime, *Principles and Practice of Stress Management* (New York, NY: Guilford, 2009), 292.

¹⁸² Lehrer, 230.

¹⁸³ P. Lehrer, “How Does Heart Rate Variability Biofeedback Work? Resonance, the Baroreflex, and Other Mechanisms., *Biofeedback*, 41(1) (2013): 182. <https://doi.org/10.5298/1081-5937-41.1.02>.

¹⁸⁴ James Nestor, *Breath: the New Science of a Lost Art* (New York, NY: Riverhead Books, an imprint of Penguin Random House LLC, 2020), 82.

¹⁸⁵ Nestor, 82.

cultures and religions all had somehow developed the same prayer techniques, requiring the same breathing patterns. And they all likely benefited from the same calming effect.”¹⁸⁶

Integrating knowledge

We have had the knowledge on a deep level of the benefits of these patterns but have lacked the technology and the knowledge to fully understand and describe them. Now that we have these advances to fill in the technological and intellectual gaps, we seem to have created a spiritual void. With the modern advances we are not integrating the spiritual knowledge. We cannot discount the importance of this deeper knowledge. Practitioners have benefited for centuries from these resonant properties, even without the ability to label this and explain what was happening physiologically. Now that we have the benefit of a fuller understanding of the importance of these practices, we have an opportunity to use this as a bridge to integrate and build toward a fuller holistic understanding. When one is balanced physiologically, this allows one to be more open to the presence of *ruah*. Stress and physiological arousal can become a barrier that prevents a fuller connection with God’s presence. We begin to cut ourselves off from the world and from one another. These healthy heart and breath patterns signify physiological balance, which allows us to be more receptive to God’s Spirit in our lives.

While we have made great advances in understanding the benefits of HRV training, we are still missing what I believe is the most important aspect, and that is the holistic integration of this practice. Western clinicians who teach HRV generally do not include any integration of spirituality. I understand the desire to not impose religious aspects in a clinical setting. But I

¹⁸⁶ Nestor, 82.

believe that those of us who recognize the importance of holistically integrating our lives and including the spiritual dimension need to constantly consider where we are creating dualistic divides in our lives. This is an important place. It is time for us to take the knowledge that has previously been limited to the field of psychophysiology and consider how we can integrate it into our broader spiritual practice.

“Do not be astonished that I said to you, ‘You must be born from above.’ The wind blows where it chooses, and you hear the sound of it, but you do not know where it comes from or where it goes. So it is with everyone who is born of the Spirit.”¹⁸⁷ We do recognize the sound of it. But in our busyness, we do not know where it comes from. And we cannot even begin to fathom where it goes, because we are not even aware of its presence. But we are offered the gift of being born from above, not just in an isolated event but over and over through the process of renewal by God’s *ruah*. The same breath that gives life continues to give life through the sustaining processes we have talked about. This exchange of gases in our lungs that gives us the oxygen needed for life and expels waste products is more than a random physiological process that happened to develop with evolution. This is *ruah* at work doing exactly what we are promised. We are born of the Spirit BY the Spirit. *Ruah* continues to bring new life through the sustaining physiological process. *Ruah* promotes cardiological health through driving that system to balance and greater efficiency. *Ruah* is the key to life, not just at the creation but with every breath we take.

¹⁸⁷ John 3:7-8

Chapter 6 Prayer Practices

Personal Experience with Prayer Practices

Despite the fact that I have a background in psychophysiology and the mind/body connection, I taught workshops on the physical results from stress, and have equipment that can monitor the body's responses and show the health benefits from relaxation and meditation, I still struggle with finding time for these practices. Even though I spent years guiding others through these physical practices, I didn't always devote the time I should have to practice this myself during that time in my life. My clinical practice was a high stress environment that didn't allow much down-time. I raced from the clinic home to put on my other hat that kept me running from event to event with all the family activities we were involved in. It often felt like I was on a merry-go-round that was difficult to stop.

As I stepped off this path and into ordained ministry, I anticipated the joys of spending the time necessary to tend to my soul and to allow space to hear God speak in my life. I assumed that every minister somehow was given the ability to miraculously shift into this mode of operating and was somehow able to stand outside of the pressures of our society. It only took a few weeks in congregational ministry for me to realize how wrong this assumption was. I watched my colleagues struggle with the same challenges that I had seen in my previous career, and I found myself with the same sense of burnout and fatigue.

I realized that one of the most important elements of my call to ministry was not going to be given to me without some effort on my part. Yes, God was speaking to me, and directing the words I was to deliver to my congregation through sermons and daily ministry, but I had to make the space to hear them. I needed to nurture my own spiritual life. There were many resources

available that helped, but the bottom line was that I needed to devote the time to a faithful prayer life. I discerned that my call involved integrating this practice I had with physiological stress response with the knowledge about the importance of a prayer life. Contemplative prayer took on a whole new meaning as I began to use my previous practices and combined them with Christian prayer practices. In order to teach this, a survey of prayer practices was important.

The Purpose of Prayer

Prayer is important for Christian disciples. Deborah van Deusen Hunsinger in *Pray Without Ceasing* describes it as being the “gracious means through which we may draw near to God.”¹⁸⁸ Scripture gives us the example of faithful followers in prayer, and also gives some instruction on how to pray. I found that many Christian books on prayer publication speak of prayer as the way we communicate with God, but they focus more on techniques and tips instead of beginning with defining prayer. Prayer is understood to be the way we communicate with God. It involves both our active participation (such as lifting praise, petitions, and thanksgiving), and learning to listen for God’s word in our own lives. We cannot listen and cannot connect fully if we are not physiologically balanced.

Hunsinger explains that it is through prayer and scripture that we are able to unite with God. For her, scripture is an integral piece of the equation. She claims that although God communicates with us in other ways besides the Bible, “we cannot know it as a message from

¹⁸⁸ Deborah van Deusen Hunsinger, *Pray without Ceasing: Revitalizing Pastoral Care*, (Grand Rapids, MI: Eerdmans Publishing Co, 2006), 496-498, Kindle.

God apart from its interpretation by means of scripture.”¹⁸⁹ Even these age-old practices can take on a new meaning when we combine them with practices that enhance physiological relaxation.

Larry Dossey seems to be skeptical of prayer that follows a particular prescribed pattern or is specifically attached to scripture. In his book *Healing Words*, he distinguishes between prayer and prayerfulness. Dossey uses prayer to refer to conventional ways of following “the formalities of the great religions and pray explicitly for specific events to occur.”¹⁹⁰

On the other hand, prayerfulness is used to refer to the way people “live with a deeply interiorized sense of the sacred” but do not “pray in the conventional sense.”¹⁹¹ Prayerfulness is not isolated to a particular form that is dictated by a specific religion but instead “is a feeling of unity with the All, rather than with specific leaders, traditions or holy books.”¹⁹² Dossey’s work is specifically focused on healing and the action of prayer in this process. He says prayerfulness “is accepting without being passive, is grateful without giving up. It is more willing to stand in the mystery, to tolerate ambiguity and the unknown. It honors the rightness of whatever happens, even cancer.”¹⁹³ This stance of prayerfulness is a key to integrating these physiological practices into our lives. Mindfulness training has become popular and is based on the same principles. Changing our perspective and the way we engage in every activity changes everything about us. Research shows that this also changes our physiology and helps to reduce stress arousal.

¹⁸⁹ van Deusen Hunsinger, 440-450.

¹⁹⁰ Larry Dossey. *Healing Words: the Power of Prayer and the Practice of Medicine* (San Francisco, CA: HarperSanFrancisco. 1994): 24.

¹⁹¹ Dossey, 24.

¹⁹² Dossey, 24.

¹⁹³ Dossey, 24.

Contemplative Prayer Practices

Those who strive for a more contemplative connection have long been misunderstood. The Bible gives us an example of this with Mary and Martha being well-known examples of seeming opposite traits. Mary exhibits a model for being more passive, listening for the word of God. In a similar line of thought, a well-known writing called the *Cloud of Unknowing* by an anonymous author refers to “actives” and “contemplatives.”¹⁹⁴ This author paints “actives” as being judgmental of attempts by “contemplatives” to develop an inward life, saying their attempts always fail.¹⁹⁵ I find this same divide in my ministry practice. People who are prone to a more active and stressful life are often judgmental of those who are drawn to contemplative practices. However, I think that is where biofeedback can offer a benefit. Sometimes it becomes the bridge that allows people to appreciate a more contemplative stance. When people can see what is happening physiologically, it can help them understand the benefits. While pure physical benefits should never be the reason for engaging in these practices, they can often open the door than can lead to a greater recognition of the presence and power of *ruah*.

Thomas Keating says that “all true prayer is based on the conviction of the presence of the Spirit in us and of His unfailing and continual inspiration.”¹⁹⁶ In *Open Mind, Open Heart*, he outlines techniques to promote union with the Divine. He uses the terms “centering prayer” and “contemplative prayer” with distinct meanings. Centering prayer is used for “the specific method described in [his] book of awakening to the gift of contemplation.”¹⁹⁷ He describes its purpose as

¹⁹⁴ Clifton Wolters, trans., *The cloud of Unknowing* (Baltimore: Penguin Books, 1961): 76.

¹⁹⁵ Wolters, 76.

¹⁹⁶ Thomas Keating, *Open Mind, Open Heart: 20th Anniversary Edition* (New York, NY: Continuum, 2006): 11.

¹⁹⁷ Keating, 1.

being to bring “knowledge and experience of God’s love into the general consciousness of the human family.”¹⁹⁸ Contemplative prayer is used for “its full development under the direct inspiration of the Spirit.”¹⁹⁹ It is a “process of interior transformation, a conversion initiated by God and leading, if we consent, to divine union.”²⁰⁰ It is a “pure gift of God.”²⁰¹ Keating asserts that Christian leaders do not receive adequate training in contemplation, citing this as a reason that people look outside of this religion for spirituality.²⁰² He goes on to say that a renewal of this practice would revive the church, open us to greater dialogue with other religions and would also bring forth the values that all religions have in common.²⁰³ I propose that those who are skeptical of the benefits of contemplative practices may begin to appreciate them if they are able to see the holistic impact they can have. Not only is one more aware of God’s presence around them and within them, but they are able to recognize the ways that God’s *ruah* can impact them physically and promote health and balance.

Thomas Merton has written extensively on the importance of a contemplative attitude. In *New Seeds of Contemplation* he says that “contemplation is, above all, awareness of the reality of that Source.” Merton does not distinguish between the process of us engaging in the techniques and the result that is obtained. “Contemplation reaches out to the knowledge and even to the experience of the transcendent and inexpressible God. It knows God by seeming to touch Him.

¹⁹⁸ Keating, 1.

¹⁹⁹ Keating, 1.

²⁰⁰ Keating, 1-2.

²⁰¹ Keating, 2.

²⁰² Keating, 7.

²⁰³ Keating, 8.

Or rather it knows Him as if it had been invisibly touched by Him...Touched by Him Who has no hands, but Who is pure Reality and the source of all that is real!”²⁰⁴ Merton explains that love is an important aspect. Contemplation is “an awareness of our contingent reality as received, as a present from God, as a free gift of love.”²⁰⁵ It is the *ruah* from God that promotes this awareness. *Ruah* within us is the bridge that allows for these transcendent experiences and allows us to recognize the ways we have been invisibly touched by God’s Spirit.

Meditation

William Johnston, in *Being in Love*, also believes that love is a fundamental element. He distinguishes between religious meditation and secular meditation, claiming that love is the distinguishing factor. He talks about a love that “springs from the depths of the spirit, from the fine point or centre of the soul, from the core of the being where men and women are most truly themselves.”²⁰⁶ It is something that “lies dormant in the human heart” until something causes a person to “wake up” and explore it more deeply.²⁰⁷ While religious meditation has a different goal than secular meditation, he acknowledges that one could start with secular meditation and be awakened to the element of love, causing one to explore religious meditation.²⁰⁸ This begins to get at the heart of why the integration of these truths is important. As he points out, the same

²⁰⁴ Thomas Merton, *New Seeds of Contemplation* (New York: New Directions Book, 2007), 188-193, Kindle.

²⁰⁵ Merton, 188-193.

²⁰⁶ William Johnston, *Being in Love: the Practice of Christian Prayer* (New York: Fordham University Press, 1999), 12.

²⁰⁷ Johnston, 13.

²⁰⁸ Johnston, 14.

practice can have a different result, depending on the mindset. When we combine prayerfulness with these physiological exercises, we are able to more fully recognize this love that lies at our core. This love is breathed into us by *ruah*, and it is *ruah* that awakens this reality.

The Goettmanns speak to love as being important as well. They teach contemplation in the community called Bethanie. Their teachings are summarized in *The Beyond Within: Initiation into Meditation*. They speak of prayer that allows one to “enter into the depths of their consciousness and even their unconscious, and there, in utter self-emptying and in the silence of surrendering love, to surrender every atom of their being to the invisible Trinity that dwells within.”²⁰⁹ For them meditation is “more than inner peace and serenity;” it is a way to look “for the Christ, the Holy One of God who has put a human face on the unknowable ‘I Am.’”²¹⁰ In exploring various writers, I found a wide range of opinions when it comes to the area of acknowledging the contributions from other religions. In fact, some even struggled with having tolerance of accepting any influence from other religions. For example, the Goettmanns also talk about the importance of learning from “oriental wisdom” but say that we must do so with “prudence and discernment,” following the example of the Fathers of the church “who, in their day, knew how to make use of the best insights of Greek philosophy. They understood that all truth, wherever it appears, is a manifestation of the Word of God.”²¹¹ When we are too skeptical of where this truth is going to be located, we can cut out important pathways where God can be revealed. We should avoid limiting God’s revelation by drawing walls around what we believe to

²⁰⁹ Alphonse Goettmann, Rachel Goettmann, Theodore Nottingham and Rebecca Nottingham, *The beyond within: Initiation into Meditation* (United States: Theosis Books, 2012), 23-25, Kindle.

²¹⁰ Goettmann, 81-85.

²¹¹ Goettmann, 122-125.

be “acceptable” and labeling other practices as “unacceptable.” Sometimes the deepest encounter with God can occur through an exercise that is outside of our typical comfort zone.

In my clinical practice I found some Christians skeptical to engage in meditation because they were leery of the Eastern influence. While I know we can benefit greatly from the wisdom we receive from other expressions of faith, I am aware that many are slower to walk down that road. Maybe combining contemplative practices with physiological focus can dilute this concern. We cannot risk missing the benefits just because of our hesitancy to step into an unknown arena. William DeWitt, in his book *The Essence of Christian Meditation*, says that we have no reason to be “suspicious” of the influence of Buddhism in meditation. He says, “The Buddha did not invent meditation. God did. When God created our human biology, he gave us the ability to meditate. He created meditation when he created us.”²¹² He goes on to later explain that Buddhism teaches something called the four boundless abodes: loving kindness, compassion, joy, and equanimity.²¹³ These are also found in Christianity as well, but we don’t not reject them because they are also in Buddhism. “Why, then, should we reject meditation because the Buddhists practice it?”²¹⁴

Many different authors defined meditation as coming from *meditari* (itari in medio), which means being led toward the center. “The center is not something toward which we concentrate, but something which concentrates us, uniting us from within, toward the interior. This center is essential Being.”²¹⁵ The Goettmanns list three essential functions in meditation:

²¹² William E. DeWitt, *The Essence of Christian Meditation* (Bloomington, IN: Crossbooks, 2010), 3-4, Kindle.

²¹³ DeWitt, 4.

²¹⁴ DeWitt, 4.

²¹⁵ Alphonse Goettmann, Rachel Goettmann, Theodore Nottingham and Rebecca Nottingham, *The beyond within: Initiation into Meditation* (United States: Theosis Books, 2012), 434-444, Kindle.

“right attitude, appropriate tension, and breathing.”²¹⁶ While each author had slight differences in the way they articulate the functions, these are similar to the techniques listed by others and breath was always a common denominator. Meditation and contemplative practices connect us with *ruah*.

Many of the authors highlighted the aim of meditation as being important. There was a focus not on ourselves and what we can gain, but instead on the Divine. DeWitt says that with “basic meditation” the focus is on self, often being concerned with the kind of progress one is making, whereas “Christian meditation” is about “Christ in me” and is only concerned with moving from “mind to heart” to find Christ.²¹⁷ DeWitt claims that in Christian meditation we are not focused on “getting something” but instead we give of ourselves.²¹⁸ It is not something we obtain by saying the right phrases but instead it is a “time to listen, to wait, to appreciate the wonder of our creation, and to pay attention to the presence of God within us.”²¹⁹

The Goettmanns pointed out that for them an important factor is that the focus is not on the “self” but on “self’s relationship with God (or its being, its freedom), and through God, with others and the world.”²²⁰ They believe that ultimately meditation “aims at creating a living person who sees God” and is a “path of transformation. It is a maturation of the entire person: in

²¹⁶ Goettmann, 459-461.

²¹⁷ William E. DeWitt, *The Essence of Christian Meditation* (Bloomington, IN: Crossbooks, 2010), 55-56, Kindle.

²¹⁸ DeWitt, 14.

²¹⁹ DeWitt, 25.

²²⁰ Alphonse Goettmann, Rachel Goettmann, Theodore Nottingham and Rebecca Nottingham, *The beyond within: Initiation into Meditation* (United States: Theosis Books, 2012), 429-430, Kindle.

our relationship to ourselves; in our relationship to others and to the world; in our relationship to God; in the transfiguration within us of Absolute Being.”²²¹

John Main, in *Word into Silence: A Manual for Christian Meditation*, said that “The central task of our life, in the Christian vision, is to come into union, into communion.”²²² For him, prayer is not something that we actively initiate. He focuses on prayer as a way to experience Jesus. “In prayer we are not striving to make something happen. It has already happened. We are simply realizing what already is, by travelling deeper into the unified consciousness of Jesus, into the wonder of our own creation.”²²³

He acknowledges that this is not easy. We must begin by “getting in touch with ourselves.”²²⁴ He explains that “we have first to find, expand and experience our own capacity for peace, for serenity, and for harmony before we can begin to appreciate our God and Creator who is the author of all harmony and serenity.”²²⁵ It is through meditation that we come to know ourselves so we can unite with God. He articulates the goal of Christian meditation in this way: “The all-important aim in Christian meditation is to allow God’s mysterious and silent presence within us to become more and more not only a reality, but the reality in our lives; to let it become that reality which gives meaning, shape and purpose to everything we do, to everything we are.”²²⁶ I don’t fully agree with this perspective. I believe that what he explains as “getting in

²²¹ Goettmann, 434-444.

²²² John Main and Laurence Freeman. *Word into Silence*, (Norwich: Canterbury Press, 2006), 96, Kindle .

²²³ Main, 135-143.

²²⁴ Main, 135-143.

²²⁵ Main, 231-233.

²²⁶ Main, 258-261.

touch with ourselves” is more about getting ourselves out of the way so that we can connect with the Divine that is within us. I think that what he explains as getting in touch with ourselves could be the process of attaining the physiological balance that we have been talking about. When our arousal is too high, it prevents us from recognizing anything outside of our immediate needs. Getting in a state of physiological balance allows us to be open to greater recognition of that which already exists.

As I read different authors, I realized that one main difference in the use of terms seemed to be related to the way the author conceived God. Those who emphasize prayer, especially petitions and supplication, seemed to understand God to be largely outside of oneself. Those who used meditation or contemplation, on the other hand, articulated the importance of unity and God within us. The Goettmanns explained it this way: “God is not in another world, where we would have to migrate in order to find him, but in our very heart as a reason for being, our soul, and dynamism. Consequently, God is to be sought in the depths of the most existential dimension, in that which makes us human and without which we cease to be human.”²²⁷ This is a critical difference. The goal of integration would be to shift so that we recognize *ruah* as a presence both within us and beyond us. Connecting to breath practices will allow us to start this integration.

Integrating knowledge

There are many prayer practices that have existed for centuries and have been beneficial in cultivating wholeness and helping people to connect with God. But we have not always had

²²⁷ Alphonse Goettmann, Rachel Goettmann, Theodore Nottingham and Rebecca Nottingham, *The beyond within: Initiation into Meditation* (United States: Theosis Books, 2012), 847-849, Kindle.

the adequate medical knowledge to explain what is happening physiologically. And we have not had the technological advances that let us view this information. An additional problem has been that these prayer practices reach a particular segment of the population, but those who are not going to contemplative practices often miss the benefits.

The integration I am proposing here makes these practices available to a much wider portion of the population. There are individuals that will not buy into these practices on their own. Yes, it is critical to teach basic prayer practices and encourage meditation. But the addition of the physiological details gives the benefit of allowing people to more fully understand the process. This should make this more accessible to more individuals.

Yes, our doctrinal beliefs teach that the Holy Spirit is present in creation, sustains us day today, and leads us to salvation. Prayer practices help this to become real in our lives by opening us up to God's Spirit. But this takes on a whole new truth when we are able to understand how this is happening on a very intimate level. When we are able to grasp the fact that it is God's breath that is continuing to create within us by the generation of new cells that are fueled by oxygen, and that would not be able to live without that breath, *ruah* takes on a whole new meaning. When we are able to understand that the exchange of oxygen for carbon dioxide is necessary for sustaining life, a process that rids us of toxins, we can see *ruah* sustaining us in a whole new way. And when we are able to understand the physiological processes behind heart rate variability and can see the way that breath brings physiological balance and promotes long-term health benefits, we can grasp the ways that *ruah* brings wholeness. Wholeness involves living life to its fullest and communion with God and others. This is only possible through *ruah*.

Conclusion

As our society grows in knowledge about our physical health and experiences beneficial advances in medical sciences, this creates a danger of constraining our understanding of overall health and well-being as being limited to the physical dimension. Instead of integrating these findings, we tend to replace age-old spiritual truths with our updated intellectual information. This could be because of the ways we struggle with the integration of the physical and spiritual dimensions. We transfer the focus from one dimension to the other. Instead of understanding stress as being a spiritual condition, we only focus on the physical aspects. Maybe this is because of our desire to be in control. When we understand something, we feel we can better control it. And while there is some truth to that, our framework seems to leave no room for the presence of God. We adopt a dualistic understanding. This dysfunctional way of viewing body and spirit is more than just a conceptual problem. This changes everything about the way we view the world. We functionally turn on and off the recognition of God's presence in our lives, selectively limiting the places where we expect God to show up while boxing off the other places to say that our intellectual knowledge has taken us beyond that realm. "Their heart is ashes, their hope is cheaper than dirt, and their lives are of less worth than clay, because they failed to know the one who formed them and inspired them with active souls and breathed a living spirit into them."²²⁸ The Biblical writer of these words may have known more about what our lives would become than we can imagine.

Stress continues to be a problem in our lives. Even as we learn more about the debilitating effects of stress, we don't seem to be making any headway to decrease the number of

²²⁸ Wisdom 15:10-11.

stressors that we encounter. In fact, to further complicate our lives, it seems that our stressors just multiply. Now more than ever it is important to find healthier ways to cope.

Stress isolates us and pulls us inward. Because of the ways that we go into self-preservation mode, it makes it difficult to be connected to God and others. Stress causes us to have a selfish edge just because it feels like that is what is necessary in order to survive. “Close family ties and a cohesive community turned out to be more important than health habits in predicting heart disease.”²²⁹ But sometimes these ties are severed because we are unable to maintain the connection. Friendships become strained because we don’t have the energy to put forth the effort at times. Church activities become an extra thing on the to do list, and our tendency to isolate can keep us from strengthening those relational ties to others. On our own, we would end up being worn out and disconnected from God and others.

But God’s Spirit is constantly working in another direction. God’s Spirit calls us to wholeness and part of that wholeness is restoration of relationships. “God’s spirit renews us and brings new life. ‘But when the goodness and loving kindness of God our Savior appeared, he saved us, not because of any works of righteousness that we had done, but according to his mercy, through the water of rebirth and renewal by the Holy Spirit.’”²³⁰ Recognizing the power of *ruah* can enhance our ability to see the importance of a spiritual dimension throughout the whole of our lives.

There seems to be important truths that have been lost as we have made other advances. We often look at physiology as being distinct from our spiritual selves. “Since the body is considered to be the instrument of the soul and cannot live without breath or spirit, discussion of

²²⁹ Joan Borysenko and Larry Rothstein, *Minding the Body, Mending the Mind* (Cambridge, MA: Da Capo Press, 2007), 461.

²³⁰ Titus 3:4-5

soul and spirit frequently occur in ancient medical texts.”²³¹ The spiritual dimension was understood as being equally or more important. In the book of Job, the central character serves as a great example of someone who has been through struggles but still holds onto the importance of *ruah*. The poems of his time, our Hebrew Psalms, reminded him of the ways *ruah* “protect him against the onslaught of sickness, loneliness, poverty, and exposure to the indignity of insensitive friends.”²³²

While it is easy to begin to partition off certain parts of our lives as being religious, and the rest of the time we turn off that part of our being, God’s *ruah* calls us to integration. *Ruah* connects us with God and others. *Ruah* brings physiological balance. And *ruah* always restores us and renews us, bringing wholeness. Salvation does not just happen at some point down the road. Salvation happens daily in the here and now and is only made possible through *ruah*.

Job teaches us that all of creation recognizes the truth of God’s presence.²³³ “But ask the animals, and they will teach you; the birds of the air, and they will tell you; ask the plants of the earth, and they will teach you; and the fish of the sea will declare to you. Who among all these does not know that the hand of the Lord has done this? In his hand is the life of every living thing and the breath of every human being.”²³⁴ And we are aware of God’s presence as well. We just have to get the barriers out of the way and connect with the *ruah* that not only surrounds and leads us but also that breaths within us.

²³¹ Troy W. Martin, “Ancient Medical Texts, Newly Re-Discovered: The Medical Background of Biblical Breathing.” *Early Christianity* 1, no. 4 (2010): 514. <https://doi.org/10.1628/186870310793597097>.

²³² John R. Levison, *Fresh Air: the Holy Spirit for an Inspired Life* (Brewster, MA: Paraclete Press, 2012), 24.

²³³ Levison, 22.

²³⁴ Job 12:7-10

HRV is a modality that helps us to recognize the importance of *ruah*. It is one thing to read about God's truths in scripture. It is another thing to experience this truth in our own lives. Prayer practices definitely help open us to God and spirit in an important way. But pairing this with the medical knowledge of how this impacts our body in concrete ways can open this truth up on a deeper level. Breath can bring our physiological systems into balance, as seen by a change in heart rate patterns. Increasing HRV not only brings physiological balance, but promotes health and decreases other disease. Low heart rate variability is correlated with several medical and psychological disorders. Heart rate variability training can help treat these disorders.²³⁵

Additionally, HRV training can help us adapt to stressors in our midst. It can increase our ability to respond to stressors. The stress symptoms are brought on by the activation of the sympathetic nervous system and turned off by the parasympathetic nervous system. A healthy system that is more resilient is able to turn the systems on and off as needed. "The oscillations of a healthy heart are complex and constantly changing, which allow the cardiovascular system to rapidly adjust to sudden physical and psychological challenges to homeostasis."²³⁶ Regular practice of healthier breath patterns at one's resonant frequency has been shown to be effective in increasing homeostasis of the autonomic nervous system and strengthening the baroreflex²³⁷

It is only because of our medical advances that we are able to understand this phenomenon. Medical advances have helped us to develop training methods that will greatly

²³⁵ A. L., Wheat and K. T. Larkin, "Biofeedback of Heart Rate Variability and Related Physiology: A Critical Review". *Applied psychophysiology and biofeedback* (2010): 229. <https://doi.org/10.1007/s10484-010-9133-y>.

²³⁶ F. Shaffer, et al. "A healthy heart is not a metronome: an integrative review of the heart's anatomy and heart rate variability" (2014): 1, <https://doi.org/10.3389/fpsyg.2014.010401>.

²³⁷ R. Gevirtz, "The Nerve of That Disease: The Vagus Nerve and Cardiac Rehabilitation," *Biofeedback*, 41(1) (2013): 33. <https://doi.org/10.5298/1081-5937-41.1.01>

improve health. But it is essential that we integrate these methodologies with our existing spiritual experience. For centuries, prayer practices have connected us with the Divine and encouraged physiological balance. Including the spiritual dimension is critical. Just because one learns about the physiology and technology behind heart rate variability, this does not mean that other truths about breathing cease to exist. We can integrate those truths into our advances to give us even greater ability to achieve wholeness. This wholeness is not something that we attain by our own work. This wholeness is only possible because of God's Spirit, *ruah*, that breaths within us. Any effort of our own that does not incorporate this truth just threatens to further divide us.

Loss of connection is one of our greatest problems in our current society. We are more and more disconnected from one another, and the multiple stimuli that are coming at us constantly from all directions threaten to disconnect us from God. We need spaces to quiet our minds, and we also need to quiet our bodies as well. HRV training offers the opportunity to do both. But this modality holds its greatest benefit when paired with the spiritual truths that underlie our understanding of breath. Biblically we see the power of *ruah*. "Several passages are quite clear that when God's power comes upon a person, they in turn demonstrate immense power, wisdom, creativity or leadership."²³⁸

Ruah can be difficult to understand through scripture. Our multiple Biblical translations further complicate this process. But the main problem is that we lack any one word in our English language that can encompass all that *ruah* is. Spirit, wind, breeze, and breath are common translations. But this does not diminish the magnitude of *ruah*. "Spirit...is not a benign

²³⁸ David G. Firth, *Presence, Power, and Promise: the Role of the Spirit of God in the Old Testament* (Downers Grove, IL: IVP Academic, 2011), 17.

companion but a fierce escort, able to turn on a dime from breeze to blast. If wind is a force of nature, then spirit is a force of faith. Both, in the end, are *rûah*.”²³⁹

Our society has such a focus on personal drive and attaining levels of success. This is apparent not only in our vocational life, but also in how we approach the rest of our lives as well. We get into a pattern of constantly working so hard and feeling like we have to earn the things that we have, that we often transfer this to our understanding of God as well. We can fall into the trap of feeling like there are certain things that we *must* do in order to attain salvation, and to deserve the gift of Christ. But the thing about our spiritual life is that these gifts that are extended to us from God are constantly there. God’s grace is not something we can attain or work for. It is surrounding us and extended to us regardless of our actions. And the same goes for the Spirit’s presence in our lives. *Ruah* is a reality that is separate from anything we do to attain or deserve. It is God’s gift of life that sustains and renews. John Wesley says that “The title ‘holy,’ applied to the Spirit of God, does not only denote that he is holy in his own nature, but that he makes us so; that he is the great fountain of holiness to his church; the Spirit from whence flows all the grace and virtue, by which the stains of guilt are cleansed, and we are renewed in all holy dispositions, and again bear the image of our Creator.”²⁴⁰ *Ruah* restores this image.

Our task is to become more adept at noticing these gifts in our lives. Stress may work against this ability. HRV training that helps us move into healthier breath patterns can help to reverse this. By lowering physiological arousal, we can remove barriers and become more aware of God’s grace that surrounds us and *ruah* that is within us. “Just as when a sunbeam falls on

²³⁹ John R. Levison, *A Boundless God: the Spirit According to the Old Testament* (Grand Rapids, MI: Baker Academic, a division of Baker Publishing Group, 2020): 16.

²⁴⁰ John Wesley Sermons: On grieving the Holy Spirit, Introduction J, VII 485-86.

bright and transparent bodies, they themselves become brilliant, too, and shed forth a fresh brightness from themselves, so souls wherein the Spirit dwells, illuminated by the Spirit, themselves become spiritual, and send forth their grace to others.”²⁴¹ Our goal is not to connect with this grace for ourselves. But we receive this grace through *ruah* so that we can more fully live out our call. “Jesus said to them again, ‘Peace be with you. As the Father has sent me, so I send you.’ When he had said this, he breathed on them and said to them, ‘Receive the Holy Spirit.’”²⁴² Jesus left us with his presence in the form of peace, and breathed into us God’s Spirit, not for ourselves but so that we can continue the work that he began. “I came that they may have life, and have it abundantly.”²⁴³

Our life, our very essence, comes from God through *ruah*. And it is God’s deepest desire that we not only live this life but that we live it abundantly. This involves wholeness and connection with others and a deep communion with God. All of these can be enhanced by using the breathing techniques that enhance physiological balance. We become more aware of our physical state and we connect more fully with God. We are able to appreciate the miracle of creation, the gift of life, and the peace that comes from living a life of communion with God and others. *Ruah* is a gift much greater than words can describe. It is a gift that can only be appreciated by opening ourselves to God’s presence, which not only surrounds us but lives and breathes within us.

²⁴¹ Basil and Stephen M. Hildebrand, *On the Holy Spirit* (Yonkers, NY: St. Vladimir’s Seminary Press, 2011) :9.

²⁴² John 20:21

²⁴³ John 10:10

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