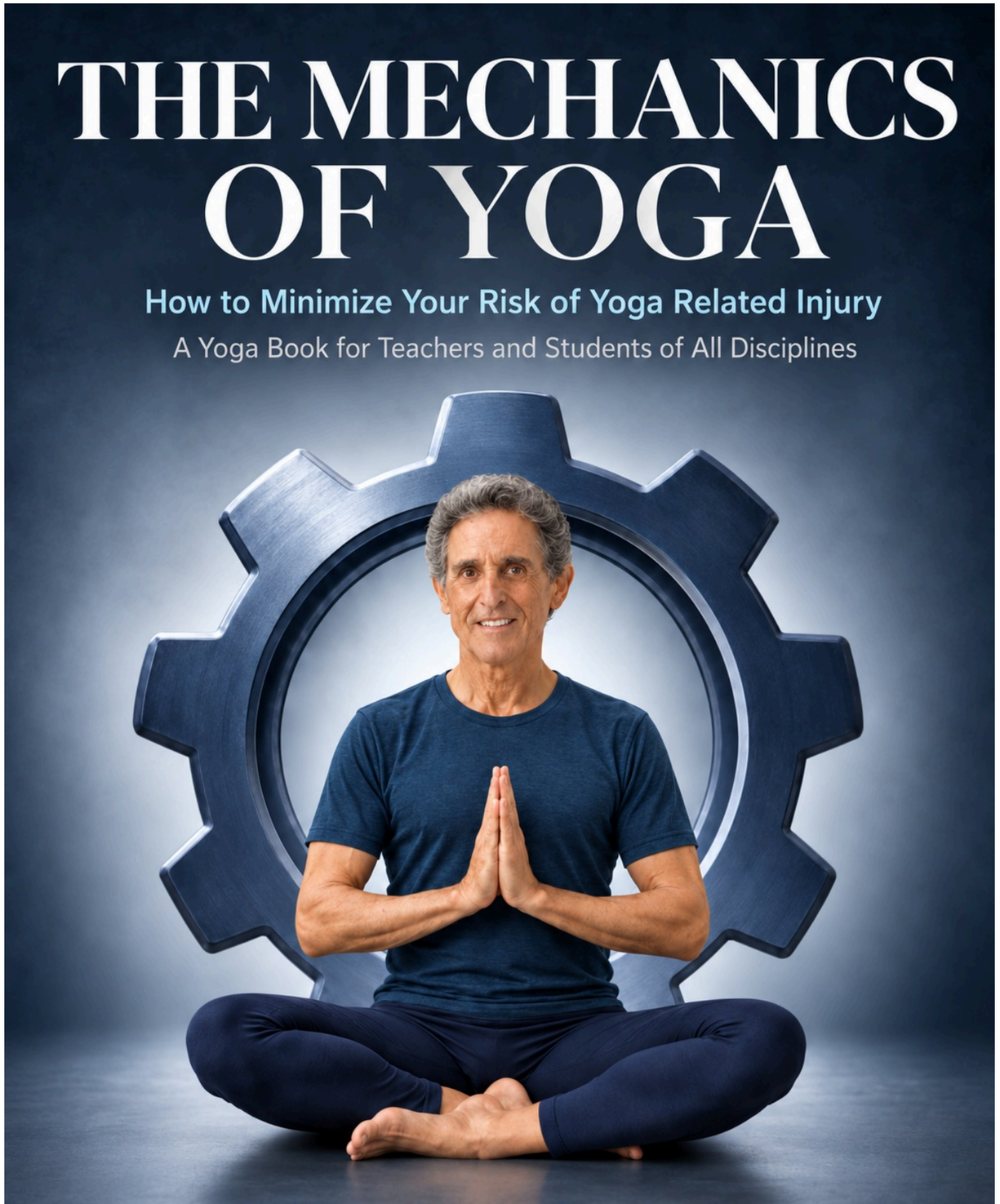

The Mechanics of Yoga

How to Minimize Your Risk of Yoga Related Injuries

A Yoga Book for Teachers and Students of All Discipline

By Sam Dworkis

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Introduction

We live in remarkable times. Books, videos, travel, and the Internet have made yoga instruction available to people who might once have had little opportunity to study it. Access, however, is only the beginning. We still need to understand how to adapt what we learn to the body we have.

My first book, *ExTension Yoga*, was published by Simon & Schuster. It presents a progressive program of yoga exercises, or asana, for people with a wide range of physical abilities, from those who have been inactive to trained athletes. You do not have to be strong or flexible to begin. The program teaches you to practice appropriately so that flexibility, strength, and endurance can develop through the practice.

When I began writing that book, many yoga books showed exceptionally flexible teachers demonstrating poses. Readers were encouraged to reproduce those poses as best they could. Few books explained how someone with less flexibility could adapt the exercises. Advice such as “keep trying” or “don't go as far if it hurts” left important questions unanswered.

I wrote *ExTension Yoga* because too many people were leaving yoga. They felt insufficiently flexible, found the exercises too difficult, or feared injury. I wanted readers to understand how to adapt each exercise to their own capabilities rather than struggle to reproduce someone else's posture.

My second book, *Recovery Yoga*, grew from a change in my own life. Just as *ExTension Yoga* was about to be released, I developed multiple sclerosis. My understanding of yoga changed dramatically.

As my illness progressed, pain and physical limitations made even familiar routines difficult. I began adapting the exercises so that I could continue doing yoga. The distinction between doing what was appropriate and trying to do what was no longer possible became central to my practice.

Recovery Yoga developed into a progressive program for people who are chronically ill or injured, substantially out of condition, or growing older and looking for an appropriate way to exercise.

The Mechanics of Yoga connects these two programs. It examines the mechanics of movement, explains why less done correctly can be more effective than more done forcefully, and develops the distinction between “doing yoga” and “trying to do yoga.”

These distinctions are practical. By “trying,” I mean forcing the body toward an expected result despite its present limitations. By “doing,” I mean applying appropriate effort while paying attention to what is actually happening. Learning requires effort. The question is whether that effort supports the person or overwhelms the person.

The same guiding principles can serve a trained athlete and someone recovering from illness. Their exercises may look very different, but both need appropriate support, useful muscular action, coordinated breathing, and respect for their present capacity.

How can one approach accommodate such different people? We begin by looking at what yoga means in this book and how the body responds to practice.

Chapter 1: How Yoga Works

A Western perspective on the mechanics of yoga

The principles behind this book are straightforward:

- No human body is perfectly symmetrical. Each of us has differences in structure, strength, mobility, and habitual movement.
- Injury, illness, and physical or emotional stress can affect those patterns and contribute to discomfort or protective muscular tension.
- Aging changes the body's capacity to recover and adapt, although the timing and extent differ from person to person.
- An appropriate yoga practice can help us move toward better balance. An inappropriate practice can increase strain or aggravate an existing problem.

Yoga means different things to different people. In this book, I use it to describe a process of paying attention and moving toward balance and union of body, mind, breath, and spirit. This is my working definition, rather than a complete account of every yoga tradition.

The exercises are tools for that process. Their value depends on how they are used. A movement that benefits one person may irritate another, and a familiar exercise may need to change after illness or injury.

Paul Rebhan, a reader and world traveler, described an experience that illustrates the problem. His letter is reproduced with permission.

> *I recently took a yoga class and the teacher was saying things like: “If you are not feeling pain, you are not doing it right.” "If you get dizzy, it's ok” “If you are not giving 110% on every position, you are wasting your time" “We don't do any of that touchy-feely yoga here!" etcetera.*
>
> *A few positions required our legs spread 3 feet apart ... at my height, 3 feet is no big deal, but to someone much shorter, like the woman next to me, it is a much greater stretch -he kept badgering her about things like that -very disturbing.*
>
> *It was a really rough workout and after the class, I didn't feel any of the release that I felt with yours or any of the re-balancing that I feel with my own yoga.*
>
> *Anyway, thought you might be interested in hearing about the experience ... not surprisingly, I don't think I'll be visiting that studio again.*

Paul's experience raises two concerns. First, an instruction such as “spread your feet three feet apart” cannot be appropriate for every body. Height, joint structure, strength, and mobility affect what that instruction asks of the student. Second, pain and dizziness should not be treated as evidence of a successful practice.

There is a place for vigorous yoga. Intensity itself is not the issue. The issue is whether the practice respects the physical and emotional integrity of the person doing it. A demanding practice can remain attentive and non-aggressive. A quiet practice can still become inappropriate if the student is pushed beyond a useful range.

This is what I appreciate about yoga: it can accommodate a wide range of needs. A supported movement may be appropriate for one student, while another can work vigorously. Neither needs to be excluded because of the appearance of the exercise.

Throughout the book, I return to two questions:

What is yoga?

How does it feel?

The first reminds us of the purpose of practice. The second brings us back to the person doing it. Sensation is essential information, although it is not the only measure of safety. We also need to consider medical conditions, movement quality, and how the body responds afterward.

Before examining the mechanics in detail, we need to place this physical approach within yoga's broader history.

Chapter 2: History of Yoga

The scope of this book

Yoga has a long and complex history that includes philosophical inquiry, spiritual discipline, meditation, breath practices, and physical exercises. This chapter provides context for my approach. It does not attempt to summarize that entire history or present one tradition as representative of them all.

The Sanskrit root associated with yoga conveys the idea of joining or yoking. I draw on that idea when I describe yoga as movement toward union or balance. The practical question for this book is how physical practice and breathing can support that movement.

Although yoga developed in India within religious and philosophical traditions, its contemporary practice takes many forms. Some teachers place spiritual inquiry at the center of their instruction. Others concentrate on movement, breathing, and physical well-being. Many combine these elements.

My emphasis is on the physical mechanics of practice. This emphasis does not make the rest of yoga unimportant. It defines the part I am most qualified to discuss as a teacher and practitioner. Later chapters consider meditation, spirituality, and the relationship between yoga and religion.

Learning from the body

I have often used the image of an animal stretching or resting to illustrate attentive movement. It is a useful teaching image: move when movement is appropriate, and respect the need for recovery. It should not be confused with a documented explanation of yoga's origins or a claim that animals are perfectly balanced.

The same distinction applies to idealized pictures of early yogis. We cannot assume that people in another culture or period were uniformly flexible, healthy, or free from stress. Nor can we explain a contemporary student's difficulties simply by calling the body “Western.” Bodies differ within every culture.

What matters for practice is the individual in front of us. A student may arrive with limited mobility, an old injury, substantial strength, unusual flexibility, or a combination of these. Tradition can guide the teacher, but it does not remove the need to observe and adapt.

Bringing the practice into the present

Many contemporary classes combine asana with breath awareness or pranayama. Some are restorative and quiet; others are physically demanding. The shared opportunity is to coordinate movement, attention, and breathing in a way that serves the practitioner.

The shared risk is to make the external form of a pose more important than the person doing it. A traditional exercise may be useful, but reproducing its appearance does not guarantee an appropriate result.

My purpose is to help students and teachers examine the mechanics of those exercises and adapt them intelligently. This requires respect for yoga's traditions alongside attention to anatomy, physiology, and present capacity.

For that reason, I believe the operative word of an appropriate practice must be **toward**.

Chapter 3: Toward

The operative word of yoga

If yoga is movement toward union or balance, we first need to understand what balance means. Human bodies are not perfectly symmetrical. Our anatomy, movement habits, injuries, and daily activities create differences from side to side and front to back.

An appropriate practice therefore does not produce a final state in which every part is perfectly balanced. It helps us move toward a more useful relationship among mobility, strength, endurance, and awareness.

That is why the operative word must be **toward**.

You do not need to be flexible, strong, or able to stand to begin. Nor does unusual flexibility demonstrate that a person is well balanced. Mobility without adequate control can be as limiting as strength accompanied by stiffness. The practice begins with the capabilities that are available now.

Flexibility, strength, and endurance can improve through yoga, but they are not measures of personal worth or prerequisites for participation. In my approach, the immediate task is to pay attention to how the body and mind respond.

What is

I use the term “what is” to mean how you are feeling and functioning at this moment. It is not the pose you wish you could perform, the body you remember from years ago, or the result you hope to achieve next month.

This distinction is especially important when you are ill, injured, or dissatisfied with your physical condition. Recognizing your present state does not mean approving of pain or abandoning the possibility of change. It gives you an accurate place from which to begin.

An appropriate practice asks you to work with that reality. By “doing rather than trying,” I mean using deliberate, non-aggressive effort instead of forcing a result. My more spiritually oriented colleagues sometimes prefer the word “being”: being present with the experience rather than struggling against it.

Both descriptions ask for attention. Neither asks you to become passive.

Your place of perfection

I sometimes call this starting point your “place of perfection.” The phrase describes acceptance of your present condition, not a claim that the body is flawless or that illness should be left untreated.

If you were already stronger, more flexible, or further along in recovery, that would be your starting point. Since you are not, wishing yourself there cannot substitute for appropriate practice now.

Begin by noticing what is comfortable and what is not. Then add a manageable action and observe the response. You may need support, a smaller movement, or more rest. Those adjustments allow useful effort to replace unnecessary strain.

Trying to increase strength or flexibility is not inherently harmful. Problems arise when the desire for change overrides information from the body. A useful challenge asks the body to adapt. Forcing asks it to do more than it can presently manage.

Two questions for practice

When someone asks me, “What does yoga do?” I sometimes answer, “Yoga doesn't do anything.” The answer is deliberately provocative. The pose does not act independently of the person. Its effect depends on how it is practiced.

Used appropriately, yoga can help us develop greater flexibility, strength, endurance, and awareness. Used without attention, the same exercise can become a source of strain.

Keep returning to the two questions introduced in Chapter 1:

What is yoga? How does it feel?

Ask them before the exercise, during it, and after it. Notice the quality of your effort, whether the breath remains comfortable, and whether the action leaves you more capable or more irritated. Also notice delayed responses later in the day or the next morning.

The purpose is not to judge every movement as a success or failure. It is to learn what helps you move toward balance.

Perspectives from other teachers

Matthew J. Taylor describes the final form of a pose as the result of smaller stages of learning. His observation is useful because it directs attention to the process rather than the picture.

> *"Another helpful description is that the final stage of an asana (the 'picture' in the book) is achieved through natural mini-stages in a sequence that progresses the patient from midline stability distally, restoring stability and motor sequencing to address both primary and secondary impairments. Each mini-stage can present a temporary disequilibrium by deviating the position of the center of gravity relative to midline or the base of support. When the mini-stage is mastered through integration of the equilibrium and righting responses as a whole, the asana proceeds along the*

continuum, generally from the core, proximal to distal toward the full postural pattern with symmetry along the midline, all key components of functional movement."

Terri Corral emphasizes presence and acceptance in that process.

"In the chapter titled Toward you state that "an appropriate yoga practice is not about trying, but rather doing." It is my belief that an appropriate yoga practice is more about being. Being in the moment, being present, is what yoga is about. Accepting ourselves as perfect, as we are at the moment, any moment, is a difficult concept to express and communicate clearly. We are TRULY limited by the words we speak!! But this acceptance is an important concept. We each have our limitations. But through our yogic practice we reach our limits and experience who we are. As we stretch past our limits, just a little, we have an opportunity to flex and expand, strengthening who we are physically, emotionally and spiritually."

These perspectives complement the practical distinction I make between forcing a pose and participating attentively in it.

Correspondence and reference

Matthew J. Taylor, “Yoga Therapeutics in Neurologic Physical Therapy: An Ancient Practice in a 21st Century Setting,” *Neurology Report*, June 2001. Taylor's and Terri Corral's comments are used with permission.

Chapter 4: Intrinsic and Extrinsic Practice

Attention to the process

I use “intrinsic” and “extrinsic” to distinguish two orientations to practice. In an intrinsic practice, attention rests on the experience itself: movement, breathing, sensation, and the quality of effort. In an extrinsic practice, attention rests primarily on an external result, such as a score, a prescribed performance, or a particular appearance.

These are working terms for this book. They do not divide all activities into fixed categories. Sport, dance, rehabilitation, and yoga can each involve both internal attention and external goals.

An athlete may be deeply attentive to movement while working toward a performance. A yoga student may be so intent on reaching the floor that the practice becomes primarily about achieving an external form. Physical therapy can require active participation and careful awareness; it is not necessarily a passive treatment.

The distinction concerns where we place our attention, rather than whether one activity is inherently better than another.

Beginning from a neutral place

My approach begins with a position that adds as little discomfort as possible. I call this a neutral place.

If you are comfortable standing or lying down, either may be suitable. If you are ill or injured, you may need to recline with supports under the head, torso, arms, or legs. The support should make breathing and resting easier.

A neutral place does not always mean the complete absence of existing pain. For someone with chronic pain, it means finding the most comfortable available starting position without adding avoidable strain.

From there, introduce a small, deliberate action. Observe how the body responds before adding more. The useful amount of movement may be modest, but modest does not mean ineffective.

Challenge without forcing

An appropriate practice can be demanding. The difference is that the challenge develops from the body's response rather than from an obligation to reproduce a pose.

You may become stronger or more flexible. Those changes are welcome, but they should not require you to ignore pain, hold your breath, or lose control of the movement.

When illness, injury, or aging changes your capacity, this distinction becomes especially useful. An exercise that once worked well may now need a different range, pace, or support. The next chapter examines the tissues involved in that response.

Chapter 5: Fascia and the Other Soft Tissues

To understand the mechanics of yoga, we need to distinguish the tissues involved in movement and support. Muscles, tendons, ligaments, and fascia are related, but they do not have identical structures or functions. Blood supplies these tissues and carries materials to and from them.

This distinction matters whenever we stretch, bear weight, or recover from injury. A sensation near a joint cannot tell us with certainty which tissue is being loaded. Nor can a tissue's appearance in an anatomical chart establish how well it is supplied with blood or how quickly it will heal.

Blood and circulation

Blood transports oxygen and nutrients to tissues and carries carbon dioxide and other metabolic products away. Adequate circulation supports normal function and healing.

Different tissues have different blood supplies. However, healing also depends on the location and severity of an injury, the person's health, and the treatment provided. We cannot predict recovery from tissue type alone.

Ligaments

Ligaments are strong bands of connective tissue that connect bones and help stabilize joints. They allow appropriate movement while resisting excessive movement.

Forcing a joint beyond a suitable range can injure its supporting structures. Some ligament injuries heal with conservative treatment; others require surgery. A severe injury does not automatically mean that surgery is necessary, and the white color used in an illustration does not mean that a ligament has no blood supply.

In *ExTension Yoga* and *Recovery Yoga*, I emphasize avoiding movements that force the joint or create a deep, uncomfortable pull around it. The practical task is to use a range you can control without provoking pain.

Tendons

Tendons transmit force from muscle to bone. When a muscle contracts, its tendon conveys that force to the skeleton.

Tendons tolerate substantial loads, but they can become irritated or injured when the demands placed on them exceed their capacity. The amount of load, its rate of increase, recovery time, and existing tissue condition all matter. Repeated loading is not inherently harmful; appropriate progressive loading can be part of rehabilitation.

To appreciate the difference between muscle and tendon, bend your elbow and feel the firm structure near the front of the joint. Compare it with the thicker belly of your biceps

higher in the arm. Do not press forcefully. The contrast gives you a practical sense of how differently these structures feel.

Muscle and tendon near the elbow

The belly of the biceps

The comparison does not establish a universal ranking in which every tendon is more elastic or better supplied with blood than every ligament. These properties vary by structure and location.

Muscles

Skeletal muscles produce force and contribute to movement, stability, and posture. Their activity is regulated by the nervous system. A muscle may shorten while producing force, hold approximately the same length, or lengthen under load.

This is important because muscular activity is not synonymous with shortening. An active muscle can control the lowering of a limb or support a position without creating the movement we usually associate with contraction.

Pain or threat can change muscular activity. A person may guard an injured area, limit movement, or develop patterns of tension that persist after the original injury. These responses are more complex than a rule that all soft tissue contracts whenever it is stimulated.

Ordinary movement does not necessarily tear muscle fibers. Soreness after unfamiliar or demanding exercise is also not a precise measure of damage, and the absence of soreness is not proof that a movement was harmless.

In practice, pay attention to the quality and location of the sensation, the amount of effort required, and the response after the exercise. If a movement repeatedly produces

discomfort, it needs to be reconsidered rather than repeated in the hope that the tissue will simply adapt.

Fascia

Fascia is connective tissue that surrounds, separates, and links structures throughout the body. It helps organize muscles and other tissues and allows movement between neighboring structures. Its thickness and mechanical properties differ from one region to another.

I have described fascia as “the bag that holds the body together.” The image is useful, but fascia is not one uniform bag. It includes interconnected layers with different functions.

Fascia surrounding the muscles of the leg

Because fascia participates in movement and contains sensory nerve endings, it deserves attention when we consider discomfort and restricted mobility. It is one part of the body's response, alongside muscles, joints, nerves, and the ways the nervous system interprets sensation.

After an injury, tissue changes and protective movement patterns may contribute to stiffness. Some people continue to feel restricted after the original injury has healed. I sometimes say that the body “remembers” the injury. This is a teaching metaphor for those lasting changes, not a claim that fascia stores every emotional or physical event.

Likewise, the feeling of tightening under stress does not establish that fascia throughout the body is physically contracting. Muscular guarding, altered breathing, fatigue, and changes in sensitivity can contribute to the experience.

My practical observation is that students often respond better when we begin gently, avoid forcing, and allow time for movement to become easier. That observation supports

a teaching approach. It does not prove that yoga releases fascia in a fixed sequence from superficial to deeper layers.

Hilton's law

Hilton's law describes a relationship among the nerves supplying a joint, muscles acting on that joint, and related skin. It helps us understand why joint and muscular responses should not be considered in isolation.

It does not establish that an injured joint causes all surrounding fascia to contract, that contraction travels through the entire body, or that all fascia should be treated as muscle. Those are broader interpretations found in some older therapeutic writing.

The useful lesson for yoga is to consider the region as a whole. If the knee is uncomfortable, changing only the apparent position of the knee may be insufficient. The teacher also needs to observe the foot, hip, load, support, and movement strategy.

Applying the distinctions

A person can feel stiff while also being weak or deconditioned. Feeling tight does not mean every muscle is strong, and greater range of motion does not necessarily mean better control.

An appropriate practice should therefore develop mobility and strength together in a suitable progression. Begin with a comfortable range, use support when needed, and increase demands according to the response. Do not chase a stronger stretch merely because the sensation is familiar.

These distinctions provide the foundation for the seven principles in the next chapter.

Illustration credits

The Bachin charts are used by permission of the Anatomical Chart Company, Skokie, Illinois. The fascia illustration is from C. D. Clemente, *Anatomy: A Regional Atlas of the Human Body*, third edition, and is used with permission.

Acknowledgments and historical references

Matthew J. Taylor's correspondence helped clarify the relationship among tissue loading, technique, and nervous-system control. The historical discussion of Hilton's law drew on Dain L. Tasker, *Principles of Osteopathy*, fourth edition, 1916. The broader historical models are discussed in Chapter 7.

Chapter 6: The Seven Principles

Principles for an appropriate practice

The following principles guide both *ExTension Yoga* and *Recovery Yoga*. They help us choose and adapt exercises rather than apply the same instructions to every student.

They do not make any practice risk-free. Their purpose is to improve attention, reduce avoidable strain, and make useful action more available.

Principle 1 Consider the whole region

Hilton's law reminds us that joints, the muscles acting on them, and related skin have interconnected nerve supplies. For practice, the important point is to consider a painful or restricted area in relation to its surroundings.

If the knee hurts during a standing pose, observe the stance, foot position, hip movement, and amount of load. If the shoulder hurts during an arm movement, consider the neck, torso, support, and direction of reach.

Avoid assuming that the apparent site of discomfort identifies the only problem. Equally, avoid assuming that every distant ache results from a single injured joint. Observe, adapt, and seek appropriate assessment when the cause is unclear.

Principle 2 Pain is a message

“No pain, no gain” is an unreliable guide to yoga. Useful muscular work can be demanding, but pain is not proof of benefit.

I distinguish an effective action from a threatening sensation. An effective action may produce warmth, fatigue, or a manageable stretching sensation. Sharp, electrical, pinching, searing, or otherwise disturbing sensations call for a change. Pain does not have to persist after the exercise to matter.

The first response may be to stop, reduce the movement, add support, or choose another exercise. Do not repeat the action simply to see how much discomfort you can tolerate.

The response afterward matters too. An exercise may feel acceptable during practice and still be followed by a flare later. Notice how you feel that evening and the next morning, especially when introducing a new movement or increasing the load.

Rest has a place, but rest does not mean abandoning movement indefinitely. When you resume, begin at a level suited to your present capacity rather than where you left off. Recovery from a significant injury should guide that decision.

Principle 3 Less done correctly gets you more

This phrase is one of my central teaching cues. It asks you to remove unnecessary effort, not to avoid all effort.

A smaller movement with good support, comfortable breathing, and clear attention may accomplish more than a deeper movement performed with strain. The comparison is with forcing, not with every possible larger or more demanding exercise.

Once a movement is comfortable and well controlled, you may be ready to add range, load, repetitions, or time. Progress remains part of the practice. The principle asks that progress be earned through an appropriate response rather than imposed by impatience.

Principle 4 Stretch without forcing the joint

When stretching, look for a manageable response in the region you intend to work. Avoid driving the movement into a joint or pulling through a painful area.

For example, a hamstring exercise should not depend on locking the knee or provoking discomfort behind it. Bend the knee enough to remove that discomfort, reduce the range, and observe what happens as you lengthen gently.

Sensation alone cannot establish that only muscle is being stretched or that a tendon is completely unloaded. The aim is a controlled, comfortable movement, rather than an attempt to isolate a tissue by feel alone.

Principle 5 ExTension releases tension

I use the spelling “ExTension” to describe a sense of active lengthening while releasing unnecessary tension. It differs from the anatomical term “extension,” which refers to a particular joint movement.

ExTension is a teaching cue, not a claim that all joint spaces increase or that all compression disappears. The useful question is whether a gentle sense of length improves the quality of the movement.

Try this small comparison if lifting the leg is comfortable for you. Lie on your back with your legs supported on the floor. Lift the right leg a few inches and briefly notice the effort. Lower it and rest.

Repeat the movement, this time gently reaching through the heel and ball of the foot so that the leg feels active along its length. Avoid locking the knee or pointing the foot forcefully. Notice whether the effort feels more distributed or the leg easier to hold. Lower the leg before fatigue or discomfort develops, and compare with the other side.

The leg has not become lighter in weight. Its perceived effort may have changed through muscular organization, attention, and the direction of action. If the comparison is uncomfortable, omit it.

The same cue can be explored through the arms, hands, spine, and neck. Reach without pulling forcefully. Keep the action useful and the breath comfortable.

Principle 6 Lengthen the spine without strain

A gentle sense of length through the spine can change how a pose feels. Whether standing, sitting, or reclining, imagine the body becoming longer without stiffening or exaggerating its curves.

Even the intention to lengthen may change muscular activity and attention. Use the cue to organize the movement, not to flatten the spine or force it straight.

If lengthening increases discomfort or makes breathing more difficult, reduce the action or change the support. More length is not automatically better.

The original forward-bend illustrations compare a sense of spinal length with a rounded position. They illustrate the cue; they do not prescribe a depth of bending that every reader should reproduce.

When done correctly both feel the same hamstring action

Principle 7 Let breathing support the practice

Breathing links physical effort with attention. Before adding a movement, notice whether the breath is comfortable and unforced. During the exercise, notice whether it becomes held, hurried, or strained.

Stress can alter breathing. Breathing rapidly or more deeply than the body requires can also contribute to uncomfortable sensations. The response is not to force an ever larger breath, but to find a comfortable rhythm.

When possible, breathe gently through the nose. Allow the jaw, tongue, and throat to soften. If nasal breathing is uncomfortable, do not make it another demand the body has to overcome.

As movement begins, coordinate it with a comfortable inhalation or exhalation. The purpose is to slow the action enough to observe it. You do not need exact synchronization, and you should not prolong a breath merely to finish a movement.

A slightly longer exhalation may be useful if it remains easy. Avoid breath holding, straining, or continuing through dizziness. More demanding breathing techniques are a separate practice and require suitable instruction.

The relationship between breathing, attention, and meditation is explored in Chapter 11. Here, the practical lesson is simple: the breath should support the exercise and help you notice when the demand is becoming excessive.

Bringing the principles together

These principles work together. Support and alignment reduce unnecessary effort. Active lengthening helps organize the movement. Comfortable breathing allows attention to remain available. Respect for pain prevents the exercise from becoming a contest.

You can apply them to a gentle supported movement or a vigorous routine. The form may change; the need for attention does not.

Acknowledgment

Matthew J. Taylor's personal correspondence in April 2001 helped clarify the distinction between anatomical extension and the sense of length I call ExTension.

Chapter 7: Neuromuscular Principles and Historical Models

My training in neuromuscular therapy strongly influenced how I practice and teach yoga. It gave me ways to think about pain, guarding, movement, and the response to stimulation.

Some of the explanations used in that training came from older physiological “laws.” They helped shape my teaching, but their historical formulations should not be presented as complete, established explanations of chronic pain or yoga's effects.

This chapter distinguishes the models from the practical observations I draw from them. The useful question is not whether an old law proves a teaching cue. It is whether the cue helps the person move with less avoidable strain and whether the explanation accurately describes what we know.

Facilitation and recurring sensitivity

In the historical model of facilitation, a neural pathway that has been activated becomes more readily activated on subsequent occasions. I used this model to understand why a previously painful area may become sensitive again under stress.

The practical experience is familiar: an old back or shoulder problem can flare after increased activity, fatigue, or emotional stress. The recurrence does not necessarily mean that the original injury has never healed or that the same tissue has been damaged again.

Pain involves more than a signal traveling through one permanently worn groove. Sensitivity, tissue condition, protective movement, sleep, and other factors can affect the response. Persistent pain should not be reduced to a single mechanism.

For practice, the lesson is to respect a sensitive area without assuming that it must remain fragile. Start with a tolerable action, observe the response, and increase the demand gradually. A flare calls for reassessment, not a conclusion that all progress has been lost.

Davis's law and adaptation to loading

Older therapeutic teaching used Davis's law to describe changes in soft tissue in response to sustained mechanical conditions. I draw on this idea when cautioning against excessive stretching, while recognizing the limits of the model.

That caution remains useful, but it needs precision. Stretching does not inevitably weaken a muscle, and a longer hold is not automatically harmful. The effect depends on the tissue, the amount and duration of load, the person's condition, and what the person is trying to accomplish.

The practical task is to develop useful mobility together with control. Do not pursue range simply because more range appears impressive. If a student already moves easily but lacks stability, additional stretching may not be the most useful intervention.

Pflüger's historical reflex laws

Pflüger's laws described patterns of reflex response as stimulation increased. In the neuromuscular teaching I received, they were summarized in five stages:

1. **Unilaterality:** a mild stimulus produces a response chiefly on the stimulated side.
2. **Symmetry:** stronger stimulation may also produce a response on the opposite side.
3. **Intensity:** the response is generally stronger on the stimulated side.
4. **Radiation:** increasing stimulation may recruit responses associated with additional spinal segments.
5. **Generalization:** sufficiently intense stimulation may produce a more widespread response.

These historical descriptions are not a diagnostic sequence through which every injured or chronically ill person progresses. They do not establish that widespread pain is caused by fascia contracting throughout the body.

I nevertheless found the general idea useful in teaching: adding more stimulation to a person who is already distressed may make the person feel worse rather than better. This is a practical observation about tolerance, not proof that a particular reflex law explains every response.

Later in this book, I use “generalized” as a teaching term for widespread discomfort, exhaustion, and sensitivity to ordinary stimulation. It is not a medical diagnosis or a substitute for understanding conditions such as fibromyalgia.

Arndt–Schultz and the amount of stimulation

The Arndt–Schultz formulation arose from observations about the effects of different doses of substances. It was later applied more broadly in some therapeutic teaching to suggest that smaller stimuli may be useful while larger stimuli may inhibit a response.

It does not establish a universal rule that less exercise is always more effective. Nor does it prove that a small yoga movement interrupts pain signals or releases compressed nerves.

The teaching principle I retain is to choose the amount of stimulation carefully. A student in substantial pain may need less movement, more support, and more recovery time. A well-conditioned student may need a greater challenge. The appropriate dose depends on the person and the response.

Hilton's law in context

As discussed in Chapter 5, Hilton's law concerns related joint, muscular, and cutaneous innervation. It encourages attention to the relationships within a region.

Hilton's law does not establish a sequence in which an irritated hamstring causes fascia to contract toward the back, reactivate old neural pathways, and eventually create whole-body pain. Such a sequence would require evidence beyond the law itself.

A hamstring problem can certainly affect the way a person moves, and altered movement may change demands elsewhere. Pain can also become more widespread. These possibilities do not justify assuming that a wave of fascial contraction is the cause.

Observe what actually changes. Does reducing the range make the movement easier? Does support allow more comfortable breathing? Does a different stance reduce the demand on the painful region? Those observations are more useful than assigning a mechanism that has not been established.

What my therapeutic experience taught me

In my neuromuscular therapy practice, I often found that gentler work was better tolerated than immediately applying deeper pressure. This experience influenced my approach to yoga.

Rather than force a restricted area to release, I begin with a small action and allow time for a response. Rather than assume that a stronger sensation means a better intervention, I ask whether the person moves more comfortably afterward.

These observations do not mean that every injury requires superficial treatment or that all deeper work is inappropriate. They explain why I place so much emphasis on tolerance and progression.

The same approach can serve active students. A vigorous practice need not be aggressive. A person can work hard while retaining good control, comfortable breathing, and the ability to stop or adapt.

Applying the models responsibly

Understanding a model can help a teacher ask better questions. It becomes a problem when the model is treated as a diagnosis or used to promise an outcome.

Yoga may support comfort, mobility, strength, and well-being. It does not need an explanation involving toxins being mechanically forced from nerve receptors to be valuable. Nor should a teacher assume that every old injury remains unhealed or that aging inevitably makes vigorous activity harmful.

The practical objective remains the same: choose an appropriate action, avoid unnecessary strain, and observe the person rather than impose a theory on the person.

Historical sources and acknowledgments

This chapter grew from neuromuscular therapy seminars with Paul St. John and Judith Walker between 1988 and 1991; material associated with *Dorland's Medical Dictionary*; and work by Janet Travell and David Simons on myofascial pain. My discussion of facilitation also drew on Leon Chaitow's writing and his account of Irvin Korr's work.

The historical Hilton discussion referred to Dain L. Tasker, *Principles of Osteopathy*, fourth edition, 1916. Julio Kuperman and Mitch Hackerman offered valuable criticism of my use of the older laws. Their criticism reinforces the need to distinguish these teaching models from current clinical explanations.

Chapter 8: Bachin Alignment

The skeleton and the muscular system

Peter Bachin's anatomical charts have been valuable teaching tools for me. *The Muscular System* illustrates muscles and tendons; *The Skeletal System* illustrates bones, ligaments, and a reference plumb line.

I use the charts to help students see relationships among the skeleton, muscular action, and posture. They provide a reference for discussion, not a picture that every body must reproduce.

The muscular system

The skeletal system and plumb line

Understanding the plumb line

A plumb line offers a way to observe alignment in relation to gravity. When body segments are positioned differently, the demands on the muscles supporting them can change.

The skeleton and muscles always work together. Even in comfortable upright standing, muscular activity contributes to balance. It would be inaccurate to say that an aligned skeleton supports the body while the muscles do nothing.

Try a brief comparison if standing is comfortable and stable for you. Stand near a support and notice the effort required to remain upright. Then shift your weight slightly forward without lifting your heels. Notice what changes in your lower legs and elsewhere. Return to your comfortable position before strain develops.

The point is not to diagnose your posture. It is to notice that a small change in position can change the work of maintaining balance.

Alignment as a practical tool

Injury, habits, structural differences, and daily activities can influence posture. Some positions may feel more effortful than others, but no single posture explains every person's pain or fatigue.

My concern is whether the student can distribute effort comfortably and move with useful control. A visual difference from the chart may reflect normal variation. Trying to force every student onto the same line can create the very strain we are trying to reduce.

Likewise, being “off the plumb” does not establish that the body cannot absorb nutrients or that weight gain will follow. Fatigue and nutritional problems have many possible causes and should not be explained solely by posture.

Moving toward balance

Use alignment to ask practical questions. Is the stance appropriate? Are the knees and hips moving comfortably? Is the head being held with unnecessary effort? Can the student breathe and change position easily?

Small adjustments can be useful. The purpose is to improve function, not to make the body conform to an anatomical illustration.

Over time, an appropriate yoga practice may help you find more comfortable ways to stand and move. That is what I mean by moving toward better balance.

Illustration credit

The Bachin charts are used by permission of the Anatomical Chart Company, Skokie, Illinois. Peter Bachin's illustrations remain useful references for examining the relationships among bones, muscles, and joints.

Chapter 9: Yoga and Pain Management

Part 1 What chronic pain taught me

The principles in this chapter apply to students with many different abilities. They are especially important for someone living with chronic pain, but they also help an active student recognize when a demanding practice has become excessive.

The distinction between doing and forcing is central. A person who is already exhausted or uncomfortable may be determined to get better and still find that more effort produces more distress. The task is to find a useful amount of movement, not to prove determination by tolerating pain.

Relief does not necessarily mean recovery is complete. When pain subsides, it is tempting to resume strenuous activities immediately. Instead, let the improvement guide a gradual progression. Observe how the body responds during practice and afterward before increasing the demand.

A change in my own practice

Before becoming ill, I was a full-time yoga teacher and neuromuscular therapist. I worked with students at many levels and especially enjoyed teaching athletes. I also developed an affinity for students with chronic illness or serious injuries.

Then multiple sclerosis changed my own capabilities. During the mid-1990s, I experienced severe limitations in both arms and shoulders, depression, and substantial weight gain. At times, even familiar movements seemed beyond me.

I had previously helped people in pain, but living with debilitating pain gave me a different understanding of what they were experiencing. I could no longer assume that an apparently simple exercise would feel simple to the person doing it.

As I resumed practice, I learned to begin from what was possible that day. Sometimes that meant movement. Sometimes it meant supported rest and comfortable breathing. The important change was in how I worked, even when an exercise looked much as it had before my illness.

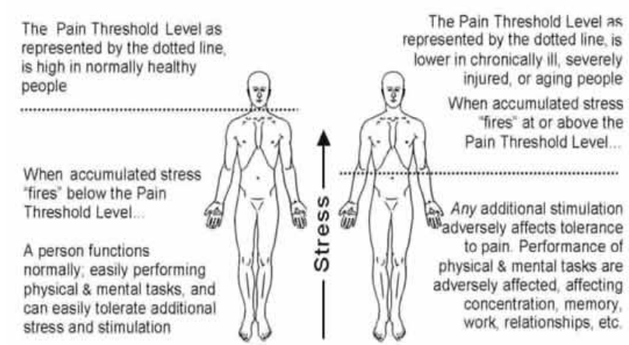
This experience reshaped my teaching. I still use the same guiding principles with active students and with students who are ill or injured. Their starting points differ, but both need a practice that respects their present capacity.

The body does not benefit merely because the student is willing to work hard. The exercise must be tolerable, purposeful, and appropriately paced.

Part 2 The pain threshold model

Life places many demands on the body and mind. Some are brief irritants; others are prolonged or overwhelming. Their effects depend not only on the demands themselves but also on our current ability to manage them.

I developed the pain threshold model to help students describe this relationship. The dotted line represents a person's current tolerance for stimulation. The activity below or above that line represents the demands the person is experiencing.



The pain threshold model

The drawing is a teaching model, not a measurement of the nervous system or a diagnostic test. Its value is in making an often invisible experience easier to discuss.

When demands remain within your capacity, daily tasks may feel manageable. When demands exceed that capacity, the same tasks may feel overwhelming. Illness, injury, poor sleep, fatigue, and stress can change the relationship. Age alone does not determine where the line belongs.

Factors that may affect the experience include:

- Current illness and the effects of previous injuries.
- Sleep, fatigue, nutrition, and medication.
- Physical and emotional demands at work or home.
- Relationships, finances, and available support.
- Noise, crowding, temperature, and other environmental conditions.
- The amount and type of exercise, including yoga.

Some factors can be changed directly; others cannot. The model asks us to consider both sides of the relationship: can we reduce unnecessary demands, and can we gradually improve our capacity to manage appropriate demands?

What I mean by generalized

I use “generalized” to describe the experience of widespread discomfort, exhaustion, and unusual sensitivity to stimulation. The term comes from the therapeutic framework that influenced my teaching. It is not a medical diagnosis.

A person in this state may struggle with tasks that were once easy. Bright light, noise, conversation, or touch may become difficult to tolerate. The person may go to bed exhausted and wake without feeling restored.

The difficulty is often invisible to others. Family members, colleagues, and even well-intentioned teachers may not appreciate how much effort ordinary activities require.

Fibromyalgia can include widespread pain, fatigue, disturbed sleep, and increased sensitivity. However, fibromyalgia should not be equated with fascia contracting throughout the body. Different conditions can produce overlapping experiences and require appropriate assessment.

The point for a teacher is to take the student's experience seriously. A student who appears capable of moving may still be unable to tolerate the amount of activity the teacher considers modest.

Understanding before intervention

It is rewarding when a student feels better immediately after a class. That improvement matters, but it does not establish that the class will be helpful over time.

Ask what happens later. Does discomfort increase that evening? Is the student more exhausted the next morning? Are sleep, daily activity, and confidence improving or deteriorating?

Short-term relief and long-term improvement are different questions. The practice needs to be adjusted according to both.

Part 3 Building the foundations of practice

When students arrive in substantial pain, they understandably want relief. They may be impatient with explanations and eager to begin an exercise. Even so, a brief explanation of the approach is important.

I first describe the pain threshold model and ask whether it resembles their experience. Some students have become emotional at this point because they finally feel that their difficulties are being recognized.

The conversation is not intended to diagnose the person. It establishes a shared understanding: the class will proceed from tolerable actions, and the student will not be expected to force a result.

Begin with support

For someone who is already distressed, I often begin with supported relaxation. Lying flat on the floor is not necessarily restful. The neck may feel strained, the shoulders may be uncomfortable, or breathing may become more difficult.

Use supports to create a comfortable reclining position. Depending on the person, the head, torso, shoulders, arms, knees, and feet may all need support. The arrangement should allow the person to settle without feeling pulled into a stretch.

photo 1a

Photo 1a Supported relaxation

photo 1b

Photo 1b A different arrangement of supports

photo 1c

Photo 1c Support adapted to the individual

Support reduces the effort of maintaining a position. It does not remove gravity or make the body unaffected by its tissues. Its usefulness depends on the person's response.

In one session, a student's arms were supported slightly below shoulder level. What looked like a small difference was enough to increase her discomfort. When I raised the arm supports, she sighed with relief and soon fell asleep.

This is an important lesson for teachers: the apparent size of an adjustment does not predict its importance to the student.

Some students settle quickly; others need much longer. In my classes, supported rest has sometimes occupied most or all of the session. There is no requirement to progress to movement simply because time has passed.

I have also used light sandbags in supervised sessions when the student found their contact reassuring. The photographs show examples of that historical practice. Weight, placement, breathing, circulation, and the student's comfort need individual consideration. The pictures should not be treated as instructions to place weights over the eyes or abdomen without suitable supervision.

photo 2

Photo 2 Supervised supported relaxation

photo 3b

Photo 3b Supports adapted for comfort

photo 3a

Photo 3a A supervised example with additional props

Introduce breathing gently

Once the student has settled, I introduce breath awareness. The first task is to notice the breath, not to make it dramatically deeper.

Useful instructions include:

- Allow the breath to be quiet at the nose.
- Soften the tongue, lips, and throat.
- Let the breath become fuller if that happens comfortably.
- Invite a slightly longer exhalation without straining.
- Stop controlling the rhythm if the effort produces dizziness, air hunger, or discomfort.

A simple count may help. For example, an easy inhalation of two counts and an exhalation of three counts may be comfortable. The count is optional and should fit the person. It is not a standard everyone must meet.

The breath should remain continuous. “Inhale and observe” means pause the movement while breathing, not hold the breath.

I encourage students to explore a comfortable supported position at home and practice gentle breath awareness before sleep. Some report that this helps them settle. The home arrangement should support comfort rather than copy every classroom prop.

From rest to movement

Once supported rest and breathing feel manageable, we can introduce small movements. Complete relaxation is not a test the student has to pass before any exercise can be useful. It is a helpful starting condition in this approach, particularly for someone who is easily overwhelmed.

Likewise, flexibility does not need to be fully restored before strengthening begins. Mobility, strength, and endurance can be developed through an appropriate progression. The first demand may simply need to be smaller than the student expects.

I introduce movement slowly and allow pauses between attempts. I also slow the pace of my instructions. This gives students time to notice their response rather than hurry to keep up with the class.

Learning active lengthening

Before an arm movement, gently activate the hands and feet. Lengthen through the fingers without stiffening them, and allow the thumb to move comfortably away from the fingers. Explore a similar sense of length through the heel and ball of each foot.

Keep the action modest. “Active” means participating in the movement; it does not mean maximally contracting every muscle. Avoid creating tension in the jaw, shoulders, or breath while concentrating on the hands and feet.

A supported starting position for active lengthening

photo 6

Photo 6 Preparing for a small arm movement

This is an introduction to ExTension: a sense of length that helps organize the action without unnecessary strain.

Exercise 1 Bend one elbow

Begin in your comfortable supported position with both arms resting. Gently activate the hands and feet if that remains easy.

On an inhalation, slowly bend the right elbow so that the hand moves upward. The upper arm stays supported. Move only as far as is comfortable; a right angle is a reference, not a requirement.

On an exhalation, lower the hand back to its support. Let the movement and breath finish approximately together without prolonging either to achieve perfect timing.

photo 7

Photo 7 Bending the elbow with an inhalation

photo 8

Photo 8 Returning the hand to its support

Repeat up to three times, then rest. If comfortable, repeat with the left arm. Fewer repetitions are appropriate when that is what the body tolerates.

After the sequence, release the active lengthening and allow the whole body to rest. Let breathing remain easy.

What to observe

The objective is not perfect coordination. It is attention. Ask yourself:

- Was the movement smooth or hesitant?
- Did the breath stay comfortable?
- Did I change the range to suit the breath and the shoulder?
- Could the rest of my body remain comfortably involved without becoming rigid?
- Did I allow enough rest afterward?

These questions are useful for an experienced practitioner as well as a beginner. A small exercise can reveal habits that a more demanding exercise makes difficult to notice.

Exercise 2 Lift one straight arm

If the elbow movement is comfortable, begin again with both arms supported. Keep the right elbow comfortably straight without locking it.

On an inhalation, lift the right arm toward the ceiling within an easy shoulder range. Reach gently through the fingers while allowing the shoulder to remain comfortable against its support. On an exhalation, lower the arm.

photo 9

Photo 9 The supported starting position

photo 10

Photo 10 Lifting one arm within a comfortable range

photo 11

Photo 11 Returning to support

Repeat up to three times on the right, rest, and then use the left arm if appropriate. Do not force the shoulder downward while lifting the arm or continue to reach after the movement becomes uncomfortable.

The breathing pattern is a learning aid. If a different coordination is more comfortable, use it. Chapter 17 of *Yoga as Medicine*, reproduced in Appendix 2, describes a related movement using exhalation for the lift.

Exercise 3 Alternate the arms

Begin with both arms supported. During an exhalation, lift the right arm within its comfortable range while the left remains resting.

Pause with the right arm raised only if that position is easy. Continue breathing. During a later exhalation, lower the right arm while lifting the left.

The movement resembles a slow windmill. Keep the fingers reaching gently and the shoulders free of strain. The arms do not have to finish their movements at exactly the same instant.

Explore up to three comfortable changes, then lower the remaining arm and rest. If alternating arms feels confusing or demanding, return to moving one arm at a time.

Exercise 4 Move both arms together

If the previous movements are comfortable, explore lifting and lowering both arms together. Coordinate the action with an easy breath and use only the range that remains comfortable.

photo 12

Photo 12 Exploring both arms together

Moving both arms adds a demand. It is a progression, not an obligation. Stop before fatigue or discomfort makes it difficult to maintain the quality of the action.

Compare active and less active movement

Within a comfortable range, compare a movement with gentle lengthening through the hands and feet to the same movement with less deliberate lengthening. Notice the difference in effort and organization.

The purpose is to learn from the comparison, not to establish that one version must feel better every time. If active lengthening creates more strain, reduce it or reconsider the instruction.

Progress according to the response

These exercises build coordination among body, mind, and breath. Their value lies in how they are practiced, not in completing a prescribed number.

Return to an earlier movement whenever the current one becomes too demanding. Rest when needed. An entire session of supported breathing may be appropriate on a difficult day; on another day, more activity may be possible.

As tolerance improves, the progressive routines in *Recovery Yoga* and *ExTension Yoga* offer further opportunities to develop mobility, strength, and endurance. Keep checking the response during practice and afterward.

What is possible today may differ from what was possible yesterday. That variation is information, not failure.

Acknowledgments

B. K. S. Iyengar introduced me to the use of props to support students with illness and injury. Paul St. John and Judith Walker taught the elements of neuromuscular therapy that influenced my understanding of tolerance and progression. Their teaching helped shape the approach described here.

Chapter 10: Yoga and Aging

Everyone ages differently. Genetics, illness, injury, activity, nutrition, sleep, environment, and the demands of daily life can all affect how we feel and move.

The body changes over time, but those changes do not occur at one fixed rate. Two people of the same age may have very different capabilities. One person's own capacity can also change substantially from year to year or from day to day.

Ages and stages

Through conversations with students and therapy clients, I developed what I call the “ages and stages” observation. Some people described noticeable changes in resilience around the ages of twenty-eight to thirty-two, thirty-eight to forty-two, and similar periods later in life.

This is anecdotal. It is not an established physiological timetable, and it does not mean that fascia contracts at ten-year intervals. I offer it as a prompt for observation: have you noticed periods when your body responded differently, and did your practice change with it?

The useful point is that a familiar routine may eventually need revision. A movement you once recovered from quickly may now require more gradual preparation or more rest. That does not mean you must stop being active.

Old injuries and current capacity

An old injury may become noticeable again when your activity, strength, mobility, or general health changes. The recurrence does not automatically mean that the original tissue never healed.

Look at the present circumstances. Have you increased a load too quickly? Have sleep or stress changed? Are you repeating a movement that now needs a different range or support? An appropriate assessment may be needed when a problem is new, persistent, or worsening.

The practical response is to adapt rather than insist that the body perform as it once did. Begin from what is available now and rebuild capacity where possible.

Rest and activity

I often use the image of an injured animal resting to remind students that recovery deserves respect. The image is a teaching analogy, not a prescription for prolonged inactivity.

People have responsibilities that can make rest difficult. We may resume demanding activities before we are ready, or become so cautious that we avoid useful movement. An appropriate practice helps us explore a workable middle course.

That course may include support, smaller movements, progressive strengthening, and attention to fatigue. It should be based on response rather than chronological age alone.

A practice that evolves

Yoga does not need to become uniformly passive as you grow older. A vigorous practice may remain appropriate if it suits your condition and is well tolerated. A quiet practice may be useful during recovery or on a difficult day.

The question is not how your practice compares with that of a younger person. It is whether the practice supports your present life.

For teachers, this requires observation rather than rote instruction. Ask about the student's history, notice how the movement is performed, and make room for changes in range, support, pace, and recovery.

For students, it requires letting go of the assumption that yesterday's achievement must be repeated today. Keep returning to the two questions: **What is yoga? How does it feel?**

An appropriate practice can remain challenging while respecting change. Its purpose is to help you continue moving toward useful strength, mobility, endurance, and awareness.

Chapter 11: Meditation and Yoga

Meditation in action

B. K. S. Iyengar described yoga as “meditation in action.” The phrase captures an important possibility: physical movement and internal quiet do not have to exclude one another.

In my teaching, I explore this possibility through coordinated breathing, balanced muscular action, and attention to sensation. The question is whether a person can remain present during movement rather than become absorbed in forcing the external form.

What an EEG records

An electroencephalogram, or EEG, records electrical activity from the brain. Researchers describe that activity in frequency bands. Four commonly discussed bands are delta, theta, alpha, and beta; these do not represent the full range of brain activity.

For the purposes of this discussion, the approximate bands are:

Band	Approximate frequency	Common association
Delta	Below 4 Hz	Prominent in deep sleep
Theta	4–8 Hz	Often discussed in relation to drowsiness and some meditative states
Alpha	8–13 Hz	Often prominent during relaxed wakefulness with the eyes closed
Beta	13–30 Hz	Common during wakefulness and many forms of mental or physical activity

The associations are not exclusive. Different rhythms can occur together, and their meaning depends on where and how they are recorded. More alpha does not, by itself, prove deeper meditation. Beta is not simply evidence of tension or an inferior state of mind.

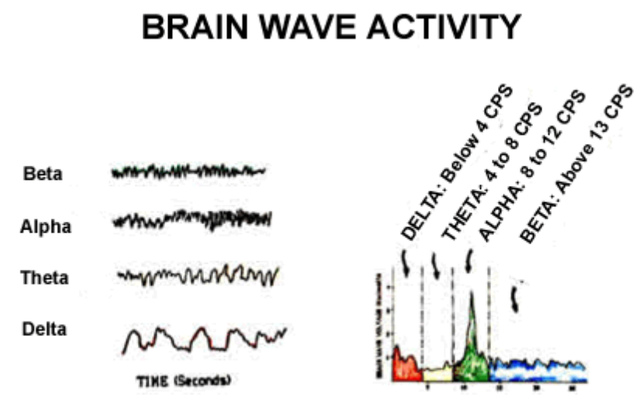
Opening the eyes often reduces the familiar posterior alpha rhythm. That is why observations of alpha during eyes-open movement were of interest in the project I participated in.

The research project

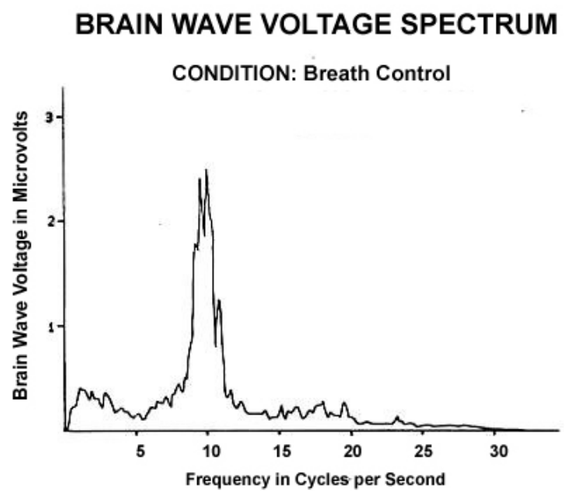
In 1986, I worked with Andrew Junker, PhD, on an investigation of brain-wave activity during yoga postures and meditation at Wright-Patterson Air Force Base in Dayton, Ohio.

We observed brain activity during rest, physical exercise, coordination tasks, and yoga. Our question was whether a practitioner could show alpha activity while performing yoga movements, including demanding movements with the eyes open.

In the sessions I participated in, we observed alpha activity during some yoga practices. These observations encouraged my interest in the relationship among attention, breathing, and movement.



Original illustration of common brain-wave bands



Original illustration of a brain-wave voltage spectrum during breath control

The observations should not be taken to mean that every appropriate pose produces alpha, that alpha can establish the safety of a movement, or that experienced practitioners always meditate more deeply than beginners.

EEG findings require careful interpretation. For teaching, the practical experience remains more accessible: can the student move while keeping the breath comfortable, unnecessary tension limited, and attention available?

ExTension and attention

The ExTension approach asks for a coordinated sense of length through the hands, arms, feet, legs, and spine. The amount of action should suit the exercise.

If one part works forcefully while another part is neglected, the movement may feel less integrated. That difference can be worth exploring, but it does not allow us to infer a particular EEG pattern from looking at a pose.

The Arm Flap, the beginning movement of the Sun Salutation in *ExTension Yoga*, provides one opportunity to explore the relationship. The feet and legs remain usefully active, the shoulders stay free, the hands lengthen gently, and the arm movement follows the breath.

Notice whether you can maintain that coordinated action without stiffening or rushing. If you can, movement may become a way of settling attention rather than merely completing a task.

The experience of meditation

A pose does not need to be advanced to invite this experience. A small supported movement can require careful attention. A demanding posture can also be practiced attentively, provided its demands remain appropriate.

Meditation in action is therefore not a reward for exceptional flexibility. It is a quality of participation: awareness remains with the movement, the breath, and the response of the person doing it.

Historical reference

Andrew Junker and Sam Dworkis, *Investigation of Brain Wave Activity During Yoga Postures and Meditation*, Dayton, Ohio, 1986.

Chapter 12: Yoga and Spirituality

My approach begins with physical practice and breathing. Through that practice, students may develop a more integrated awareness of body and mind and, for some, a deeper spiritual awareness.

I do not claim to be a spiritual master. I am a yoga teacher interested in how an attentive use of the body and breath can open inquiry beyond the physical exercise.

To explore that relationship, I asked Richard Miller, PhD, to review my work. The following exchange comes from our correspondence in April and May 2001. His contributions are retained as correspondence and used with permission; my responses have been revised for clarity.

Where should spiritual inquiry begin

Richard Miller When first looking-over the site, what strikes this mind is that the approach is body centered and there is no inclusion of Consciousness (call it God, Awareness, Spirit, whatever) as the underlying principle. I don't agree with your comment that: "Muscles move our body." This cannot be the underlying principle when we inquire, what moves the muscles? I wonder if there is a way of building into your site the underlying spiritual principles of Yoga. I assume you are trying to write for the average western reader. But I find leaving out this most basic movement of Yoga what keeps Yoga at the body level.

Sam Dworkis replies

I agree that yoga extends beyond its physical components. My emphasis has been pragmatic: I want students and teachers to understand the body so that practice can be useful and less likely to create unnecessary strain.

That emphasis is not intended to exclude consciousness or spirituality. I often begin with an experiential integration of body, mind, and breath, allowing students to discover what the practice means internally. When they become interested in that inquiry, I encourage them to explore further.

Do you introduce consciousness from your first contact with a student? Has that always been your approach, or has it developed through your own teaching?

Richard Miller From the beginning of my experience with Yoga, inquiry was always present. I could never separate the spiritual of yoga from its physical component. While there were years when I was engrossed in the physical aspects of hatha yoga, the meditative aspect of the practice was always close by.

In all the classes I've ever taught, there was always some reference to Yoga being more than the physical. While these were not always direct references to the spiritual, the hint was always there and my ears were always listening for the student

who perceived the hint to go deeper into the inquiry of what lies behind the physical, what is the home ground of all movement, i.e. Awareness (or whatever name we give this unnamable).

These days (for the past many years) I unequivocally teach the spiritual dimension of Yoga to each and every incoming student. It is my passion and I realize life is too short to hold myself back from what I feel is this one's endeavor. I want to place it on the table squarely so that the incoming student can see it directly and know that he/she does not have to hold back in any way. If they are not interested, and what I have to offer does not appear appealing, I am equally unequivocally interested in steering them into the class that meets their interest.

What I often experience, however, is how starved students are for the spiritual. They have practiced yoga for years in the physical and are feeling the deeper pull but not knowing how to express it. When I met my spiritual teacher, Jean Klein, after moving from teacher to teacher and teaching-to-teaching, I knew what I was looking for but could not quite grasp it, as it was so intangible. In the first class I had with Jean, which was with the hatha as well as in dialogue, Jean pointed me directly to myself as Consciousness.

This direct pointing brought me to a standstill and the recognition of myself as That. I have eternal gratitude for his emphatic pointing out that instruction, which no other teacher had done for me until that moment. Of course when the student is ready the teacher appears. All teachers and teachings to that moment had each prepared me for my meeting with Jean. Some teachers had shown me a piece of the truth; others had helped me see what is not truth. So there is equal gratitude for all the teachers along the way.

I experience that we are each an expression of Consciousness. As such, we each express different facets of Consciousness. Consciousness loves knowing Itself in every possibility. This is the joyousness of life expressing Itself in infinite varieties of experience.

I think of it this way... timeless eons ago, we, as Consciousness, split ourselves into infinite pieces and scattered, or projected ourselves around the entire cosmos. Every thing and person we see is our self, looking back at our self. We are each going about taking these projections back into ourselves. And since there are an infinite number of projections of myself, there are infinite joyous occasions to take myself back into myself. Yoga, to me, is living this understanding that everything I see is myself. In this there is infinite compassion and love because we are always looking at our self in every manifestation.

We each are doing exactly what Consciousness wants because we are not separate. Physical, psychological, spiritual, we're all doing exactly what we should be doing at every moment. It's beautiful, this being alive.

Your site pulls responsive seekers into the teachings. My thought, in viewing your site, is to have some place in it where the person who is looking for Truth can go and hear (read) the direct teachings as well as the indirect. Then that student can come to you with their unequivocal need for spiritual awakening.

A question I keep in mind, as I hear you do, is how each aspect of yoga, be it hatha, pranayama, dhyana, etc. can bring the student to knowingly knowing themselves as Consciousness. Each piece of the discipline of yoga is a pointer to our infinite Wholeness. I like to point this out in the beginning so that those students are ripe can hear it from the very beginning. Those who are not ready hear something else. Joy to you. Your thoughts?

Sam Dworkis replies

Thank you for clarifying your approach. I feel our perspectives are closer than they first appeared. My physical emphasis can also be a doorway to conscious awareness, rather than a boundary around it.

Would you explain what you mean by direct and indirect teaching? That distinction may help readers understand how these approaches can support one another.

Richard Miller Yoga suggests a progressive teaching. The student slowly builds understanding through the eight-fold ladder of ashtanga yoga...yama, niyama, asana, pranayama, etc. The teaching unfolds progressively, step by step supporting the student to build the steadiness and insight necessary for the experiential realization that they are not separate. This is often called the progressive or indirect path.

Patanjali suggests, however, that the 'goal' of yoga is always close at hand because it is never the product of effort, which is a contradiction in terms with the definition of Yoga. In the direct path the student is informed from the very first moment that they are not separate, all is One and that it is only their striving to obtain that keeps them from this realization. All efforting and striving, from the perspective of the direct path is born in conflict and suggests that we need to be different than we are in order to realize who we are. This is a contradiction. Striving takes us away. When yoga finally empties of all striving and we rest just as we are, we stand not in opposition to gravity but instead at peace within ourselves.

These two paths are compatible and support each other as the progressive path of purification helps eliminate the misperceptions that keep the mind identified with its movements and prevent the insight of Oneness from being established. The direct path informs the student all the way along that who they are is already present and identification as an ego-I and striving for perfection is again a contradiction.

As I experience it, the physical asanas help empty the physical body into pure sensation and open the student to the deeper energy body. Pranayama supports this

emptying process. Working with the manomaya and vijnanamaya koshas empty identification with emotion, feeling, thoughts and imagery, opening the body into its inherent and uncaused joyfulness of the anandamaya kosha. Then, through persistent inquiry into the nature of the witness, the body and mind merge into awareness without identification.

This is what I mean by the above statement. I like the five koshas as a map of yoga because they reveal the structures of identification (body, feelings, emotions, thoughts, etc.) that make up our sense of separateness. Dis-identification does not mean dissociation. It entails being able to feel and think, welcoming all the structures of personality, but no longer being captivated into them. Once freed to be, these structures then serve as pointers to the awareness that is always present in the background.

It appears to this mind that everything in the universe is an expression of Awareness. What, then, is there to repress if everything is 'me'? Who can I be angry with but myself. All, whom I love is 'myself'. This feels to me to be at the root of compassionate understanding. When everything is intuited to be me, the only response can be love. Asana, pranayama, etc. then appear as doorways into our infinite nature as Beingness, or Awareness.

Each inquiry of asana, pranayama, etc. can be paired with a kosha that we are investigating through the practice. Each step is inquiry into its true nature, which is always revealed as the next underlying kosha, which ultimately empties into awareness. This was a long answer but I hope it helps clarify what I meant.

Returning to the questions

The exchange helps clarify an important distinction. A physical approach can invite spiritual inquiry without pretending that anatomy alone explains it. Likewise, a spiritual approach need not disregard the student's physical needs.

Terri Corral, a certified Kundalini instructor, asked why I keep returning to the question “What is yoga?” once a working definition has been established.

Terri Corral; Certified Kundalini Instructor asked: I wonder why you suggest continually asking "What is yoga?" Once you have defined it for yourself, why continue to ask again? However the question "How does it feel?" is ever so important to ask as it keeps us in the experience of yoga! Scanning one's body to "feel how you feel" provides valuable feedback to the student and aids in keeping one in the experience.

Sam Dworkis replies

I return to the question because the experience can change. A student who begins with an interest in physical fitness may eventually recognize other dimensions of practice. Asking “What is yoga?” can serve as a gentle reminder that the exercise is part of a larger inquiry.

“How does it feel?” keeps that inquiry grounded. If the body is being strained to achieve a pose, the physical struggle can interfere with attention to anything else. My intention is to make useful physical practice available so that students can explore its internal meaning for themselves.

I do not assume that discomfort has the same meaning for every person or that an injury necessarily ends spiritual inquiry. My responsibility as a teacher is to reduce avoidable harm rather than ask a student to regard harm as a necessary spiritual lesson.

Anna Edwards of the British Wheel of Yoga offered a related perspective.

> *Anna Edwards The British Wheel of Yoga, Worchester, U.K. Your description of life stages are spot on as I have seen both with my own students and myself. (I'm the same age as you) All injuries take longer to heal as we age and our bodies certainly "remember" long ago injuries and stresses whether physical or emotional. As teachers it is essential we take this into account and start from where the student "is" not from where they think they would like to be. Isn't this one way of beginning to introduce the Spirituality side of yoga? The Bhagavad-Gita says "Do thy work in the peace of Yoga and, free from selfish desires, be not moved in success or in failure. Yoga is evenness of mind -a peace that is ever the same."*

Different entry points

Students enter yoga with different interests. Some seek relief, some seek physical activity, and some seek explicit spiritual guidance. A teacher can recognize those differences without insisting that every student describe the experience in the same language.

My contribution is to help people participate more appropriately in the physical practice. What grows from that participation may extend beyond the physical, but it belongs to the student's experience rather than to a promise I can make.

Correspondence credit

Richard Miller's correspondence from April–May 2001 was previously edited for brevity and reproduced with permission. Terri Corral's and Anna Edwards's comments are also used with permission.

Chapter 13: Yoga and Religion

A reader's question

Susan wrote to ask why her experience of yoga appeared to conflict with what she was reading in a religious studies course. Her letter is reproduced below.

> *Dear Sam I read your website and wonder if you could help me. I have been practicing yoga for several years. I have also learned TM which I thought was not to do with religion but to do with releasing tension.*
>
> *I recently started a religious studies course and have a book, which says that TM and yoga should not be followed. However, both yoga and TM feels okay to me and the more I practice the calmer I get. This helps with my depression.*
>
> *Do you know why there is so much conflict? I really can't understand this at all. I am finding this very upsetting. Please help.*
>
> *Many thanks. Susan*

My response

Dear Susan,

Your concern is understandable. You experience greater calm through practice, yet a source you respect tells you that the practice should be avoided. Those two messages can be difficult to reconcile.

I have not studied Transcendental Meditation, so I cannot assess its teachings or assume that it is identical to yoga. I can offer a perspective on yoga and on the distinction I make between religious belief and spiritual experience.

What yoga means here

As I explain in Chapter 2, yoga has a complex history within Indian religious and philosophical traditions. Contemporary teaching includes both explicitly spiritual approaches and approaches that emphasize movement, breathing, and attention.

My own teaching concentrates on adapting physical practice to the individual. A student does not need to adopt my religious beliefs, or anyone else's, to explore those exercises.

The calm you feel is an experience worth considering. It does not resolve every theological question, but neither does another person's disagreement make your experience unreal.

Religion and spirituality

For this discussion, I use “religion” to mean a shared framework of beliefs and practices, which may include teachings, worship, rituals, and community. I use “spirituality” to mean a person's inquiry into meaning, connection, and the inner dimensions of life.

The two can overlap. Spirituality is not necessarily separate from religion, and religious practice is not necessarily opposed to personal inquiry.

Some people experience yoga as part of their faith. Others practice it without religious commitment. Still others prefer forms of movement or meditation that fit more clearly within their own tradition.

These differences do not require us to declare one experience universal.

Personal responsibility and guidance

In Chapter 4, I distinguish attention to the experience of practice from attention to an external result. That distinction also has relevance here, but it does not mean that all outside guidance is unhelpful.

Learning to observe your own response is valuable. So is seeking informed guidance when you need it. Personal responsibility and professional or spiritual advice can support one another.

An attentive practice may help you feel more grounded and connected. Whether you understand that experience as physical, spiritual, religious, or some combination is a matter for thoughtful inquiry.

Why disagreement occurs

People within religious communities differ in how they interpret yoga. Some object to its associations with other traditions. Others distinguish physical exercises from religious observance or regard yoga as compatible with their faith.

It would be unfair to assume that every objection comes from the same motive or that discussion can never help. If a teaching troubles you, ask what specific practice is being objected to and why. A trusted spiritual adviser may be able to help you distinguish a doctrinal concern from a concern about a particular method.

My role is not to settle your beliefs for you. I would encourage you to consider both the content of the practice and its effects in your life. Does it support your well-being, attention, and relationships? Does it conflict with commitments that matter to you? Can those concerns be discussed clearly rather than reduced to a blanket judgment?

Your experience and your faith both deserve thoughtful consideration. You need not dismiss either in order to begin that discussion.

Sam

Chapter 14: The Medical Benefits of Yoga

For many years, I enjoyed periodic conversations with Timothy McCall, MD, a specialist in internal medicine with a deep interest in yoga.

During his travels and research, Dr. McCall interviewed yoga teachers about their work with people living with chronic illness and physical limitations. The result was *Yoga as Medicine: The Yogic Prescription for Health and Healing*.

I contributed my perspective on chronic pain, and the book's chapter on fibromyalgia features my teaching. That chapter is reproduced with permission in Appendix 2.

Reports of benefit

Dr. McCall describes a survey conducted by the London-based Yoga Biomedical Trust. Respondents reported whether yoga had helped them with a range of conditions. The results appear below.

These figures describe reported benefit in a survey. They do not show that yoga cured the conditions, establish how it compares with other treatments, or predict the outcome for an individual reader. Several groups were small, which also limits what can be inferred.

Condition	Respondents	Reported benefit percent
Alcoholism	26	100
Anxiety	838	94
Arthritis & Rheumatism	589	90
Asthma or Bronchitis	226	88
Back Disorders	1,142	98
Cancer	29	90
Diabetes	10	80
Duodenal Ulcers	40	90
Heart Disease	50	94
Hemorrhoids	391	88
High Blood Pressure	150	84
Insomnia	542	82
Menopausal Disorders	247	83

Condition	Respondents	Reported benefit percent
Menstrual Problems	317	68
Migraine	464	80
Neurological & Neuromuscular Diseases	112	96
Obesity	240	74
Premenstrual Syndrome	848	77
Smoking	219	74

Reports of back pain relief

Arthur Klein and Dava Sobel also surveyed people about their experience of back pain and treatment. Their findings were published in *Backache Relief*. With permission from the publishers, I reproduced the following table in *ExTension Yoga*.

Provider	Temporary Relief (%)	Long-Term Relief (%)
Yoga Instructors	4	96
Psychiatrists	0	86
Physical Therapists	8	65
Acupuncturists	32	36
Chiropractors	28	28
Osteopathic Physicians	15	28
Neurosurgeons	8	26
Family Practitioners	14	20
Massage Therapists	63	10
Neurologists	4	4

The percentages should be read as historical survey findings, not as a ranking of clinical effectiveness. Without comparable patient groups, treatment details, and methods, the table cannot establish that one profession is universally more effective or safer than another.

Putting the findings in context

The surveys help explain why people became interested in yoga as a complementary approach to health. They also invite further investigation rather than settle it.

Appropriately adapted yoga may support function, comfort, and quality of life for some people. Its usefulness depends on the condition, the person, the instruction, and the response to practice.

Conventional medical care and movement-based approaches can have complementary roles. Decisions about treatment should be based on the individual's needs and the available evidence, rather than a general assumption that one approach is always safer or more effective.

Conclusion: The Practice Is Never Finished

When I began *The Mechanics of Yoga*, my intention was not to create another collection of poses. *ExTension Yoga* and *Recovery Yoga* already provide progressive exercise programs. This book asks a different question:

What is happening inside the person doing the exercise?

Why does one person benefit from a pose while another is irritated by a similar movement? Why can an exercise that once felt wonderful become uncomfortable? Why does forcing sometimes produce less progress? How can the same guiding principles serve an athlete, an older adult, a beginner, and someone recovering from illness?

The answer begins with the individual. An appropriate practice adapts the exercise to the person rather than forcing the person toward a predetermined form.

Throughout this book, we have examined that relationship through anatomy, fascia, alignment, neuromuscular responses, stretching, pain, breathing, aging, meditation, spirituality, and health. These subjects are related, but no single tissue or theory explains the whole experience.

Listen and adapt

Every body has differences in structure and function. Injury, repetitive activity, emotional stress, illness, and aging can change how those differences are experienced.

Yoga can help us work with change when it is practiced appropriately. The same exercise may need a smaller range, more support, or a different pace tomorrow.

This is why fixed instructions such as “put your feet three feet apart” or “go deeper” need interpretation. The body responds to the action it is asked to perform, not to the appearance of the picture in a book.

One of the most useful abilities a student can develop is the ability to distinguish demanding work from a troubling sensation. Muscles may work, the body may become warm, and attention may become intense. Those experiences differ from sharp, pinching, electrical, or otherwise disturbing pain.

Pain is a message. Listen to it. Sometimes the response is to stop. Sometimes it is to reduce the range, bend a knee, add support, or choose another movement. Notice delayed responses as well as immediate ones.

These adjustments represent intelligent practice. They are not evidence of failure.

Useful effort

“Less done correctly gets you more” means eliminating unnecessary effort so that useful effort can become more effective. It does not mean that challenge or progression has no place.

When support, alignment, breathing, and attention work together, movement can feel better organized. As that capacity develops, the practice can grow more demanding where appropriate.

ExTension releases tension. The phrase describes a sense of length through the limbs and spine while reducing avoidable strain. The objective is not to pull the body apart or remove every compressive force. It is to find a more useful quality of action.

Breathing belongs to that action. A held or strained breath may indicate that the demand has become excessive. When movement and breath cooperate comfortably, the exercise can become more integrated.

Beyond the appearance of a pose

Much of this book examines yoga through physical mechanics because understanding the body helps us adapt practice. But yoga's meaning is not confined to its external form.

A highly flexible person may perform a remarkable posture with little attention. Another person may move only a few inches and experience a profound awareness of body, breath, and mind.

The depth of a practice is not measured in inches. Nor is it measured by age. A practice at eighty need not look like a practice at twenty to remain useful. After illness or injury, the task is not necessarily to recreate what existed before.

My own illness taught me to ask a more useful question:

What is possible now?

That question replaces comparison with observation. It allows the body to become a source of information rather than a problem to be forced into submission.

The teacher's responsibility

A teacher needs to understand the exercise and also learn to see the person. Students arrive with histories that are not always visible: surgery, old injuries, fear, unusual mobility, weakness, fatigue, and experiences that affect how they move.

Teaching cannot therefore be reduced to making everyone look alike. Adaptation is part of instruction, whether the class is gentle or vigorous and whether the student is a beginner or highly experienced.

The exercises may look different while the guiding questions remain similar. Is the action appropriate? Is the breath comfortable? Is the student attentive and able to adapt? Does the response support continued practice and daily life?

Continuing the inquiry

A pose is not an endpoint. There will always be another change in the body, another layer of awareness, or another question arising from practice.

You may finish this book, but you will continue learning how your body responds. Return to the questions that have guided these pages:

What is yoga? How does it feel?

The answers can evolve as you do. Continuing to learn, adapt, and move toward greater balance is the practice.

Appendix 1: Inquiries and Responses

These exchanges grew from readers' questions about *ExTension Yoga*, *Recovery Yoga*, and the material that became this book. Read the main chapters first, especially Chapter 9, to understand the context of my responses.

The readers' contributions are retained as historical correspondence and used with permission. Their descriptions, assumptions, and personal conclusions should not be taken as clinical findings. My responses have been revised to clarify the teaching principles and their limits.

Running injuries and movement education

Steven R., a runner from Columbus, Ohio, asked about old injuries, myofascial release, and movement education.

Steven: I came across your work after already having discovered that fascia only responds to gentle forces. I first learned that from reading John Barnes' Myofascial Release Manual. I want to run. I'm a runner and I love it. I believe our bodies, when healthy, are designed to run provided we run properly and softly. But I'm now age 40 and I did not understand that when I was younger ... because today, I'm racked with chronic injuries and overall tightness. A brief synopsis of my injures are:

• A severe fall in high school that injured my left side on the ribs, left hip on greater trochander (to the bone), and left lateral knee (to the bone) • Severe ankle sprains on both ankles that left them with limited range of motion and permanent swelling. • A bike accident as a child that resulted in a deep cut and now a scar on my right side just above my pelvic rim, and • I've over trained to the point of severe soreness countless times (stomach, chest, calves, thighs, hamstrings, you name it).

1) Can Extension Yoga, done properly with controlled breathing and active extension and never pushing too hard, eventually restore fascia that is badly bound by scar tissue, like in my ankles and hips and left outer thigh and hamstring. I will continue to do Barnes releases on them, but I'm finding that it will take forever without some way of employing my mind and body in movement and stretching in order to re-balance my body. Can that process happen and what will I experience along the way to know?

2) I am very interested in somatic re-education. I'm sure you're aware of the concept of "sensory-motor amnesia" where we are tight in a certain motion, our minds don't go there anymore, and we aren't aware of it. Those chronically tightened areas can't relax because we've lost control of them and don't use them.

What I've read about somatic re-education is that you basically find modes of movement that are painful or difficult, and gently move back and forth into that very movement, being precise about the direction that is most difficult. For example, I find

that inverting my ankles on purpose, with no weight on them, induces an uncontrollable shake because my injuries were inversions.

What I'd like to know from you is whether it is advisable to do this while in ExTension Yoga positions. For example, my left hamstring and the region between that and the outside of my leg, is chronically tight. I feel pain when I try to stretch that area. (Your hamstring stretches, the forward bend and lying down with legs up the wall, do not cause pain.)

I sense this as being a key area for my entire body and that if it were to release and be restored, the vast majority of my body would be able to respond. Those scars on my left side are very dense and I can feel them pulling everything to the point of pain.

I find when I'm doing the hamstring stretch on the wall that if I bend my leg maybe 20 degrees and bring my knee toward my chest by taking my left foot off the wall maybe 6 inches, it is uncomfortable to move my leg gently side to side. Is it advisable to do this?

The pain is only slight. It depends on how far I go and how fast I go. When I do it slowly and gently, it seems ok. I don't know yet how effective it is because it hasn't been long enough. I'd really like to know your opinion.

Sam responds

It is not possible to predict whether yoga will change a particular area of scar tissue or restore a specific restriction. My approach is intended to help you develop more comfortable, controlled movement. The amount and pace of change cannot be promised.

Breathing can help you slow down and notice what is happening. "Inhale and observe" means keep the movement steady while breathing comfortably. It does not mean hold the breath. During an exhalation, explore a small additional action only if it remains comfortable.

I use "neuromuscular re-education" to describe learning a different way of moving and responding. That does not mean every method called somatic education is identical to this program, or that painful movements should be repeated because they are thought to be corrective.

In your description, certain movements reproduce discomfort around old injuries. I would not encourage you to work repeatedly into that discomfort without an assessment of what is occurring. Your history of ankle injuries, restricted motion, and swelling deserves individualized guidance.

Apply the principles to what you can do without provoking symptoms. Reduce the range, use support, and work slowly enough to observe the response. Pay attention afterward as well as during the exercise.

Running may remain an important goal, but returning to it should follow your current capacity and rehabilitation needs. Desire alone is not a reliable guide to readiness.

The same program can eventually provide greater physical challenges. The progression should come from increased tolerance and control rather than from a timetable or a demand to regain your former ability immediately.

Steven Responds: Thank you for your response. Here's what I've learned:

1) It is not clear whether ExTension & Recovery Yoga can clear up my internal fascia scarring, but if I stick to the "less done correctly is more" philosophy, my body will definitely move toward balance over time. I shouldn't have any expectation of time frame. I should trust nature's, and my body's, intelligence. I need to trust the process.

2) Barnes releases can be enhanced by inhaling with a hold, and exhaling while gently stretching the tissue into "action", always observing and feeling and exploring.

3) I should allow my body to rest, heal, and re-balance before pushing it. (I did push with these injuries in place... many times... but I haven't done that in about 2 years. I haven't run in several years. I agree that nature doesn't want an injured body to run. Nature has been emphatic on that point... with intense pain J I have, however stretched improperly. I will no longer stretch that way).

4) I should not do somatic re-education exercises in modes of motion that would be painful if I were not to do them gently. Rather, I should trust ExTension and Recovery Yoga principles to re-educate my body and movement. Thanks so much for taking the time to give such a thoughtful response.

Clarification

Steven's follow-up records his understanding at the time. It should not be read as a guarantee that scar tissue will resolve. Continue breathing during any pause in movement; breath holding is not part of the instruction.

Breathing discipline and emotional well-being

CG asked several related questions.

CG: It has been my experience (I have also encountered the concept in various breathing practices), that the inhalation is for action and the exhalation is for release. You have reversed this in your program, or nearly so. Is that because it is essential for the over stressed person to relax as they begin to move? Wouldn't it make them more tired or are the movements so subtle that it isn't really exertion at all.

Sam responds

I often use exhalation to accompany an action because it can help a student reduce unnecessary effort. This is not a universal rule that inhalation is inactive or that every movement must occur on an exhalation.

In the initial exercises, we coordinate a small movement with a comfortable breath so that the student has time to observe it. Later, the same attention can accompany more demanding movements.

The breath pattern should serve the action. If it makes the student strain, hurry, or become short of breath, change the movement or the pattern rather than force the coordination.

CG: It must take a great deal of discipline, as you know, just to get out of bed if you have chronic pain. All that you have done considering your situation, is tremendously impressive and any one who can practice your method on their own from a book is also quite determined. It is rare. Not everyone has that.

Sam responds

Beginning can be difficult when a person is exhausted or in pain. A skilled teacher can help by making the first step manageable and explaining why it matters.

Patience is important. The practice should not become another test the person fears failing. A short, tolerable session that can be repeated may be more useful than an ambitious routine that produces a setback.

CG: Depression and fear add to the load of stress. Physical relaxation would definitely help the body but have you found anything to help the spirit...

Sam responds

An attentive practice may help a person feel more connected and capable, but emotional recovery should not be reduced to discipline or physical relaxation. Depression and fear can require professional support as well.

My contribution is to help the person find an accessible way to participate in movement and breathing. The sense of agency that develops may support well-being, while appropriate mental-health care addresses needs outside the yoga teacher's role.

CG: Can you see any way for a therapist to integrate these things using your program. What are your thoughts on this?

Sam responds

A therapist who practices these methods personally may gain useful insight into how the instructions feel. That experience should complement professional training and an understanding of the patient's condition.

Adaptation matters more than reproducing a routine. Ask what the patient can tolerate, observe the response, and coordinate with other care when needed.

Advanced poses and delayed pain

John Billings studied with me during the 1980s. Years later, he wrote about changes in his practice and the difference between fitness and long-term health.

John Billings: I believe health and fitness are different! My new goal is not to do advanced poses, but to do poses at an advanced age...because if you can still do yoga at 80, that's real health, not just fitness.

After reading your web-book and especially the Ages and Stages section, I want to learn ExTension Yoga . The first reason is that I believe it's more healthful than what I'm doing now. For a couple of years, I've been having pain directly attributed to my yoga practice.

The second reason is the alpha-wave phenomenon. I have noticed vinyasa does not lead to that peaceful feeling I used to get as described by Dr. Herbert Benson's Relaxation Response. (Ed. Note: Vinyasa is an aerobic flowing approach to yoga that promotes extreme flexibility and endurance). My wife, interestingly, is beginning to notice the same thing in her own practice. Vinyasa, at least as we practice it, creates stress. She much prefers the Gentle Yoga I also teach. So I am very interested in your Wright-Patterson experience and anything else on the subject. Yoga should definitely produce waves in alpha range.

I have been in power yoga classes where there is just mass jumping around and it leads me to reflect on your two fundamental questions: “What is yoga?” and “How does it feel?”

I'm now 46. When I was 17, I was able to do remarkable things with my body -things that also feel good. The injuries started when I got into all this Ashtanga jumping around.

Sam's note

No particular yoga style guarantees either benefit or injury. When symptoms emerge, reconsider the way the exercises are being performed and the demands of the routine. Do not assume that an advanced posture remains appropriate simply because you have done it before.

John Continues: It will probably help to know what I mean by injuries. Apart from the current pain below both shoulder blades, which goes all the way around to the ribs almost in front, there is sometimes a "sticking" feeling in my left shoulder joint, usually when going into Pincha Mayurasana (the scorpion pose). So I adjust around it. Also, and of more concern, I have what appears to be chronic medial right knee soft tissue damage. This came from trying to raise my leg overhead in Natarajasana.

I can do on left side, carefully, but not at all on right. I also now have to be careful with that knee, because any pose that requires lateral movement or twisting of tibia from knee joint that causes pain. I cannot do advanced Marichyasana, for example. This may change, but right now I'm very careful with that knee. Sam, I have begun to wonder not only what is the purpose of these poses, but I've also been thinking about the epidemic of yoga injuries

Sam responds

I cannot identify the injured tissues from a written description. Persistent shoulder, rib, or knee symptoms need an appropriate assessment, especially when movements repeatedly provoke them.

For your practice, remove the movements that reproduce the problem, reduce other demands as needed, and examine the progression with someone who can observe you. The goal is not to prove that an advanced pose can still be performed. It is to find an appropriate practice now.

As you read this book, keep asking how the principles apply to your own movement and teaching.

John Billings: Actually I expected such an answer from you, and you haven't disappointed me. I agree with you, and add that what actually feels good during practice can later be very painful. For instance, a few days ago I started to practice an Ashtanga move which involves pressing and lifting from seated pose into a handstand. Or at least trying to do this, about ten times. Now my back, on both sides below shoulder blades, is so painful it sometimes hurts to breathe. But the lift did not hurt at the time, because of endorphins and what may be called "yoga high". I have noticed that real injuries began when I started doing "advanced" poses in vinyasa. This is partly the "yoga high", and also the repetition inherent in vinyasa. So it's time to sit and ask what is the purpose of yoga; or, whether I should even try these things. Is yoga health or ego, or something else? I'm rapidly developing new understanding, and you are an important source.

Sam's note

John's account reinforces the importance of delayed responses. Feeling good during a movement does not establish that the dose was appropriate. New pain that interferes with breathing should not be dismissed as a normal consequence of practice.

Head-down poses and medical conditions

John Billings:

We commonly say, "people with thus and so conditions should not do inversions. But what about all those other poses, like down dog and standing forward bends, that definitely put hips above the head? Is the inversion thing just a superstition?

Sam responds

The concern is not limited to whether the legs are upside down. Head-down positions can raise pressure within the eyes, including Downward-Facing Dog and standing forward bends.

Someone with glaucoma, retinal disease, uncontrolled high blood pressure, or another relevant condition should obtain individualized medical advice before using these positions. A pose does not become safe merely because it is described as a “partial” or “baby” inversion.

Raising the hands onto a support may change the position, but the actual height of the head relative to the heart still matters. Sensation alone cannot establish that pressure in the eyes remains acceptable.

Choose an alternative that avoids the concern rather than progressively testing head-down positions until symptoms appear. The appropriate modification depends on the condition and the person's medical guidance.

Menstruation and the limits of sensation

John Billings:

That's the best advice I have heard so far. I also think it also has to do with the length of time the pose is held; we typically hold inversions longer than other poses. This may be why the standing forward bends such as uttanasana, prasarita padottanasana, etc. are not contraindicated, especially in the Iyengar school.

And what about women practicing yoga during menstruation? I've been exchanging emails with a woman yoga student who said: “Inversions during menstruation should be an individual decision. I have always believed that when a woman listens to her body (nothing teaches this more than yoga) she will know what is best for her. I was happy to see Yoga Journal cover this topic in an article written by an M.D. I have been a Registered nurse for many years specializing in women's health and the rationale behind not doing inversions did not make good science sense to me. Inversions might be fine for some and not for others. The article in Yoga Journal covers this issue well. It is in the April 2004 issue. The bottom line is to evaluate each client individually. What works for one client may not work for another."

I (John Billings) responded to her by saying: “O K, I know that article, but are people ready to drop the ritual contraindications about inversions? You appear to be way up on the subject. I am going to start teaching The Truth , which appears to be that whatever feels good is good, and whatever feels bad is bad! Now we are all enlightened...”

Sam responds

I agree that students should be considered individually, but “whatever feels good is good” is too broad a rule. Some effects are delayed, and some medical risks do not produce immediate discomfort.

Traditions differ in their advice about practice during menstruation. That question should be distinguished from established concerns such as eye disease or uncontrolled blood pressure. Symptoms, individual preferences, and relevant medical advice should guide adaptations rather than an unsupported universal claim.

The same care applies to backbends and other demanding movements. Unusual flexibility does not remove the need for control, and a pleasant sensation does not justify forcing the neck or spine to an extreme range.

Depression and beginning gently

Barbara writes: I suffer with major depression and panic attacks. I was wondering if you could offer some words of advice as to how you may be able to help me. I've tried yoga here and there, but its hard to even get out of bed let alone have the energy to do a class. I've gone to a few yoga schools, but the classes were too hard and it was clear that all they wanted was to get my money. If you can help in some way I'm desperate for relief.

Sam responds

I know from my own experience that depression can make even beginning feel difficult. You deserve help that takes your symptoms seriously.

My first recommendation is to seek a qualified mental-health professional or speak with your healthcare provider about treatment. The right person is someone suitably trained with whom you can work comfortably; age or sex alone does not establish that fit. If cost is a barrier, ask about accessible services or reduced fees.

Yoga can be a supportive activity, but it should not replace care for major depression or panic attacks.

If walking is accessible to you, begin with a short, manageable distance. It may be less than the ten or twenty minutes you imagine a walk should require. Keep the pace comfortable and stop before exhaustion.

You can notice the rhythm of your breath while walking. If a gentle count helps, explore it, but do not force a longer exhalation or make breath control another obligation. Avoid continuing through breathlessness or dizziness.

The useful first step is one that fits your present capacity and can be repeated without making you feel worse. Professional care and a manageable movement practice can support one another.

Scoliosis and the cervical spine

Randy Jellen of Lisle, Illinois, Asks: What yoga exercises would you recommend for my scoliosis? I have a small scoliosis, and so, my natural curves in my spine are a little more "flattened" than normal. Not a lot, but there is some. I was wondering mostly about the cervical curve because my chiropractor says I should really try addressing it more with traction and so forth to try restoring a more normal curve to it. I was wondering if there are any asanas (yoga exercises) you could suggest to help restore the cervical spine?

Sam responds

Scoliosis and a change in the cervical curve are not necessarily the same problem. A written description is not enough to determine what movement or traction would be appropriate.

Discuss the proposed treatment with a clinician who can assess your spine and symptoms. Yoga may help with comfortable movement and strength, but I cannot promise that it will restore a particular curve.

I prefer a balanced program to selecting one exercise as a remedy for an anatomical finding. The Wiggle and Waggle, described in *Recovery Yoga* and Appendix 2, can be useful for some students, but it still needs to be adapted to the individual.

The priority is function and tolerance, not forcing the spine toward an idealized shape.

Helping students choose appropriate modifications

Elizabeth Molfese, a yoga teacher from Lake Park, Florida, asked about language, attention, rest, and demonstrations.

Elizabeth Molfese: How to instruct people in a firm and gentle way to stay with the modification best for them, rather than forcing themselves into the moderate and more flexible postures for which they are not ready. I haven't formally introduced yamas and niyamas and am thinking it may be time to emphasize.

Sam responds

Explain that the modification is a form of the exercise suited to the student's present capacity. It is not a lesser achievement.

I often introduce the practical meaning of non-aggression before discussing its classical terminology. Students can understand that forcing moves them away from the quality of practice we are trying to develop.

Elizabeth Molfese: How to awaken students' self-awareness? How to encourage them to listen and feel their body, rather than encourage forcing? For instance, this is what I now say in class: "Do your yoga with patience, strength and compassion, and by not by pushing the edge"

Sam responds

Words matter. "Move toward" invites exploration; "get to" may imply a fixed destination. "Do what is available" can be more useful than "try harder."

Ask students to notice breathing, effort, and sensation. Demonstrate how a smaller movement can still be purposeful so that self-awareness becomes part of the exercise rather than an instruction added afterward.

Elizabeth Molfese: How to reinforce students' resisting a personal time out? Is it a reflection on me because I don't want to interrupt the flow taking too many time outs? What can I say or do to establish personal body intelligence and moderation in students?

Sam responds

Introduce rest options in the first class and make them available throughout. A student should not have to wait for the whole group to stop.

Some may prefer a supported resting position; others may use a small, comfortable movement. Reassure them that the quality of participation matters more than completing every sequence.

Elizabeth Molfese: How do I reassure interconnecting body openings with a student fixated on their challenging areas?

Sam responds

Help the student consider the whole movement rather than repeatedly forcing the restricted area. Sometimes changing support, stance, or the action elsewhere makes the exercise more manageable.

The purpose is not to persuade the student that one body part controls everything. It is to broaden attention and reduce unnecessary strain.

Elizabeth Molfese: What is the best way to introduce new yoga poses? Initially introducing new practices by modeling compromises working the room – is it inappropriate to address students from the front of the room? Anonymously suggesting doesn't always hit its mark. Is there a gentle, nurturing technique(s) eliminating self-consciousness? Should I ask permission – just like touching?

Sam responds

Demonstrate enough to make the instruction clear, then observe the students. If you remain absorbed in your own practice, you may miss how they are responding.

Show an accessible version before a demanding one. Otherwise, students may assume that your range is the standard they must reproduce.

When inviting a student to demonstrate or drawing attention to that student's movement, ask permission. General trust established earlier does not remove the person's right to decline on a particular occasion. Ask separately before touch or physical adjustment.

Keep the observation specific and respectful: “Notice how this support lets the shoulder stay comfortable,” rather than treating one student as the class's model of correctness.

Finding a comfortable hamstring response

Jim Sturiale asks: I've been reading ExTension Yoga and have a question regarding the hamstring stretches in the book -particularly the standing forward bend. It's really more of a problem then a question: I ALWAYS feel the stretch in the tendons behind my knees, NEVER in the belly of the hamstrings themselves. In fact, even with the hamstring stretch against the wall, that you recommend for those who are having problems feeling the stretch in the hamstrings. The results are the same. Either no feeling of stretch at all, or a fairly intense feeling in the tendons behind the knees. I've tried other poses (not in your book), such as Prasarita Padottanasana (Wide-Legged Forward Bend), and that seems to work much better. Is this a good substitute pose? Or would you suggest something else?

Sam responds

Do not pursue a stronger stretch behind the knee simply because you cannot feel the sensation you expected in the thigh. The absence or location of a stretch sensation does not reliably identify the tissues being loaded.

I once became so enthusiastic about teaching a highly flexible visitor that I kept offering more demanding poses when she could not feel her hamstrings. Only later did I ask about previous injuries. She told me that a land-mine injury had affected sensation in her legs.

That conversation exposed a mistake in my teaching. I should have asked about her history before assuming that more movement would produce the response I wanted.

For your exercise at the wall, begin with the knee bent enough to avoid discomfort behind it. Keep the supporting foot secure and the pelvis comfortable. On an easy exhalation, explore a very small amount of leg lengthening while maintaining that comfort.

Use only a few repetitions, then rest. Do not pull the knee straight, force the foot, or continue increasing the range to make a sensation appear.

If the exercise remains uncomfortable or the lack of sensation is persistent or unexplained, obtain an assessment. Another pose may be appropriate, but it should be

chosen by its response and suitability rather than because it produces a more intense stretch.

Practice after an acute injury

Jacqui, M.D.: Please comment on when to practice yoga after an acute injury.

Sam responds

The appropriate timing depends on the injury. My experience with gentler manual work does not establish a universal waiting period for every injury or a rule that all intervention is ineffective during the acute phase.

Avoid using yoga to test a newly injured area. Follow the assessment and rehabilitation plan appropriate to the condition. Some injuries benefit from carefully guided early movement; others require protection or a different approach.

When yoga is resumed, begin with a tolerable range and load. Pain relief alone should not be taken as proof that strenuous activity is appropriate.

My therapeutic experience influenced the way I introduce supported movement, but manual trigger-point techniques and yoga are different interventions. Neither should be assumed to replace the other or to suit every injury.

Applying ExTension to other poses

Linda of Orlando, Florida: More "ex-tension" details I loved ExTension Yoga and read it through and applied the concepts immediately. Do you have more materials that cover proper "ex-tension" of more of the poses. In any event, I am glad to see some people are questioning the "traditional" yoga poses and safety.

Sam responds

My intention is to give you tools for adapting practice, rather than question every traditional pose or provide a separate instruction for every variation.

Consider support, range, muscular action, breathing, and the response afterward. Those questions can help you work more intelligently in classes as well as at home.

Developing your own awareness is valuable, but it does not mean that every pose is suitable for you or that an experienced teacher has nothing to offer. Use personal observation and informed guidance together.

Circulation and inversions

Sheri Kauhausen, of Vancouver/Burnaby, Canada: Why is shoulder stand contraindicated in shoulder stand? I have been trying to find out why, in yoga, the shoulder stand is contra indicated for people with high blood pressure, but the downward dog is okay. Could you explain how, exactly, BP is affected by true inverted positions. And, again, why the downward dog is okay for people with high BP.

Sam responds

Blood circulates through pressure differences generated and regulated by the cardiovascular system. Many veins have valves that help limit backward flow. An array of one-way valves along the arteries is not what prevents blood from pooling in the legs.

Changing body position alters the effects of gravity on circulation. However, we should not conclude from that fact that inversions reliably strengthen the heart or provide a specific cardiovascular training effect.

For the concern you raise, the important distinction is the position of the head and the person's medical condition. Downward-Facing Dog is a head-down pose and can raise pressure inside the eyes. It should not be described as automatically safe for someone who has been advised to avoid inversions.

Use the individual's medical guidance to choose an alternative. A higher hand support changes the exercise but does not, by itself, establish safety. The head may need to remain above heart level, and the appropriate position should be decided for the specific condition.

Aging arthritis and hope for change

Elizabeth Martin, of Westford, MA: "Ages and Stages" concept: Do you mean to say that every ten years our practice may become more limited, and we should just accept it? I've talked to so many people at Kripalu about pain. The conclusion has always been that I have to figure it out for myself. Do you have any information about arthritis? I would greatly appreciate any direction you could give me about it.

Sam responds

No, accepting your current condition does not mean accepting inevitable pain or abandoning improvement. The ages and stages observation is anecdotal, not a timetable that limits what you can do.

Arthritis is not one uniform condition. The diagnosis, symptoms, and appropriate treatment matter. Yoga may help some people manage movement and discomfort, but it should not be presented as reversing every tissue change or correcting arthritis itself.

An appropriate program can use support, manageable range, and progressive strength to help maintain function. Observe what improves daily life and what repeatedly aggravates symptoms.

There is reason to work toward improvement without making a promise about how much change will occur.

Spiritual inquiry and physical practice

Adhisthana Ellen Pfeffer, The Yoga Connection, North Caldwell, NJ: About Spirituality: I understand that you're working on the page regarding spirituality. So far, what you have so eloquently said about yoga is more about the physical practice than anything else. However, it's not the physical practice that keeps me coming back to yoga, it's the deep stillness and experience of SELF, and PURE AWARENESS (Perusha) that keeps me in it. Yoga, in the final analysis, is an experience that is always available; one only needs to become aware of it. You have not fully addressed the fact that the entire system of yoga comes out of the basic inquiry of all humanity: WHO AM I? And the desire of humanity to transform and transcend to a higher state of awareness, consciousness, functioning. Yoga is a complete evolutionary path, not just an ancient system of exercise.

Sam responds

I agree that yoga extends beyond exercise. My physical emphasis reflects the part of teaching in which I can offer the clearest practical guidance.

Understanding movement can help reduce avoidable strain and make room for deeper attention. It does not explain consciousness or replace the spiritual inquiry you describe.

What appears physical from the outside may be deeply internal for the student. Chapter 12 explores that relationship through my correspondence with Richard Miller and other teachers.

Why a limb may feel lighter

Shoosh Crotzer, Mobility Limited, Morro Bay CA: Another View of ExTension Yoga In your description about the theory of why extension makes the limb feel lighter, I have a different thought on that. I agree with the concept and the movement, but my studies have led me to believe that by extending, the musculature is resisting gravity more, and therefore creates the lighter feeling. You said that it causes a release of tension in the limb being extended. Let's use an example.

By holding the arm out in front, with a bent elbow, it becomes heavy with time. If you then lengthen and extend out to the fingers, we both know that the arm lightens. However, you say that the reason is a release of tension from the bent arm. My bent arm was not tense, though. Some might even say it was more relaxed, hanging loosely. To me, it wasn't the tension that caused the weight, it was gravity pulling it

down because the center of energy became the bent elbow, and the energy pulled down. By extending, the energy moves all the way out to the fingers, causing more resistance to gravity, and therefore the lighter feeling. What do you think about this?

Sam responds

You are right to distinguish the experience from the proposed explanation. Holding a limb against gravity requires muscular activity. Lengthening through it may change how that activity is organized and how the effort is perceived.

The limb's weight does not change, and the feeling of lightness does not prove that muscular tension has disappeared. “ExTension releases tension” is my teaching cue for reducing unnecessary strain while maintaining useful action.

Your alternative explanation is worth considering. The practical comparison helps us notice a response, but it cannot establish the exact mechanism by itself.

Supporting the knee during a hamstring exercise

Shoosh Crotzer continues In your hamstring test, on pages 32-3, you are holding behind the knee. Doesn't this inhibit the stretch?

Sam responds

Support can make the exercise more manageable if it is placed comfortably. Do not press firmly into the back of the knee or use the hands to pull the leg into a stronger stretch.

Keep the knee bent, maintain a comfortable pelvis, and explore a small amount of leg lengthening on an easy exhalation. The aim is controlled movement without discomfort, not proving that the tendon is completely unloaded.

Work with one leg at a time when that helps you observe the response more clearly. A teacher who can see the movement can help adjust the support and range.

Pelvic awareness

Shoosh Crotzer continues: One area that I have begun working on intensively over the last 2 years is pelvic alignment. On the same hamstring pages (32-3), I agree with all that you explain, except that you don't mention the pelvis. If a person did this, imitating figure 7, they could conceivably have rolled or tilted their pelvis to accommodate the knee lift without really knowing it. They would have the false sense of length, but only because they were working from the pelvis rather than the hamstring.

I know that you know this, as a teacher, but I have become a real taskmaster about it lately. Of course, it has stemmed from 25 years of my doing things incorrectly and only recently realizing, as a result of new-found problems, that I am a symptom of

this lack of pelvic awareness. Imagine my shame and sense of failure that during all these years I never understood this correctly, nor was any teacher ever able to point it out to me! My apparent flexibility overshadowed the fine-tuning and hid my weaknesses. All your work discusses this indirectly.

By pointing out lengthening, for example, in forward bends, don't you think that it also must come from a core awareness of the position and balance of the pelvis for people to be able to create the proper angles that you so beautifully point out?

I know that this book was written in 1994, so we have both learned a lot since then. I would like to hear your comments.

Sam responds

You are correct that pelvic awareness needs to be explicit. A leg may appear to move farther because the pelvis has changed position, rather than because the intended movement has changed.

In a hamstring exercise, first establish a comfortable pelvic position. Then explore a small amount of leg lengthening without forcing the spine or shifting the pelvis to achieve more range.

I sometimes use a rubber band held between two fingers to illustrate attention to both ends of a movement. The analogy is a cue for coordinated action, not proof that moving both ends always produces a more even strain in tissue.

A subtle intention through the sitting bones may help some students organize the exercise. It should not become a demand to push them down forcefully. Observe whether the cue improves comfort and control.

A more vigorous practice

Anna Billingham, Dip. B.W.Y. Worcester, United Kingdom, writes: In several of our past email exchanges, you talk about the ExTension approach to aerobic yoga. Is there anyway I can find out about it?

Sam responds

A vigorous ExTension practice uses the same attention to movement and breathing as a slower one. Increased pace is a progression, not a reason to abandon detail.

Begin with a small number of deliberate Sun Salutations that suit your capacity. If the response is good, pace or repetitions may gradually increase. Stop before breathing, coordination, or comfort deteriorates.

Before my illness, I sometimes practiced 108 Sun Salutations. That was part of my own history, not a target for readers. Later, managing the effects of illness meant reducing the amount and avoiding excessive heat.

Choose the demand that serves you now. More cycles are not necessarily a better practice.

Writing for students and teachers

> *Nancy Freedom from Berkeley, CA writes (responding to my request for comments or questions): I may have misunderstood who your audience is. You say it's for students and teachers. (Would not) a simpler presentation ... help ... beginners who are unwisely using the instructions without a live teacher not to injure themselves.*

Sam responds

This book is intended for readers who want to understand the reasoning behind my teaching, including students, teachers, and healthcare practitioners.

No single explanation will meet every reader's needs. The main text presents the practical concepts; the references and correspondence provide additional context.

Instructions still need to be adapted to the person. A book can support that process, but it cannot observe the reader or provide an individualized assessment. Questions and criticism help me make the material clearer, and I welcome them.

Appendix 2: *Yoga as Medicine*

Chapter 17 Fibromyalgia

Note on the reprinted chapter

The following chapter from Timothy McCall's *Yoga as Medicine: The Yogic Prescription for Health and Healing* is reproduced with permission. It describes my teaching and Jill Valliere's experience at the time of publication.

The chapter is retained as a historical reprint. References to other chapters refer to *Yoga as Medicine*, not to this book. Medical understanding and treatment guidance have changed since its publication, particularly in relation to diagnosis, prevalence, medication, and exercise for fibromyalgia. The reprinted material should not be used as current prescribing advice.

The chapter's personal accounts remain valuable for understanding how I adapted the practice. They describe individual experiences rather than guaranteed outcomes.

SAM DWORKIS feels a special affinity for people with chronic pain due to his own experience with multiple sclerosis and the fibromyalgia that followed. A yoga teacher since 1975, Sam was diagnosed with MS in 1994. He had so much pain and became so discouraged that he completely gave up his yoga teaching as well as his own practice. But a few years ago, after sharing some yoga concepts with a quadriplegic neighbor and seeing the tremendous progress she made, he reversed course. “When she told me how these exercises had changed her life, I started my yoga up the very next morning after six years of doing nothing.” Since then he’s lost the twenty pounds he had put on and has regained his ability to do many yoga poses that he thought he’d never do again. “I believe today that I have to do whatever I can to maximize my potential and minimize my liability,” he says. “I’m convinced that the practice of yoga moves me in that direction.” Sam teaches from his studio near West Palm Beach, Florida. He is the author of two books, ExTension and *Recovery Yoga*.

Sam Dworkis in the original reprint

Before Jill Valliere started to study with Sam Dworkis on the recommendation of a friend, she had tried yoga but the results weren’t good. She had taken a vigorous power yoga class that involved jumping from pose to pose, and as is common in people with fibromyalgia syndrome (FMS) who do too much, she paid the price. “I was in bed for two days afterward.”

For years before seeing Sam, Jill had often felt tired and achy, had sleep problems, and suffered other symptoms suggestive of fibromyalgia, though to date she still hasn’t been officially diagnosed by a doctor. When Jill mentioned her symptoms to her physicians and asked about fibromyalgia, she says, “they kind of pooh-poohed it.” Another doctor, an “arthritis specialist, who didn’t have a great bedside manner, almost insulted me when I mentioned it.” A friend told her she would probably get that reaction because some doctors just don’t believe in fibromyalgia. Indeed, none of her physicians has ever checked her for “tender points,” eighteen specific spots on the upper back, chest, neck, hips, elbows, and knees where tenderness points to a diagnosis of FMS. (She reports that she is still very sensitive to touch in many areas of her body.)

Fibromyalgia is a frustrating disease for doctors and patients alike. Because there is no lab test to diagnose it, many doctors, like Jill’s, aren’t sure it even exists. Due to this widespread ignorance, many patients bounce from doctor to doctor, enduring a series of unrevealing lab tests and mostly unhelpful drugs, until finally, if they are fortunate, someone hits on the diagnosis. Jill’s experience of having her concerns dismissed and even belittled by her physicians is unfortunately quite common. That she could see a string of doctors, including rheumatologists, and never be tested for tender points—a central feature of the condition that any well-informed physician should be aware of—is also unfortunately too common.

During the winter months, Jill raises and trains horses at her stable in Wellington, Florida, which is near Sam’s studio. Some of her equestrian friends had been studying with him and recommended that she see if he could help her. The main reason Jill consulted Sam was not FMS, though, but to help with rehabilitation after having undergone neck surgery for ruptured spinal disks. Months later, she was still weak on the left side of her body, particularly in her arm, and was very out of shape from all the inactivity before and after the surgery. When she first saw Sam, she had just started riding again, but it hadn’t been easy. “Being forty-eight, unfit, and a little overweight,” she says, “I hurt. I ached.”

Overview of Fibromyalgia

Fibromyalgia is a painful condition of unknown cause. In addition to numerous tender points, which tend to be located at spots where muscles attach to ligaments or bones, the typical symptoms include widespread pain, fatigue, and poor sleep, all of which Jill had. The sleep is often described as “nonrestorative,” meaning the person wakes up in the morning not feeling refreshed. Sleeping troubles are so prominent in this condition that some researchers believe it is the primary cause of the symptoms, and there is some scientific evidence to support this view. While the reality of FMS is likely to be more complex than that, it is clear that poor sleep can exacerbate symptoms and lower quality of life. People with FMS often have other conditions such as irritable bowel syndrome, chronic fatigue syndrome, and restless leg syndrome (marked by itching, numbness, or tingling in the legs, often relieved by walking). For reasons that are not understood, women are about twenty times more likely to develop FMS than men.

While there is no diagnostic lab test for fibromyalgia, the condition is not “all in your head.” Researchers have found, for example, dramatically elevated levels of a pain mediator, called substance P, in the spinal fluid in FMS patients. Thus, the problem appears to involve abnormalities in processing pain sensations in the spinal cord and brain that greatly amplify pain. These amplified pain signals cause pain that is real and can be debilitating, even though the sensations of pain are out of proportion to any actual damage or trauma to the muscles and other tissues. While knowing that FMS does not damage joints, bones, or internal organs doesn’t necessarily diminish the pain, it can be reassuring. It is also reassuring to know that, despite the pain and the lack of a cure, FMS does not progress or cause death.

Since many doctors are poorly informed about FMS, it’s essential to find one who is open- minded, and ideally, has experience treating FMS patients and keeps up on the latest research. Often other people with the condition or consumer groups, such as the Fibromyalgia Network, can provide referrals or leads.

How Yoga Fits In

Yoga, when practiced appropriately, can help people with fibromyalgia in several ways, beginning with the stress response. There is evidence that people with FMS have an overactive sympathetic nervous system (see Chapter 3), which is turned on most of the time. A number of yoga practices can ratchet down this stress response and switch the body into the relaxation response, mediated by the parasympathetic nervous system. Learning to modulate your stress response can not only diminish your symptoms, but help you deal with the stress of having a disorder that is poorly understood by both the medical community and the public.

The slow, deep breathing common in yoga practice, which becomes the way long-term practitioners breathe most of the time, is an especially effective way to calm an agitated nervous system. Kristin Thorson of the Fibromyalgia Network, an FMS sufferer herself

and patient advocate, says that in her experience deep-breathing exercises (see Chapter 8) can help people generate an “inner sense of peace” and create emotional benefits as well, which can be very important for FMS patients, many of whom have been made to feel like “damaged goods” by a medical system that does not acknowledge the reality of what they are going through.

Yoga can improve your ability to sleep and this can be of enormous benefit in FMS. In addition, a number of yoga practices including meditation, Yoga Nidra, and Deep Relaxation (Savasana) appear to provide some of the restorative effects of sleep, even though you are awake (see Chapter 3). Yoga asana, as well as practices like pranayama and meditation, can increase energy, improve posture, and create better alignment of the bones, muscles, and other tissues, particularly if they are done regularly over a long period of time.

While asana can help alleviate the pain of FMS, it’s easy to overdo (as happened to Jill in her first experience with yoga). This may be why the evidence for the effectiveness of treating FMS with exercise is mixed. While doctors often encourage patients with FMS to exercise, sometimes doing so can be counterproductive. As Sam says, “The harder they try, the worse they get.” From a yogic perspective, the problem may be that doctors typically give patients a standardized exercise routine for a certain amount and kind of exercise every day. Such one-size-fits-all approaches are very different from a yoga therapist’s personalized and ongoing assessment of what the patient is capable of doing, fine-tuned by the patients’ own assessments of their pain and energy levels.

The regular practice of yoga, of course, improves your ability to monitor your body’s response to what you do and to judge whether something is benefiting you. Based on what you discover through this cultivated awareness, you can adjust your activity level, and again, notice how your body responds. It’s an ongoing process that leads to finer and finer awareness and better choices.

Meditation can play a vital role in helping manage the pain of FMS. Practitioners learn in meditation to tune directly in to their experience and separate painful sensations, which may be bad enough, from their ideas and feelings about the pain, which can be worse, fueling the fire of suffering. By cultivating the ability to selectively focus your awareness, meditation may also help you modulate the pain sensations down to a more manageable level.

Yogic Tool: SANGHA, meaning community. The love and support that can come from a community of yoga teachers and practitioners can be therapeutic, especially because FMS sufferers may feel alone and misunderstood because of their illness. Many people with FMS also find it useful to connect with each other, either informally or as part of FMS support groups, in person or via the Internet. Support group members often share information with one another on research developments and recommend supportive physicians and other health care professionals.

The Scientific Evidence

A 1999 study led by Dr. Patrick Randolph, then director of psychology services in the Pain Center at Texas Tech University Health Sciences Center, found that a program of gentle yoga stretches and mindfulness meditation both reduced the pain of fibromyalgia and improved patients' ability to cope with it. The uncontrolled study examined sixty-seven patients who used the mindfulness- based stress-reduction (MBSR) program for as long as seven years, in addition to standard medical and psychological care. Patients attended yoga classes and were also asked to meditate for forty- five minutes a day while listening to an audiotape. Of the participants, the majority of whom were Christians from rural Texas, 78 percent reported an improvement in mood, 80 percent said their ability to handle stress was increased, 86 percent noted better pain management skills, and 98 percent indicated that they had learned something of lasting value. Of note, 90 percent indicated that the program was "moderately" or "highly" consistent with their spiritual beliefs, and a similar percentage found that the program enhanced their spiritual growth.

A study by Kenneth Kaplan and colleagues at the Newton-Wellesley Hospital in Massachusetts found that a ten-week MBSR program for seventy-seven people with FMS resulted in less pain, reduced fatigue, an increase in well-being, more restful sleep, and better mental health. All fifty- nine patients who completed the program improved and more than half showed moderate to marked improvement (there was no control group). In addition to mindfulness meditation, the program included gentle yogic stretching, breathing exercises, and guided imagery. Other studies of MBSR led by Dr. Jon Kabat-Zinn have found that the program reduces pain and improves mood in patients with chronic pain. For more details on Kabat-Zinn's studies, see pp. Chapter 9.

Sam Dworkis's Approach

As the ancient yogis knew, Sam says, "controlling the breath is the precursor to controlling everything about your life—the physical body, the emotions, and the spirit," and breathing is key to Sam's approach. Used appropriately to calm an overtaxed nervous system and induce relaxation, it can be "the fundamental key that unlocks the tightness of the body." He emphasizes breathing gently and evenly throughout the exercises, never forcing the breath. Although the goal is to breathe entirely through the nose, he tells those students who find nose breathing uncomfortable at first to breathe through the mouth for the time being, and soon all of their yoga breathing will be through the nose.

Yoga teachers like Sam often give people with FMS gentle stretching exercises to help relieve tightness of the fascia, the soft tissue that wraps (and links) muscles and organs in the body. These stretches, particularly when coordinated with the breath, he believes, stretch and loosen the fascia and make movement easier and more pain free. Although the medical profession tends not to pay much attention to fascia, yogis and bodyworkers find it plays a role in many conditions from back pain to carpal tunnel syndrome. It was

partly the palpable tightness of her fascia that convinced Sam that Jill had FMS. "The more symptomatic I find people are with fibromyalgia or fibromyalgia- like symptoms, the tighter the skin is to the underlying structures." He says he can often tell where people have pain just by the tactile feel of the fascia.

Sam devises routines that are closely tailored to each patient's needs and abilities. In Jill's case, he noted that she had weakness, numbness, tingling, and some difficulty with coordination. In the aftermath of her neck surgery, her symptoms were more pronounced on the right side of her body. She had poor posture, with shoulders rounded forward and stooped, head protruding forward of the neck.

The asana practice Sam created for Jill was designed to energize her and realign her without causing her to overexert. He wanted to break into the "insidious cycle" that afflicts so many FMS sufferers: a sedentary life, due to the fact that exercise is so painful; the lack of exercise and resulting weight gain can fuel depression, which makes it even harder to overcome the lethargy of FMS. Sam says that almost all the people who come to him in chronic pain are overweight, and Jill was no exception. He describes typical chronic pain sufferers as having "a heaviness about them, a darkness about the eyes, a dullness of the skin."

With all of Sam's exercises, the operative principle is that less is more. He tells every client that on a scale of one to ten, from completely passive with nothing going on to very vigorous and really painful, he wants them to work at a level of two approaching three. This is very subtle work. Though it might seem that such an approach would not yield any results, Sam finds that this is the best way to make steady progress and avoid injuries and other setbacks.

Here is the sequence of the poses and instructions that Sam provided for Jill.

EXERCISE #1. SUPPORTED RELAXATION POSE (Savasana). Set up your props to support your body in your most pain-free, neutral, reclining position. Use as many props as you need to completely relax. Once you are comfortable, bring your attention to your breathing, and stay with it for the remainder of Savasana. Don't try to actively control the breath; instead simply tune in to the gentle rhythm of air coming in and going out. If you remain calm and comfortable, you can stay in the pose twenty minutes or longer.

Jill couldn't lie flat on her back because her neck and shoulders were sore, so Sam used various props to create a wedged platform to support her body at a slight angle. He also placed a small pillow under her neck, and supported her arms and legs so they were aligned with her torso (figure 17.1). The net effect is as if she is in a "reclining chair," with the legs elevated and the arms supported.

Figure 17.1 Supported relaxation

The length of time that Sam might keep a new student in this supported position depends on what he observes. He says, “I’m like an eagle, watching all the time for their level of agitation or discomfort.” With Jill, the timing was twenty minutes or longer because the support allowed her “to be more comfortable than she’d been in ages, even more comfortable than lying in bed.”

How much more than Supported Relaxation pose Jill did in a given session depended on how she was doing that particular day. Sam explains that progress in yoga is like the stock market. Some days you’re going to feel better and do more, and some days you’re going to feel like you’ve never done yoga before. That’s true of Sam’s own practice, too. “There are days I walk down the stairs for my morning practice, and I’ll be able to do twenty or thirty Sun Salutations like I did the day before. The next day I’ll spend my entire session in a supported, relaxed breathing position, because that’s all I can do that day—and it doesn’t matter.” Sam says that it’s doing only what you can comfortably do at any moment, even if it’s just breathing in a supported position, that’s going to take you in the right direction. He knows it may sound far-fetched, because in our culture the emphasis is always on trying hard. “Everybody in gym class from day one is taught to compete and to try.” He explains that competing and trying is not going to get FMS sufferers the recovery that they’re looking for. To heal, you need to accept the reality of where you are right now and respond appropriately, not try to force something that your body is not ready for.

EXERCISE #2. ELBOW MOVEMENTS IN RELAXATION POSE (Savasana). After you have set the basic foundation of body, mind, and breath coordination in Relaxation pose as described above, you can begin to move your arms, one at a time. Keeping your hand cupped and relaxed, inhale and bend your arm at the elbow. Exhale and release your arm back down to the support. Move your arm slowly and mindfully, always coordinating your movement with your breath. Practice this movement three times on one side, then repeat with the other arm.

Elbow movement in supported relaxation

Key to Sam’s philosophy is beginning by moving only one arm at a time. He says that when your sensory system is already overloaded by chronic pain, moving both arms means “two times the sensory input going into a brain that’s already compromised.”

EXERCISE #3. HAND AND ELBOW MOVEMENTS IN RELAXATION POSE (Savasana). Repeat the arm movements from exercise #2 while straightening your fingers and thumbs to stretch your palms. Sam believes that when the palm of the hand is active, it helps the elbow and shoulder to open more, and creates a sense of lightness. As in the prior pose, do the arm movement three times on each side, coordinating with breath, adjusting to your capacity, as always.

Hand and elbow movement

EXERCISE #4. SHOULDER MOVEMENT IN RELAXATION POSE (Savasana). While you are still in Supported Relaxation pose, straighten the fingers and thumb of one hand as in exercise #3, with the palm facing upward to the degree that is comfortable. Keeping the elbow straight, on an exhalation, raise your arm from your shoulder and move it up and over toward your head. As you extend the arm, the thumb will move toward pointing at the ceiling (figure 17.4). How high you lift the arm depends on the mobility in your shoulder at any given time. If you experience any pain at all, you’ve gone too far. Inhale as you come down. Repeat two more times on that side and then switch sides.

Because Jill’s shoulder mobility was limited, Sam placed props on the floor behind her head to support her arms, so there would be no tension or strain. Because she had less mobility in her right arm, he propped that side about 10 or 15 degrees higher.

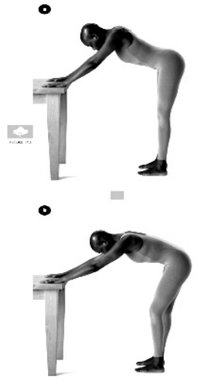
Figure 17.4 Shoulder movement

The main purpose of the following exercise is to stretch the fascia in the arms, shoulders, trunk, hips, and legs. For example, you gently move the hand away from the shoulder to stretch the arm. To explain the concept of moving two body parts away from each other without strain, Sam picks up an old rubber band and holds it loosely between the index fingers of his two hands. First he demonstrates pulling the rubber band rapidly with one hand and shows how the stretch is uneven and very often the rubber band will snap. Then he demonstrates pulling the rubber band slowly and evenly with both hands. “You can see how the fibers of the rubber band seem to stretch more evenly along its entire core,” he says. “Stretching your arm in this fashion allows the skin of your arm and then the underlying fascia to gently start to stretch.”

EXERCISE #5. WIGGLE AND WAGGLE. Start by facing a kitchen counter or tabletop and placing your palms flat on the surface. Position your feet so they are six to eight inches apart and slightly turned out. As you step backward, fold forward at the hips until your arms are extended fully and you have reached an angle that does not create pain anywhere in your body. Bend your knees as much as is necessary to keep the spine from rounding. From there, subtly “lift your tail feathers” to gently stretch your hamstrings (thigh muscles) and the fascia (connective tissue) at the back of the thighs (figure 17.5a).

To do the pose correctly, make sure you are keeping your shoulders moving downward away from the ears, allowing the neck to remain relaxed. Also, keep your head a little higher than your spine, but not tilted back. When you turn your head from side to side, you should always be able to look above your arms and shoulders.

To begin the wiggle and waggle, bend your left knee without moving your arms. Then, on an exhalation, begin to stretch the right side of your body (figure 17.5b). “Pull your rubber band evenly from both ends, from the hands to the hips,” Sam says. On your inhalation, return to neutral. Repeat two more times on the right side only, moving with your breath. Then return to center, making sure your neck is still relaxed, and do the exercise on the other side three times.



Figures 17.5a and 17.5b Wiggle and Waggle

Sam calls the wiggle and waggle “the fundamentally most important exercise in yoga for chronically ill and injured people.” In fact, he gives it to every single client, from those who are chronically ill and in pain to those who are young and physically agile and very athletic. For people who are significantly out of alignment, and Jill was slightly, he explains that over time the tightness of the soft tissue that’s taking them off plumb will resolve itself. Sam says, “Athletes and nonathletes alike get significant release with this exercise, promoting flexibility.”

EXERCISE # 6. THE WINDMILL, thirty to sixty seconds. Start by standing with your feet hips’ width apart and your arms at your sides. Turning your torso, swing your arms from side to side, bending at the knees and pivoting on your back foot like a golfer hitting a drive (figure 17.6). Let your breath flow smoothly. Alternate between the left and right sides, always pivoting on your back foot and allowing your back heel to come off the floor to make sure there’s no torque on your knees.

Figure 17.6 Windmill

EXERCISE #7. SUPPORTED RELAXATION POSE (Savasana). For the final Relaxation pose, use props to support your head, arms, and legs in a pain-free, neutral, reclining position. You may find that you need considerably fewer props at this point than in the Relaxation pose at the beginning of the practice due to the fascial release (softening of connective tissue) created by preceding poses.

These seven exercises were the extent of Jill's initial practice sessions with Sam. Later on, as Jill improved, he added gentle Sun Salutations. To make the Sun Salutations less likely to cause problems, he made the following three modifications:

1. Keep your hands on your waist when bending forward and when coming up (figure 17.7a). Sam has found that when students go into or come out of forward bends with their hands over their heads, it can worsen their FMS symptoms.
2. Rather than doing Cobra pose or Upward-Facing Dog, do Sphinx pose, with your forearms on the ground (figure 17.7b).

Three modifications of Sun Salutations Sam recommends.

3. Keep your knees bent in Downward-Facing Dog pose (figure 17.7c).

Figure 17.7a Modified forward bend

Figure 17.7b Sphinx

Figure 17.7c Modified Downward-Facing Dog

OTHER YOGIC IDEAS

In her long career as a yoga teacher, Ana Forrest has only met one man who said he had fibromyalgia. All the others have been women and, all of them, bar none, breathe poorly, she says. For many of them, she has observed, there is an emotional component to the condition. They seem unable or unwilling to express what they're feeling, so there's a huge emotional backlog that remains lodged in the tissue where it causes pain. She finds deep-breathing practices to be extremely useful. She might tell a student with FMS, "Let's go into where in your body you feel that despair and that sadness, and let's breathe into that, and release as much of it as we can." Says Ana, "If we did our work well, there'd frequently be a whole outpouring of tears," in addition to a lessening of pain.

OTHER YOGIC IDEAS

Roger Cole has heard from several students with FMS that Iyengar restorative poses (see Chapter 3) "are what saved them." He thinks it makes perfect sense that restorative poses would be helpful, because they stretch muscles passively, while providing much-needed deep relaxation. He recommends in particular supported forward bends such as Paschimottanasana with the forehead supported by a folded blanket or your arms placed on a chair (as long as you don't have lower back problems) (top) and supine twists such as Jathara Parivartanasana with bent knees, which can be supported by folded blankets (bottom).

Supported forward bend

Supported supine twist

Contraindications, Special Considerations, and Modifications

Some people with FMS get light-headed when they change position quickly. Moving slowly from pose to pose and taking particular care when coming out of standing forward bends, inversions, or other poses when the position of the head moves from low to high can prevent this symptom or lessen its impact.

Many vigorous yoga classes—as well as activities like aerobics, jogging, and basketball—involve jumping. Most experts consider such high-impact activities contraindicated in FMS. On the other hand, perhaps the worst thing you can do is nothing. Being inactive leads to deconditioning of muscles, which over the long run may result in even greater pain.

Normally in yoga, you should always let pain be your guide: If a pose hurts you at all, you should modify it so it doesn't hurt or you shouldn't do it. This rule of thumb may be even more important for people with FMS to follow. If you push yourself to do a yoga pose or any other exercise when you are experiencing discomfort, you may regret it the next day. To prevent overdoing, it can be helpful to take breaks between asana, resting in Child's pose or Savasana before resuming your more active practice.

Kristin Thorson says, "More often than not, people with fibromyalgia do not know that they have overdone it until the next day or a few hours later, once they are home and wondering, 'What did I do?'" To sort out whether a practice is safe, don't just notice how you feel when you are doing it but try to tune in to longer-term trends. Do you have less pain than usual the day after asana practice? Are you more relaxed and energetic? If you practice regularly does your mood improve? How about your sleep? These may ultimately be more reliable indicators of whether the practice is benefiting you than how you feel while doing the poses, though that should feel good, too. If you tune in to yourself carefully, Kristin believes yoga will help you build strength and stamina. It may take you longer than it would the average healthy person, but you can achieve long-lasting results.

One final consideration with FMS is when to do your yoga practice. Most patients experience less pain and stiffness from the late morning through the midafternoon. If this is true for you, and your schedule allows, try to time your asana practice accordingly. Practices such as pranayama, meditation, and deep relaxation can be done whenever it is most convenient. As your internal awareness evolves, you will increasingly be able to tell what times are best to do yoga and you may discover that what works best for you doesn't fit the rules of thumb listed here.

A Holistic Approach to Fibromyalgia

Poor sleep can increase pain and fatigue during the day. Steps to improve sleep include getting up at the same time every day, winding down before bedtime, and if necessary, taking medication such as a low dose of a tricyclic antidepressant (see Chapter 23).

Since a significant minority of people with fibromyalgia also have sleep apnea, your doctor may want to investigate this possibility.

Cognitive-behavioral therapy appears to improve coping and mood.

For people with depression, antidepressant medication (at higher doses than that used for sleep) can help. Note: some of the newer drugs like Paxil (paroxetine) and Zoloft (sertraline) can contribute to sleep problems.

Two supplements that may be helpful in depression, S-adenosyl-l-methionine (SAM-e) and 5- hydroxytryptophan (5-HTP), may also improve tender point soreness.

Nonsteroidal anti-inflammatory drugs like ibuprofen and naproxen, as well as the pain reliever acetaminophen, aren't generally effective for FMS pain.

Oral narcotics can be a good option for pain control. Few people with chronic, painful conditions like FMS get addicted to these drugs, though side effects like sedation and constipation are common.

Doctors who have been trained to do it (for example, some rheumatologists and primary care doctors) can treat pain by injecting a local anesthetic directly into tender points. The treatments usually need to be repeated for maximal effect. Note: the skill of the doctor doing the injections is key.

Another potentially helpful technique, which some physicians do, involves spraying tender areas with an anesthetic spray and then stretching the underlying tissue.

Topical pain relievers such as capsaicin rubbed into sore muscles can lessen discomfort.

Acupuncture can be beneficial and is very safe.

A recent survey on nondrug therapies conducted by the Fibromyalgia Network found that massage, which can lessen pain and relieve stress, was the treatment recommended by the highest percentage of patients. Note, however, that vigorous, deep-tissue massage may make pain worse.

Other modalities favored in the survey included the application of heat, either via heat wraps or hot tubs, and chiropractic care, particularly when the treatment was complemented by acupressure techniques.

Some doctors surveyed by the Fibromyalgia Network believed that osteopathic manipulation may be even more effective than chiropractic.

The survey also found that learning all they could about the disease and following developments in research allowed people with FMS to cope better.

Jill found the yoga she was doing with Sam so subtle that for a while she wasn't even sure it was helping. "At first I felt like I wasn't getting anything out of it, but I stuck with it. There were many times when I didn't even want to get up and go." However, if nothing else, she was motivated by the relaxation, which was deeper than anything she'd experienced. As she told a friend in the early days of her sessions with Sam, "I really don't know yet how it's going, but the hour and a half of complete relaxation is worth it

all." After several months, she says, "I couldn't wait to get up and go there. And I don't know when that transition was made. It slowly crept up on me."

Now Jill says, "I feel like I've come a long way. As I progressed, I saw changes in my body. My clothes were fitting differently. I've lost some weight. My strength and energy level is better." She adds, "For the longest time, whenever I went somewhere, to a cocktail party or some other kind of gathering, halfway through I'd have to sit down, because I just didn't have the energy level, or I felt my back wasn't going to hold me up. Sam has taught me a lot about the union and balance of my body, and I've gotten better. All of a sudden I notice, my God, I never sat down this evening. I didn't feel the fatigue, and didn't feel a twinge of pain."

Jill says, "Am I 100 percent? No. But, I'm stronger, and I'm doing things with Sam—being able to balance my body, and having the strength to do yogic positions—that I'd never even thought I could do when I was eighteen, much less forty-eight. The pain, when I first came to him, was like having a fifty-pound weight on the upper part of my spine. That's completely gone." Even with the yoga, Jill confesses that her mind still goes nonstop. "I'm someone who's thinking of ten things that have to be done at all times." But yoga, she says, took "the sharp edges and rounded them."

Although her condition is vastly improved, how much Jill can do still varies day to day. Says Sam, "Today Jill might come in, do a couple of windmills, the wiggle and waggle, up to ten Sun Salutations, and start to sweat, with no discomfort at all. Sometimes, though, she only does four Sun Salutations, and we have to modify them so she doesn't exacerbate her pain." Jill has started to practice regularly at home between lessons and, as Sam has taught, has learned to modify her practice as needed.

Perhaps the most satisfying result of Jill's yoga practice is the change in her ability to ride horseback. When she began yoga, she'd get pain after riding for ten or twenty minutes. Now she can ride for an hour or longer and walk away without pain. Not only that, but yoga even seems to be having an effect on the horses. "The reason," Sam explains, is that "in nature, all the horse wants to do is find its balance. Then we take an imbalanced human being and put her on a perfectly balanced horse and we screw the horse up." People who practice yoga have a better sense of both physical and emotional balance. A number of equestrians who have become Sam's students are discovering that "the more yoga they're practicing, the easier it is to get the horses to respond to their commands. It's amazing."