

# I

## WHAT YOU NEED TO KNOW

Part I contains the latest on what we know about myofascia, how trigger points (TrPs) form, the TrP/fibromyalgia (FM) connection, and what happens when TrPs become chronic. It explains how TrPs interact with each other, and with other conditions. You'll discover how TrPs can cause and/or maintain FM, and why the ability to control TrPs directly affects the control of FM symptoms. Kinetic chains are included here, as is a list of some TrP non-pain symptoms that may surprise you and give you a sense of hope. The key to controlling many symptoms rests with the control of TrPs, and the key to controlling TrPs is identifying and controlling perpetuating factors. This information is contained in this segment as well.

This part is packed with information you will need in order to understand Parts II and III, so strap on your seat belt and let's begin.

# 1

## General Overview

### What This Book Is

*Healing through Trigger Point Therapy: A Guide to Fibromyalgia, Myofascial Pain and Dysfunction* is written primarily for patients with chronic pain and those with other previously unexplained symptoms associated with fibromyalgia (FM), trigger points (TrPs), and chronic myofascial pain (CMP), and for their care providers of all varieties. It is designed to facilitate communication among them, and to be used as a tool for FM, TrP and CMP diagnostics, care, treatment, and prevention. TrPs are one of the main factors generating and perpetuating FM pain and other symptoms, no matter what initiated the FM. The FM amplifies the pain and other symptoms. TrPs can cause acute or chronic pain, as well as a surprising diversity of seemingly unrelated symptoms that are often mistakenly linked to FM. The TrPs can mimic many conditions, causing diagnostic confusion. TrPs tend to refer pain in specific referral patterns. This book can help match symptoms to the TrPs generating those symptoms, and will provide the knowledge you need to bring those symptoms under control. It is also a tool that you can use to help explain those symptoms to others. TrPs can cause such diverse symptoms as impotence, loss of voice, pelvic pain, muscle weakness, cardiac arrhythmia, menstrual pain, irritable bowel syndrome (IBS), clumsiness, toothaches, shortness of breath, headaches (even migraines), and incontinence. The good news is that TrPs can be treated, and they can be prevented. Control of TrPs results in control of CMP and FM, and can help with control of coexisting conditions by minimizing symptom burden.

Everyone needs to be familiar with TrPs. They cause symptoms that mimic conditions seen by general practitioners and every type of specialist. Every medical care professional has seen patients with TrPs, although TrPs are often unrecognized as the symptom cause. TrPs can cause a number of altered sensations, including numbness, itching, dizziness, burning, prickling, heat, or cold. The older population needs to know about TrPs,

because they are treatable causes of range of motion (ROM) loss, muscle weakness, pain, and other symptoms often blamed on “old age.” Osteoarthritis (OA) may be minimized if related TrPs are promptly treated. Prompt control of TrPs can prevent FM from developing, and minimize its impact once it has. Those involved with children need to know too, because “growing pains” are due to TrPs. Athletes need to know this material, because TrPs are one of the most common sources of musculoskeletal pain. Physical therapists need to know, since strengthening exercises worsen the muscle weakness caused by TrPs. Insurance agencies need to know, because prompt diagnosis and treatment may avoid surgery and other major expenses later. Chronic pain patients need to know, because most chronic pain conditions have a treatable TrP component, and treating TrPs can substantially relieve the symptom burden. For example, pain and ROM in an otherwise well-treated case of arthritis may be significantly improved by treating the TrP component.

This book will enable the medical care team to treat more efficiently, and will teach patients what they need to help regain function and gain some control over symptoms. TrPs may seem complicated, and for the most part they are, but they are also very treatable. This book will show you where and how to look for the TrPs for each symptom. You will learn what can perpetuate each TrP. Both patients and care providers will learn how to treat and prevent them.

This book offers empowerment and hope to patients, and direction to care providers. FM and TrP symptoms are real. Although we don't currently have all the answers, a great deal is known, but the practical applications of the latest research are not often in use. This book will help bridge that gap. We believe that there's already too much pain involved in FM and TrPs, and have attempted to make this book as understandable and pleasant to use as possible.

## What This Book Is Not

*Healing through Trigger Point Therapy: A Guide to Fibromyalgia, Myofascial Pain and Dysfunction* is not a substitute for an education in FM, TrP and CMP medicine. Patients with these conditions need a GREAT medical team. This book will help patients find such a team and help care providers to become part of one. In the best of all possible worlds, every health care team and every patient would be one that considers and understands chronic pain management, including TrPs. This world does not exist yet, but this book is part of the effort to transform medical care into a more efficient, user-friendly experience.

# 2

## Muscles: Your Moving Machine

If you are reading this book, you probably have pain or know somebody who does. You may be a care provider. Unlike other systems of the body, the fascia and muscles have been orphans. Although myofascial texts have been published and documented, and many myofascial research papers are available in the medical literature, tight and rigid minds are more difficult to change than tight and rigid muscles. TrPs are not “controversial”; that term implies scientific evidence on both sides. As you will see, TrPs have been imaged by the National Institutes of Health and the Mayo Clinic. They are very real. Understanding TrPs requires a paradigm shift—it’s a different way of looking at something that’s been here all along. Myofascial pain is not a “belief system”; it is a medical and scientific reality. As you will later find out, fibromyalgia pain is largely maintained and may be initiated by TrPs. The ability to control TrPs is the ability to control FM. Even many symptoms blamed on “old age” may be at least partially due to TrPs, and those TrPs can be treated. So where and how does TrP pain originate?

### **Fascia: The Force That Connects**

Bones don’t hold together by themselves, nor do muscles. You’re held together and given shape by connective tissue. Blood vessels, lymph, nerves, and other structures are supported by and meander through fascia (pronounced fass-e-ah or fash-ah). Fascia is connective tissue that forms a three-dimensional network in your body. It’s an internal web, providing both structure and a medium through which your body repairs tissue, fights infections, and works its metabolic miracles. The words “fascial” and “facial” look similar, but they’re not the same. Your face has fascia, but so does the rest of your body. In the universe of the body, fascia is the force that connects.

When fascia gets stuck to other tissue, your muscles may feel as if they’ve been tied in knots. In a way, they have. Unraveling stuck, unhealthy fascia is a key to relieving many forms of chronic pain and dysfunction.

Fascia comes in many varieties. Fascia covers the organs and helps support them. The dural tube is a long bag of specialized fascia that contains your spinal cord and the fluid that lubricates it. Specialized fascia forms the linings in your chest and abdominal area, and the bag surrounding your heart. Fascia forms scar tissue and adhesions. Myofascia is fascia surrounding and permeating skeletal muscle. At the molecular level, myofascia has an organic crystalline component that can generate and conduct electrical fields. This piezoelectric (pie-ee-zoh-...) ability is greatly affected by how well your tissues are hydrated. Hydration is dependent not only on adequate water intake, but also on other variables such as the health of your cellular membranes, of your fluid transport system, and of your myofascia itself.

There is important material in myofascia called ground substance. In young, healthy people, ground substance is like soft gelatin, absorbing the traumas of life. Life creates changes, and ground substance reflects those changes. Biochemical and mechanical traumas transform the texture of the ground substance: what was soft and flexible becomes thick and gluey, tightening the myofascia. Your muscles and your cells are wearing a three-dimensional wetsuit that is several sizes too small. It becomes more difficult for nutrients and other biochemicals to move through the myofascial network, and harder for wastes to be removed. The tightening of ground substance is a reversible process, but does not happen on its own.

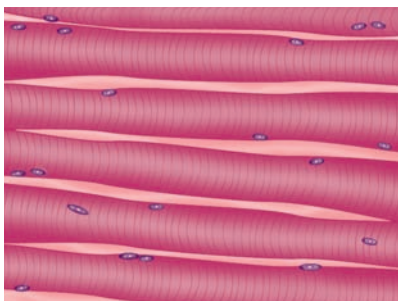
## Muscles: The Inside Story

Anatomical terms are explained in this book because they are specific and useful. Medical appointments can be more efficient when patients arrive, book in hand, saying “I have a typical gluteus minimus pain pattern, just like on this page,” rather than a vague “my hip and leg ache.” Patients will find it worthwhile to become comfortable with words that describe conditions and anatomical parts. You already use words derived from Greek and Latin every day. For example, the word “muscle” is from Latin for “little mouse,” because the biceps brachii muscle looks like a little mouse when it contracts your upper arm. To understand TrPs, you need to know how muscles function in order to learn how they become dysfunctional. Then you can start helping them to heal. We’ll start with the muscle types that most of us understand, or think we do:

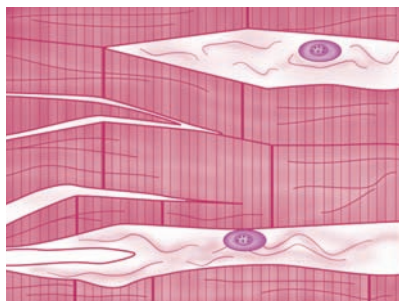
1. **Skeletal muscle**, the muscle type we will mainly focus on in this book, is under the voluntary control of your nervous system. To move skeletal muscle, your brain—director of the central nervous system (CNS)—communicates with the nerves in the outer areas of your body (peripheral nerves). Once you learn a movement, each time you perform it you will recruit muscles needed to complete the action in the same sequence every time. If you have learned a movement incorrectly the first time, you will perform that movement wrong every time. This can be corrected, but the process requires a lot of patience, commitment, and willpower. The correct movement sequence must be performed many times before it becomes natural. TrPs affect muscle recruitment order.
2. **Cardiac muscle** is heart muscle: it works without being told to do so, which is a very good thing for us! It is therefore involuntary muscle.
3. **Smooth muscle** is also involuntary muscle; it moves things too. This muscle is found in the blood vessels, gut, and stomach, and helps to move blood, digested food, and gases.

Skeletal muscle comes in different shapes. It’s formed of muscle fibers and the direction of those fibers helps fingers identify the muscle and the kind of work it does. Each skeletal muscle is infiltrated by myofascia. There’s really only one continuous muscle in your entire body; it’s just squeezed into 657 individually wrapped fascial envelopes. The belly (or gaster) of the muscle is the central part. Where the muscle fibers end, the sticky myofascia forms ropes called tendons, that attach the muscles to wherever they belong. Tendons have a limited blood supply, so they look pale compared to muscles, and they heal much more slowly.

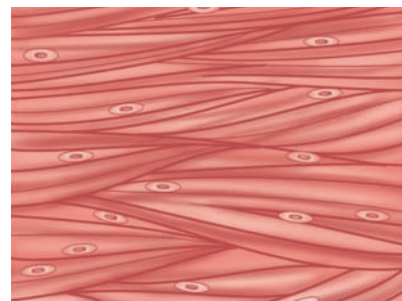
Tendons link muscles to the lining of the bone by becoming periosteum. The periosteum is the fascia of the skeletal system. It covers all of the bone except for the joint cartilage. Tendons come in assorted sizes and shapes, with a great deal of variation, just as muscles do. Some tendons are big flat sheets that can cover large expanses of your body. These are called aponeuroses, and if there is only one of them, it’s an aponeurosis. Tendons can be either thick or thin. There are also areas where the muscle bag blends right in with the tendon. Those tendons are called raphe, from the Greek, meaning a “seam.” You can see these tendon types in the figure opposite. Ligaments also come in sheets or bands, and they connect bones to other bones. These are only some of the types of connective tissue in the body. Your body is an ecosystem of its own. Everything is connected to everything else.



a)

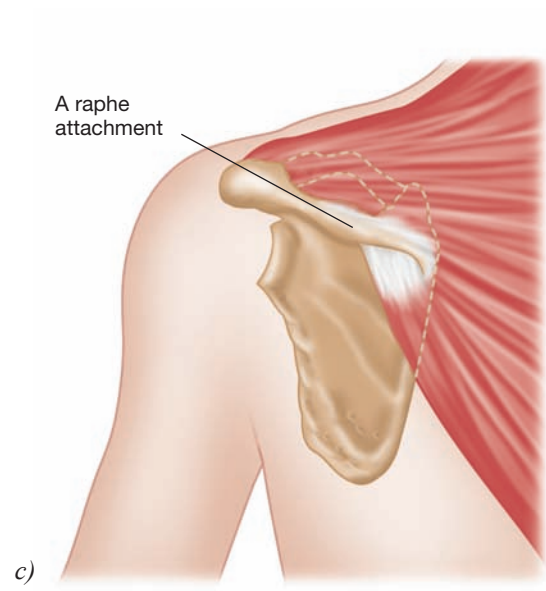
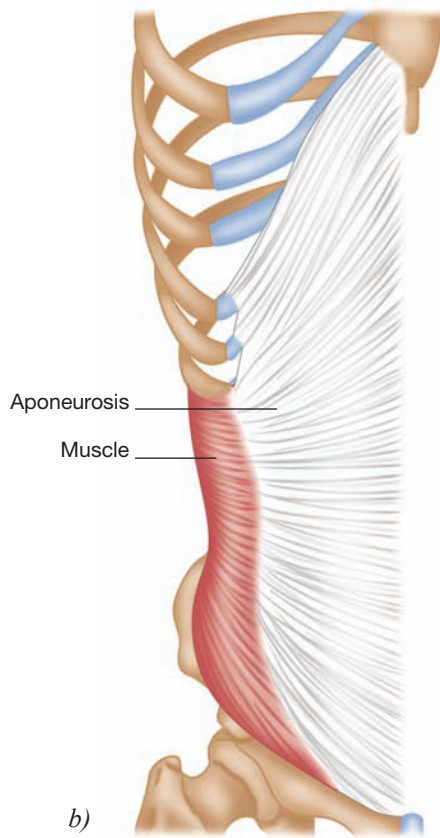
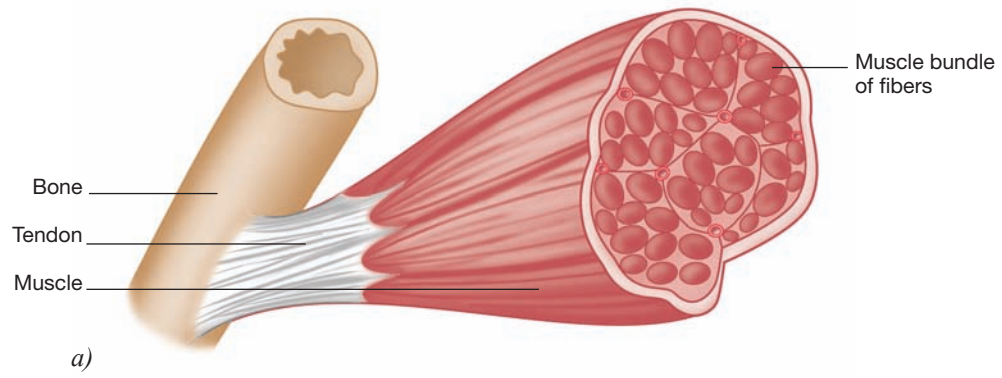


b)



c)

*Muscle shapes: a) skeletal muscle, b) cardiac muscle, c) smooth muscle.*



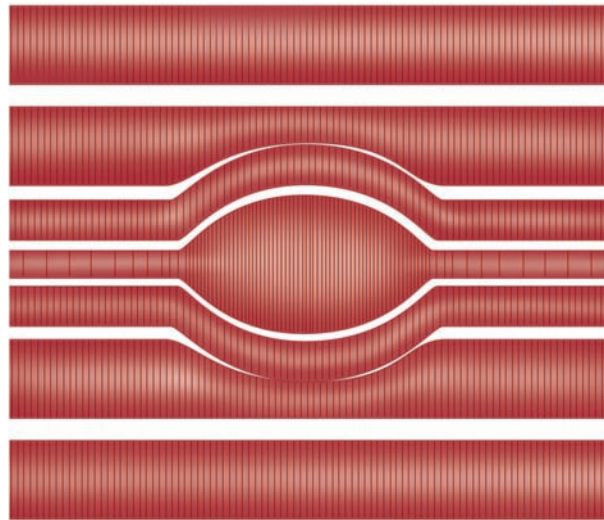
Muscle attachments by: a) tendon, b) aponeurosis, c) raphe.



Do muscles control movement? The answer is no. Muscles *facilitate* movement. The nervous system orchestrates movement: we cannot have quality movement without first having appropriate information. Special units located throughout the entire body, called “proprioceptors,” send this vital information to where it is needed. Proprioceptors tell you where parts of your body are in both time and space, and without this information you’d be forever bumping into things. (When they are dysfunctional from TrPs, you do bump into things.) There are specialized units in your joints, your fasciae, your muscles, and so on, all providing valuable feedback. In response, your nervous system recruits muscles in the most appropriate fashion, creating a tension or force which, in turn, “pulls” on the fascia, resulting in coordinated movement. Amazing! Close your eyes and touch something. Without seeing, you can tell simply by touch if it is wet, moist, soaking, hot, cold, tepid, roasting, cool, freezing, rough, smooth, uneven, metallic—and the list goes on. Wow! If you touched something and it burned your fingers, that information would result in you immediately withdrawing your fingers from the burning surface. This is an example of how the nervous system controls movement.

A muscle doesn’t function alone. Muscles function in synergies. A synergy is the interaction of two or more cooperating groups or forces so that their combined effect is greater than the sum of their individual abilities. Muscles can only pull; they cannot push. When one or more muscles lengthen, the opposites of these muscles shorten. These synergies work in conjunction with other systems. Tendons and ligaments move as well, supporting, protecting, and acting as part of the team. Motor coordination requires the integration of a vast number of communications. Messages are continuously traveling throughout the body and mind, allowing the simple acts that we take for granted, such as standing up, walking, and sitting down. These actions require not only the health of the individual components of the systems, but also the coordination of communication among the systems. The brain must be able to talk to the muscles. The sensory receptors in the muscles must be able to integrate those messages with other sensory input, and then provide feedback to the brain. Muscles have sensory units called muscle spindles that are a key component in this feedback system. Muscle spindles respond to muscle lengthening, sending information including how fast the muscle is lengthening and if the muscle is being held in the lengthened position. TrPs can disrupt this system of synergic action by affecting proprioception.

Muscle cells are long cylindrical fibers wrapped in myofascia. The space between the fibers is the critical fiber distance, and when muscles are injured or dehydrated, that distance is not maintained. This creates opportunities for fibers to stick together. Muscle fibers are formed into bundles called fascicles, also wrapped in myofascia. The long cylindrical muscle cells contain mitochondria, the body’s energy factories. Muscle fibers contain contractile units called sarcomeres, which are important in the formation of myofascial TrPs. Pain stimuli from the local areas directly affect the CNS, which is composed of the brain and spinal cord. When the CNS becomes overloaded with pain stimuli from peripheral areas, a state of central sensitization, called FM, can result.



*Relationship of trigger point, sarcomeres, and taut band.*

# 3

## Trigger Points: Cause and Effect

Fibromyalgia patients must understand this section, because your pain is directly maintained by peripheral stimuli from pain generators such as TrPs and arthritis. You need to control the peripheral pain generators before you can gain control of the pain amplifier, FM. Nearly everyone has TrPs at one time or another. Have you ever heard stories such as: “I broke an ankle when I was small, and it’s been weak ever since”? The bones have healed, so why is the ankle still weak? Most commonly, TrPs were activated at the time of the break or during immobilization after, and the soft tissue damage was never adequately treated. After the TrP treatment, the ankle will no longer be weak. We have successfully treated people who have had such symptoms for decades. Many of these patients had been told they had to “live with” these symptoms. The patients were grateful to receive healing, but some got angry later, grieving for their lost years. Consider the man impotent for 30 years, or the woman with IBS for 25 years. They looked at TrP patterns and recognized themselves. When they learned how long TrP texts had been available, they wondered why former care providers didn’t recognize the TrPs causing their symptoms. The universe has many mysteries. This lack of training is one; TrPs are not. Knowledge is power, and this book is about empowerment for patients and care providers alike.

### Getting to the (Trigger) Point

Myofascial TrPs are hyperirritable localized spots in taut bands within those muscle sarcomeres you met in the last chapter. You may not always be able to feel those ropy bands, but they’re there. Placing the muscle in a lengthened position exaggerates the bands and helps you locate them. Contraction knots—the lumps in the bands—can be small or large, depending on a number of variables, such as how many TrPs make up the contraction knots, the tissue consistencies, and the amount of fluid infiltration involved. When a muscle is burdened with one or more TrPs, it hurts to stretch that muscle out. There is pain at the end of the range of motion (ROM), so you avoid extending the muscle. This is not a sign of mental illness and “pain avoidance behavior”: it’s logical to avoid doing things that hurt. Some psychologists have trouble with this concept.

TrPs in each muscle cause a recognizable pain and/or dysfunction in a characteristic referral pattern. Sometimes those patterns are in the area of the TrP, but they may cover several muscles. The patterns may not even include the muscle that holds the TrP, because TrPs can *refer* pain elsewhere and can also alter sensations. Imagine having a constant itch you cannot find, or hearing a noise that won’t go away—until you find and treat the TrPs causing it. Referred pain is something you already know. Angina and heart attack can refer pain down the arm. (So can TrPs. They can mimic heart attack and other conditions very well, keeping Emergency Department staff busy and frustrated unless they know TrPs.) An irritated gall bladder can refer pain to the top of the right shoulder, abdomen, and upper back. In the body, everything is connected.

The pain patterns in this book do not have “X” to “mark the spot” of the TrP, as in many other books. TrPs can occur *anywhere* in *any* muscle, although they often occur in the muscle belly or where the muscle attaches to other tissue. They can also occur in any *layer* of any muscle, and each muscle layer can have multiple TrPs. You need to know anatomy to find them all. TrPs can also occur in other tissues, including scars, ligaments, tendons, skin, joint capsules, and periosteum, but myofascial TrPs have the most commonly recognizable referral patterns. Fortunately, these patterns have been mapped out, and we have a whole picture gallery of them in this book, and we include anatomical drawings so you can find their source.

Fascia contains protein that contracts it (Schleip et al. 2005). In low back fascia, there can be a thousand times more contractile protein than in surrounding muscles. Myofascia may form contractures slowly, a few sarcomeres at a time, even over the course of years, causing worsening stiffness as we age. Sometimes TrPs twitch. Patients might be able to feel or see that happening, as the muscle seems to jump visibly. Every time a TrP twitches, over 30 irritating biochemicals are released into your body (Shah and Gilliams 2008). These twitches can occur whenever you get successful treatment, and can be visible to the care provider. These biochemicals include nerve toxins, and acidify the surrounding area. When many TrPs twitch, or a few TrPs twitch a lot, patients can



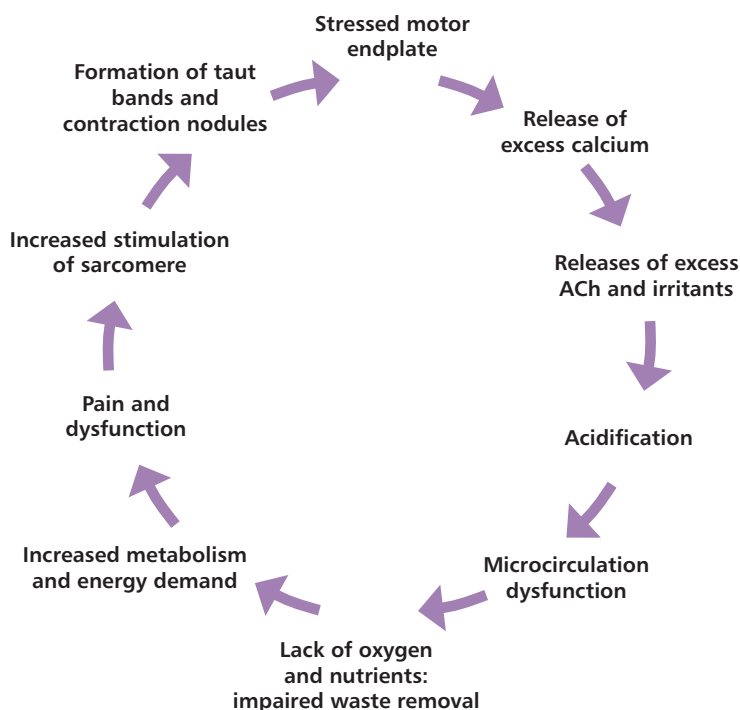
feel extremely toxic, with exhaustion, nausea, fatigue, and/or extra achiness. It takes time for these toxins to be processed and eliminated, so they need to be patient patients. Better the toxins are on their way out, rather than being stored within the tissues.

TrPs shorten muscles. Muscle fibers can contract without any input from the nervous system, without adenosine triphosphate (ATP)—the body’s main energy biochemical—and even without additional energy. The muscle is in physiological contracture—a tightened state that is different from contraction. A *contracted* muscle is shortened because it has been told by the nerves to tighten. A *contractured* muscle is shortened because the sarcomeres are shortened, without any message from the nerves. This is *physiological*. *You can’t relax a physiologically contractured muscle without outside intervention*. Tissues close to the TrPs develop a serious energy deficit. Because of increased tissue tension, which can itself cause pain, they get less oxygen. This worsens the energy crisis around the TrP, and adds to fatigue.

TrPs can cause dysfunctions of the autonomic nervous system, including itching, burning, redness, goosebumps, or other sensations, often in the typical referred pattern. TrPs can also cause proprioceptor dysfunction. Proprioceptors are sensory units that tell your body parts where they are in relation to the world around them. This includes the positions of other body parts. If your teeth don’t know where your cheek or tongue is, they can chomp down on part of *you* rather than on that sandwich you are eating. Your legs don’t lift your feet quite high enough when you walk, and you stumble over them. You are forever stubbing your toes or walking into doorjamb.

If this happens, it doesn’t mean you’re clumsy. You are simply proprioceptively impaired. Not only do some TrPs cause all of the above, but also their little (figurative) myofascial fingers wrap around nerves, blood vessels, lymph vessels, and maybe even ducts. So you can have nerve entrapment, which can feel like you are being hit with jolts of lightning, zapped by tongues of fire, or impaled on a sword of pain. You can experience swelling of the hands and feet if TrPs are entrapping blood vessels in your neck. Your breast may be lumpy from TrP duct entrapment. These localized symptoms are not caused by FM. Diagnosing TrPs is a challenge because they don’t show on common tests, and for a long time much of the medical world dismissed them. In 2008, the Mayo Clinic announced it had photographed the taut bands of TrPs (Chen et al 2008). The National Institutes of Health did a study on TrPs using this type of equipment, and verified that TrPs are real (Sikdar et al. 2008). They noted that “as many as 85–93% of chronic pain patients” in pain clinics have TrPs, and “almost 10% of the population of the USA” have them.

The figure here shows the chain reaction of the Integrated TrP Hypothesis as we know it today; it creates and perpetuates TrPs. At first, the flattened end of a local motor nerve, called the motor endplate, is stressed. The motor endplate responds to this stress by releasing excess calcium. The excess calcium prompts the release of excess amounts of the neurotransmitter acetylcholine (ACh). The area becomes more acidic, which inhibits the biochemical that breaks down ACh. These biochemical releases result in tissue tightness, and that tightness restricts the blood supply. This makes it difficult for nutrients and oxygen to get to the muscles and for the



*Cycle of misery: trigger point formation hypothesis as we know it today. These individual links in the chain do not always occur in this order.*

waste materials of muscle metabolism to be transported away, resulting in a state of energy crisis. The tissues in the area of the motor endplate are starving for oxygen and food, and burdened with excess waste.

The deforming of the sarcomeres creates the characteristic TrP contraction knot. Those knots are the lumps you can feel—or learn to feel—in your muscles. The sarcomeres on either side of the contraction knot lengthen, creating the taut band. Within the dysfunctional endplate area, there is a situation of increased energy demand and lower energy supply that is self-perpetuating. Muscles with TrPs begin the day tired (so do their owners) and become more fatigued more easily and quickly than healthy muscles. These muscles are *physiologically* weak. Repetitious strengthening exercises, like those often found in “work-hardening” clinics, don’t help TrPs. These muscles are crying out for more energy, and they are given more work instead, so the energy crisis gets worse. And it can all be amplified by FM.

## Active and Latent TrPs

Trigger points can occur directly from an initiating factor (such as repetitive motions) or secondary to another condition, such as arthritis or anything that can induce the energy crisis. They can even result from faulty muscle recruitment patterns. When a person performs an action—any action—many muscles contract to provide the tension and stiffness required to carry out the task without stressing joints. All the muscles don’t contract at the same time, but in a specific sequence or order. When “good muscles go wrong,” some muscles contract “too early” and others contract “too late,” with some muscle fibers not contracting at all! This state is called “muscle inhibition.” If the TrPs recur in spite of adequate treatment, look for the *perpetuating factor(s)*. These are mechanical and metabolic factors that keep the TrP(s) active and produce symptoms. The key to controlling TrPs is control of perpetuating factors. TrPs are activated by acute or chronic overload. Your introduction to TrPs may come from a sports injury, inappropriate physical activity, surgery, a fall, an unexpected movement, an auto accident, or a repetitive trauma. Even with acute onset TrPs, there may be delay in TrP formation. Active TrPs can hurt all the time, even at rest. The tendency is to back away from a roaring lion. You restrict your muscle movement and the pain may go away. The TrP does not; it has become latent.

Latent TrPs are like land mines waiting silently under the soil, ready to activate at any provocation. Latent TrPs don’t cause spontaneous pain, but they still cause dysfunction: the muscles are still shortened, tight, weak, and in an energy crisis. Younger people tend to

have more active, painful TrPs; older people have more latent TrPs, with restricted ROM and muscle weakness, because, in general, they move less. They have decreased their range of motion, because it hurts when they stretch TrP-laden muscles. Then along comes an infection, a fall, or other stressor. *Wham!* Those latent TrPs activate, and there is an unexpected pain overload. This may also occur in sedentary people. Often, one event initiates a TrP and another maintains it. For example, a head cold can cause many symptoms, including headache, stuffy sinuses, and a runny nose. It may also activate TrPs that cause the same symptoms. The TrPs and their symptoms may remain long after the cold is gone. TrPs are dynamic in nature. During the activation process of a TrP, or while it is in the process of becoming latent, spontaneous pain (occurring without outside pressure) may be present in the area of a TrP, without the typical referral pattern. Even with pressure, when the TrP is in this stage, the pain may only be local. For example, a temporalis TrP may cause pain that is restricted to the immediate area around the TrP, without characteristic referral to a tooth, the eyebrow area, or extended areas of the head. These transitional TrPs may be missed and the pain misdiagnosed, because the characteristic referral pattern is absent.

## Satellite TrPs

Uneven tightening of muscles caused by TrPs can affect joints. Bones follow muscles, so the bones can be pulled a little bit out of alignment by contracted muscles. This can cause wear and tear on the joints, and result in inflammation known as osteoarthritis (OA). This process includes TrPs that can affect your jaw alignment, causing wear and tear on the temporomandibular joint (TMJ). Others cause gait disturbances that, if untreated, may lead to hip and/or knee replacement. Much of this damage can be prevented, but if TrPs are not properly treated and perpetuating factors are not brought under control, TrPs can spread. This process is not progressive, because it is reversible. Simple TrPs, if diagnosed and treated promptly, can be easy to resolve. If, however, they remain untreated, your body compensates. You limit the way you move to avoid pain at the end of the movement. You set in motion habits that will further perpetuate TrPs, stress other muscles, and take time to unlearn. As muscles weaken from TrPs, other muscles are recruited to take up the work of the weaker ones. These muscles tend to be targets for spasm when others are stressed, including the trapezius, masseter, posterior cervicals, and lumbar paraspinals. Muscles that are in the referral pain pattern of a TrP are also subject to stress. These muscles can develop TrPs too. To find out what happens when one TrP becomes many, we need to explore the world of chronic myofascial pain and fibromyalgia.

# II

## THE GALLERY: IDENTIFYING THE SYMPTOM SOURCE

This section will teach you how to identify and deal with individual TrPs. Some muscle sections have two segments called **Hints for Control**: one for the care provider and one for the patient. Readers may find it enlightening to read both sections. There are stretches, but not all muscles are designed to be stretched the way one ordinarily thinks of the term, and that will be explained too. Each muscle or muscle group has an anatomical drawing (sometimes more than one), showing muscles in deep red, and indicating the direction of the muscle fibers; the fiber direction can help identify and treat individual muscles. The muscle-connecting tendons are in white. Other body structures are illustrated and labeled when they are important for TrPs or are helpful for locating the muscle. The referral patterns are shown separately: dark red in those figures indicates the most intense pain. The lighter and less dense red areas indicate spillover pain. Such expansion of the referral pattern is an indication that the TrPs are very active and exceedingly annoyed, and may indicate accompanying FM. Muscles and referral patterns can occur on both sides of the body, but we often show only one. If there are different referral patterns for the same muscle, depending on the location of the TrP, we at times will show one pattern on one side of the body and another on the other side. Referral patterns may vary from patient to patient, especially when there are multiple overlapping pain patterns and FM.

Those of you familiar with myofascial TrPs will notice something different here. You will not see “X”s marking guideline locations of TrPs, because TrPs can occur in any place in any muscle. This depiction was first pioneered by John Sharkey (2008). Others who have shown TrP “X” guidelines have had them misunderstood. People check “X” spots and, finding none, erroneously assume that the muscle has no TrPs. They may not even examine the associated attachments. Instructions for finding

TrPs by palpation (exploratory touch) and a blank chart are found in Chapter 14. Differences in referral patterns are important clues to TrP locations. Accuracy and completeness are important. For example, many referral patterns include part of the shoulder blade.

Eventually, readers with multiple TrPs will be drawing their own patterns. Pain areas and non-pain areas help to identify the TrPs. Our figures are depicted as if they were the only TrPs, because that's the best way to learn the individual referral patterns. In reality, TrPs enjoy the company of their own kind. They rarely occur alone. Each part of the gallery segment begins with a regional overview of that segment, including an example of a patient who has overlapping referral patterns. The overviews will help patients and care providers begin to think in terms of multiple TrPs and interactions among tissues of the body.

# 8

## Muscles of the Face, Head, and Neck

### Introduction

This book is divided into specific segments. Please understand that this separation is artificial, and that there's nothing unusual about a calf TrP referring pain to the jaw. Also, different areas of the head and neck interact, as do different tissues. For example, a runny nose may be caused by a variety of conditions, including TrPs, and the mechanical irritation of the drip itself may activate a number of nose and throat TrPs. Each of these TrPs may set up other TrPs. These TrP cascades can develop slowly or quickly. Once each of the TrPs is active and generating pain, healthier muscles attempt to compensate by taking on some of the workload for the painful weakened ones. The ground substance of tissues hardens, guarding the TrP-laden muscles and minimizing their pain-generating movement. The brain sends out signals to prevent full ROM because of the pain, and the muscle shortens even more. Welcome to the downward spiral. Fortunately, education can prevent this scenario, and that's what you'll find here.

**Regional Kinetics:** The head and neck region is open to attacks from allergens, infectious agents, and the trauma of dental work, and eye, ear, and throat conditions. This region of the body is most impacted, literally, by whiplash. The often-excessive response to collisions and other whiplash incidents can be explained by the startle response that provokes extreme muscle contraction (Blouin, Inglis, and Siegmund 2006). This response can even be provoked by abrupt loud noise. Extreme muscle contraction often translates into TrPs. Many headaches of many varieties, including migraines, have treatable TrP components. Instead of the term "tension headache," we often use the term "myogenic headache," because these headaches originate in the muscles. Tight muscles can have many causes other than psychological stress, and psychological stress is often the first thing we think of when we hear the word "tension." Many temporomandibular complaints have treatable TrP components. The child's earaches and unexplained toothaches, the senior's dizziness, and the teen's inability to listen may all have a common cause in myofascial pain. Many head and neck TrPs have symptoms often considered to be neurological until tests indicate otherwise. They are then often erroneously regarded as psychological.

When emotional and physiological stressors cause the shoulder position to creep upward to the ears, the head goes forward and the shoulders curl round and inward. The head-forward position can set up the body for increased trauma from subsequent abrupt muscle movement. If the tongue is out of its normal position of rest at the roof of the mouth, the hyoid bone is not in its healthy position and many muscles are out of alignment, setting them up for further injury. When the hyoid bone is out of alignment, the carotid artery may be entrapped, causing false-positive test results and diagnostic confusion (Kolbel et al. 2008). TrPs are often the reason that structures are not in healthy alignment. It's critical that diagnosis and treatment are prompt and sufficient, or permanent tissue changes could result. A high percentage of patients with TrPs in the posterior neck also have FM (Sahin et al. 2008). This state of central sensitization may erroneously be considered "functional," psychological, or "somatoform," by those who don't know any better.

**Regional TrP Comments:** Headaches, even migraines and one-sided cluster headaches, are often associated with TrPs. The TrPs can be initiating, contributing or maintaining factors and can lead to central sensitization. (Calandre EP, et al. 2006.) The central sensitization may begin with migraines or other localized manifestations but can often develop into generalized FM. Even in children, TrPs are a common cause of headaches (Fernandez-de-las-Penas et al. 2011). Although migraines may have persisted for years, some may be resolved or minimized with TrP treatment (Nelson, Fernandez-de-las-Penas, and Simons 2008). TrPs in any muscle, ligament, or tendon that can pull the jaw out of alignment could be involved in contributing to TMJD pain. They also can prevent muscles from performing integrated, efficient movements, thus adding to fatigue.

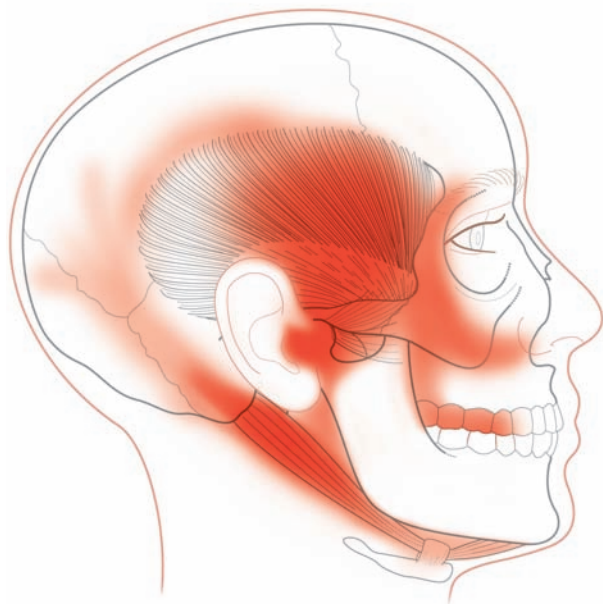
**Regional CMP Comments:** When CMP has developed in this region, it may be difficult to find the source of the symptoms, even if the care provider understands individual TrPs, because so many muscles may be participating in symptom generation. Justine Jeffrey, my (Starlanyl) TrP myotherapist, has invented words such as "shnead" to indicate a shoulder/head combination of symptom generators, and "shneck" for a shoulder/neck combo. Misleading symptoms of multiple TrPs



can cause use of unneeded antibiotics, initiating fungal overgrowth. Primary insomnia and sleep apnea are often related to TMJ pain (Smith et al. 2009), and that often involves TrPs.

**What does CMP look like? Here's a simple example:**

A 20-year-old college student came with a headache that had persisted for several months. The headache was located predominantly in the temples, although on questioning he admitted to intermittent tooth and jaw pain and eyestrain on the right side.



*CMP patient pain pattern.*

History revealed he'd had a root canal on a right upper tooth a month before the headache started, and the procedure was prolonged due to an interruption. Several weeks afterward he developed a sore throat and swollen glands, and earache on the right side. Later his jaw started to ache again, but a return trip to the dentist found no other tooth problems. Recently he experienced difficulty sleeping, and trouble concentrating during the day. He'd been taking OTC anti-inflammatory medication for two months. On examination, TrPs were found in the front of the right temporalis, posterior digastric, and lateral pterygoid. He recognized their pain patterns as his own. Treatment with stretch and spray was successful. He was taught finger pressure technique and given home stretches. During a follow-up call a week later, he reported no symptoms, and that he had discontinued the anti-inflammatory medication.

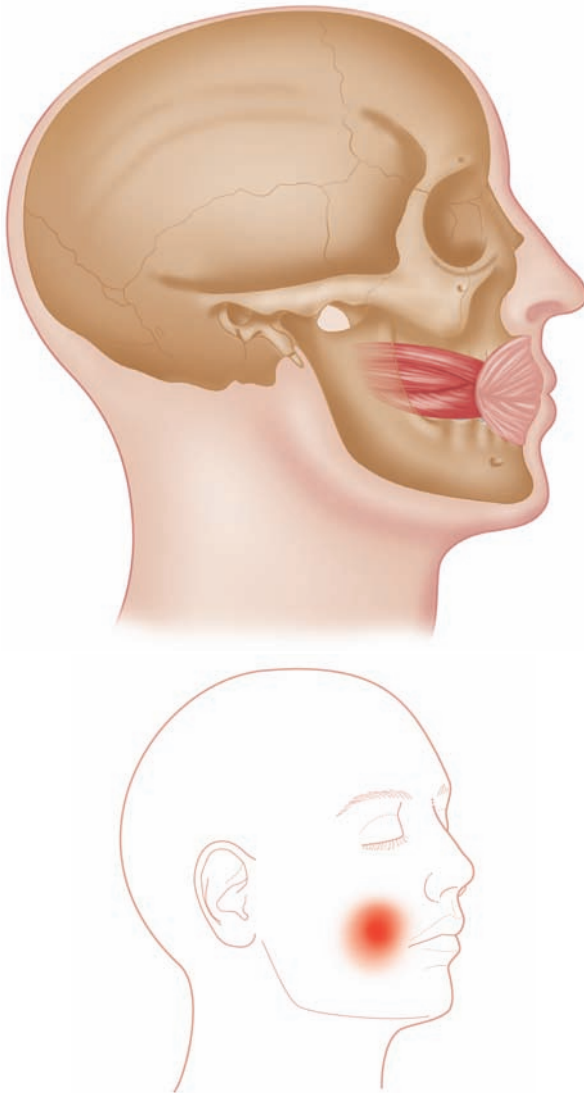
**Regional Perpetuating Factors:** Interactive conditions such as TMJD, allergies, osteoarthritis, trauma or other muscle overload, hormonal or vascular imbalances, chronic infections, and poor posture (especially head-forward posture and forward rotation of the shoulders) are common initiating and perpetuating factors in this region. Use of CPAP (pressure from head straps and a face mask) can cause TrPs in the head and neck, as can the weight of heavy eyeglasses, vision impairment, paradoxical breathing, immobility, sustained computer use, psychological stress, and/or sustained dental work. Perpetuating factors must be brought under control for successful head and neck TrP treatments to last.

**Note for Dentists:** If you have patients with TrPs, equilibration on these patients must be accompanied by TrP assessment and treatment, because the bite will change as the TrPs release. You can often prevent disc deterioration with TrP assessment, treatment, and control of perpetuating factors. Stretch and spray, ice stroking, hot moist packs, and/or topical anesthetics can be useful (see Chapter 14). You can assist your patients by giving them frequent breaks and encouraging dynamic jaw movement during those breaks, coupled with the application of moist heat packs or stretch with spray, to avoid TrP formation during long dental procedures.

**Regional Hints for Control:** Check for mouth breathing and other types of paradoxical breathing, and for head-forward position and other posture deviations. Check photos and assess postures. The history or exam may give clues to the primary or key TrP. Successful treatment of one or two areas in the neck may give symptom relief in vast areas of the head and face (Mellick and Mellick 2003). Perpetuating factors must be brought under control or the treatment results will not last.

## Buccinator

Latin *bucca* means “cheek.”



**What It Does:** Aids the chewing process by keeping food between the teeth, and forms a substantial part of the cheek. It has lower fibers running to the upper lip and upper fibers running to the lower lip in a crossing pattern. It's involved in sucking, whistling, swallowing, blowing a wind instrument, pursing the lips, and producing facial expressions.

**Kinetics Comments:** Whenever you blow a balloon up or suck a liquid through a straw, you are exercising the buccinator. If you have fangs, this is the muscle you use to bare them.

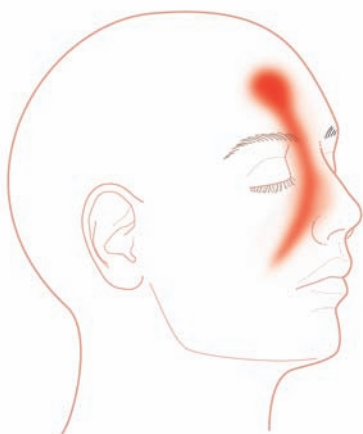
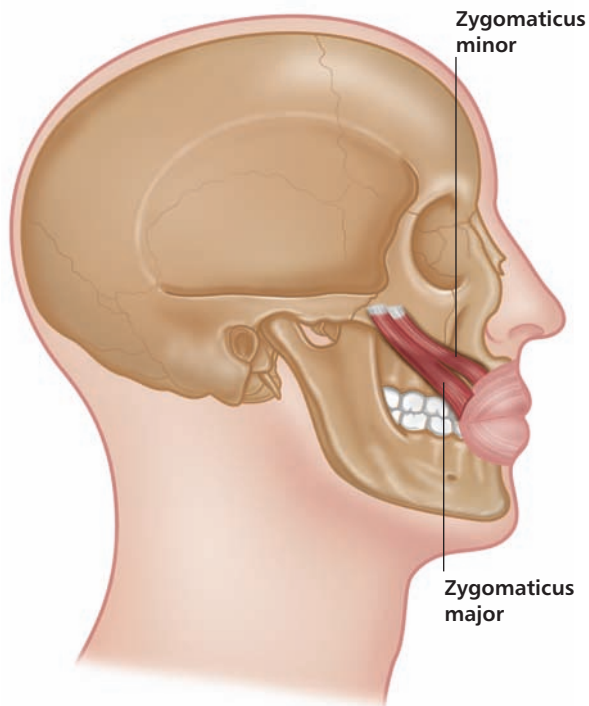
**TrP Comments:** TrPs in the buccinator cause pain locally that may spill over to the teeth. These TrPs may give the sensation that swallowing is impaired, because the buccinator attaches to the superior pharyngeal muscle. Tightening of one muscle by TrPs stresses surrounding muscles. These TrPs can cause mouth twitches, and may entrap the parotid salivary duct. They may contribute to proprioceptor dysfunction, resulting in tongue or cheek biting. We believe that buccinator TrPs may be involved in nocturnal drooling or dry mouth. These TrPs may be responsible for nonverbal miscues, as they contribute to misleading facial expressions. Deep nodules felt at the side angles of the mouth may not be TrPs: they are the locations of the interlacing of buccinator and orbicularis oris fibers.

**Notable Perpetuating Factors:** Extended chewing of tough substances, ill-fitting dental appliances, poor bite, and lack of smiling. Come on—give us a smile.

**Hints for Control:** Try to avoid lengthening the muscle and holding it for several seconds, as this, believe it or not, may actually compound the excessive tension and stiffness in the muscle. Dynamic range of motion stretching can be accomplished by blowing air out through pursed lips, and allowing it to escape gently and slowly over three or four seconds in a controlled fashion. If you place your finger between your cheek and teeth and then purse your lips, you can feel the buccinator contract as it presses the finger against the teeth. You may be able to feel TrP contraction nodules, and press them between your finger and thumb. Topical anesthetic safe for use inside the mouth may minimize pain: apply the anesthetic to the TrP pain source, not to the area of referred pain. Moist heat compresses on the outside may be soothing. We recommend finishing with a cool compress to avoid encouraging swelling.

## Zygomaticus Major and Minor

Greek *zugoma* means a “bar” or “bolt.”



**What They Do:** Draw upper lip upward and sideways when you smile or laugh.

**TrP Comments:** TrPs here cause pain reaching upward in an arc along the side of the nose. This pain extends over the bridge of the nose to the mid forehead. These TrPs may restrict the opening of the jaw by as much as 20 mm, so if you can't open your mouth wide enough to fit in a sandwich, TrPs may be the reason why. One of the authors (Starlanyl) has found that TrPs in this muscle can contribute to drooling, especially during sleep. TrPs occurring in the zygomaticus, orbicularis, and levator labii muscles can produce symptoms of trigeminal neuralgia (Yoon et al. 2009).

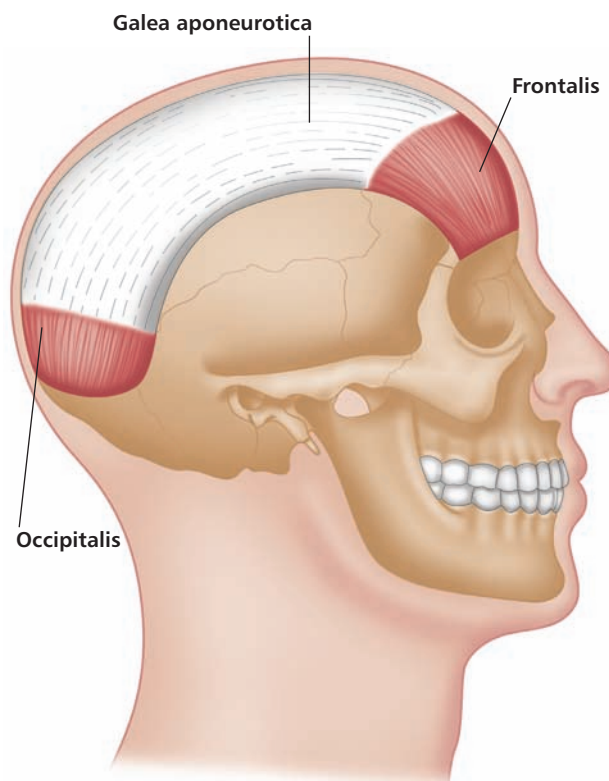
**Notable Perpetuating Factors:** Habitual frowning, squinting, poor vision, poor lighting, TMJD, and TrPs in the sternal division of the SCM.

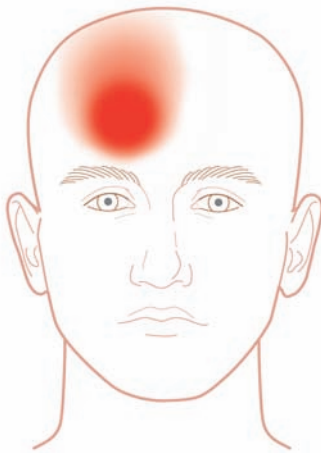
**Hints for Control:** A good stretch for these muscles is the pursed-lips kiss, but avoid holding the kiss for too long. That said, repeating this particular stretch can be very enjoyable. You may be able to feel TrPs in this muscle by placing one finger inside your mouth and your thumb outside. Gentle pressure on the TrP may help, as may moist heat or cold. Rolling and squeezing available TrPs between your thumb and your finger may help treat the TrPs, but be gentle—it hurts. Check jaw opening before and after treatment. If it is effective, the jaw restriction should ease substantially, and thick sandwiches may be back on the menu.

**Stretch:** Smiling and laughing are good exercises for this muscle, as is saying the word “Whee!” **Caution:** saying “Whee!” repeatedly in company at odd moments may require explanation. It is a good opportunity for educating others about TrPs.

## Occipitofrontalis

Latin *occiput* means “the back of the head”; *frontalis*, “relating to the front of the head.”



*Occipitofrontalis.**Frontalis.*

These are two muscles, jointed together by a fibrous tendon area.

**What It Does:** The occipital and frontalis segments of this muscle work together. The occipitalis moves the scalp backward and helps the frontalis to raise the eyebrows and wrinkle the forehead. The frontalis moves the scalp forward and wrinkles the forehead skin horizontally.

**Kinetics Comments:** Tension in the posterior back-line kinetic chain can shorten this area. Muscle spasms in the hamstrings or plantar fascia, for example, can result in occipitofrontalis tightness. This adds to head and neck tension, contributing to headaches and a hyperextended neck. The body then compensates with a posteriorly rotated pelvis to keep the eyes level during walking and running motions. All of these reactions contribute to TrP formation and are major perpetuating factors.

**TrP Comments:** Upwardly referred pain over the forehead is common. Pain can be referred inside the head, behind the eye, into the eyeball, behind the ear, or into the nose, with occasional referral to the eyelids.

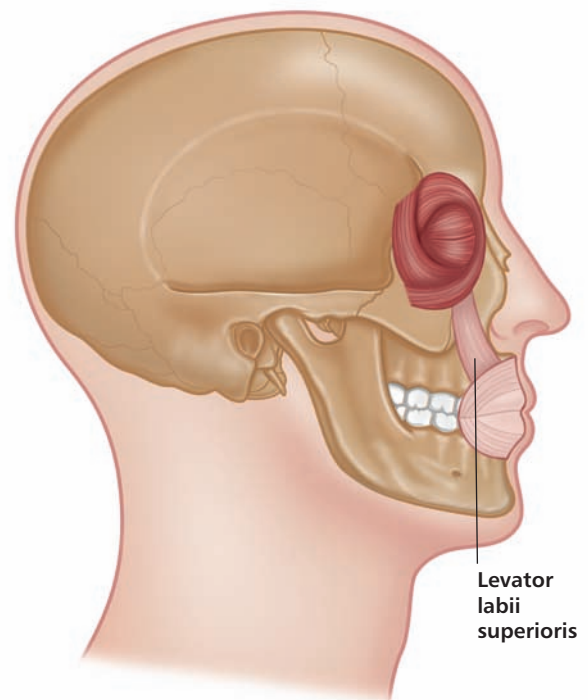
Sound and light sensitivity can occur with these TrPs, with accompanying pain increase. The patient may be unable to bear the weight of the head on a pillow. Hats and headbands are unendurable. The deep ache of these TrPs must be differentiated from the hot prickling pain of entrapment of the greater occipital nerve by posterior cervical TrPs. Sharp or searing pain originating on one side but spreading across the forehead can be due to entrapment of the supraorbital nerve by frontalis TrPs. Frontalis TrPs can cause excessive tear production. Occipitalis TrPs are more common in patients with decreased vision and/or glaucoma; frontalis TrPs are more common in patients who use computers. Pain occurs on the same side as the TrP, although TrPs can occur on both sides with overlapping pain patterns. It is suspected by this author (Starlanyl) that TrPs form in the galea aponeurotica along either side of the suture line on the skull, and that they can have quite distinct referral patterns. In general, ice is more helpful for nerve pain, and hot moist heat is more beneficial for muscle pain.

**Notable Perpetuating Factors:** Direct trauma, habitually frowning or otherwise wrinkling the forehead, chronic computer use, poor vision, and other TrPs.

**Stretch:** Gentle massage of the scalp with the tips of the fingers is the ideal way to keep this area supple. Raise the eyebrows, and then lower them. Or do it one at a time. Live long and prosper.

## Orbicularis Oculi

Latin *orbiculus* means "small circular disk"; *oculus*, "eye."



Levator  
labii  
superioris





**What It Does:** Pulls down the upper eyelid and raises the lower lid to wash the eye with tears. Enables squinting to protect the eye from sudden or over bright light. One part of the muscle dilates the tear sac.

**Kinetics Comments:** This is a multipart and extremely complex muscle. It slows the act of blinking and returns the eyelid to “open.” It’s part of the “crow’s feet” wrinkle effect of aging at the lateral corner of the eye. The orbicularis oculi plays an important part in the nonverbal communication of body language, and can send the wrong signals if burdened with TrPs.

**TrP Comments:** TrPs in the orbicularis oculi refer pain above the eyebrow and along the nose, to the nose and just below. They are frequently misdiagnosed as sinus pain, and can be activated by sinus problems. They can be involved in eye twitching. Myofascial entrapment from these TrPs can affect tear ducts. If the levator labii muscle is involved, these TrPs can cause symptoms that mimic trigeminal neuralgia (Yoon et al. 2009). These TrPs can cause the print on a page to jump around when reading, especially if the print is in a strong contrasting color. These symptoms may be blamed on FM.

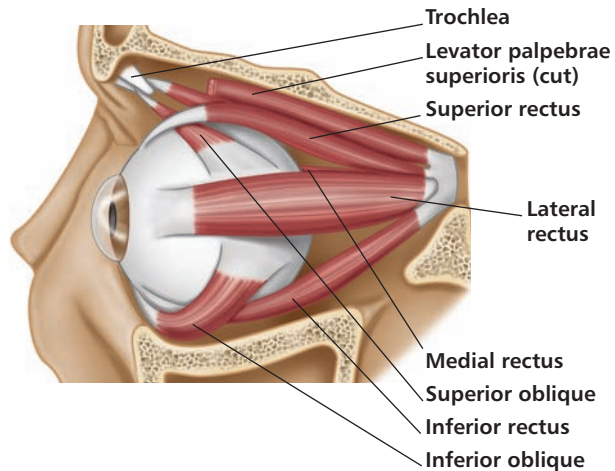
**Notable Perpetuating Factors:** Sinus and eye infections, eye irritation, uncorrected eyesight, and prolonged computer use.

**Hints for Control:** Jumpy print can sometimes be subdued by placing a piece of plastic wrap over the page before reading, to diminish the contrast. The TrPs still need to be treated. Self-treatment includes moist heat or cold, and gentle finger pressure around the eye.

## Extrinsic (Extraocular) Eye Muscles

(medial rectus, lateral rectus, superior rectus, inferior oblique, superior oblique, inferior rectus)

Latin *extrinsecus* means “on the outside.”



**What They Do:** These are the six muscles that move each eyeball in vertical, horizontal, and rotating motions. The medial and lateral rectus muscles enable the eye to move horizontally, from the center to the side and back. The rectus muscles pull the eye centrally as well as horizontally. The superior rectus also pulls the eye up; the inferior rectus also pulls the eye down. The anatomy of the oblique muscles causes them to pull to the side as well as up and down. The superior oblique pulls the eye down and to the side; the inferior oblique pulls the eye up and to the side. The trochlea (Latin for “pulley”) is a common TrP site. When functioning well, these eye muscles move together in harmony, with each movement of the eyeball requiring the coordination of at least three different eye muscles, directed by the brain. Pretty spectacular.

**Kinetics Comments:** Changes in positioning of these muscles will affect the suboccipital muscles. Thus, easing the TrP tightness of the extrinsic eye muscles through exercise may help the muscles in the back of the neck, easing headaches and other symptoms.

**TrP Comments:** TrPs in these muscles can contribute to headache, eye twitching, blurry vision, eye irritation, or sinus pain, depending on which muscle is affected. TrPs in any of these muscles can contribute to proprioceptor dysfunction. For the eyes to work together, the muscles must be contracted to their normal length. If one or more of them is shortened by TrPs, this can affect stereoscopic vision, contributing to visual disturbances, including dizziness, when moving rapidly forward, backward, or sideways, or looking up or down. This variance can



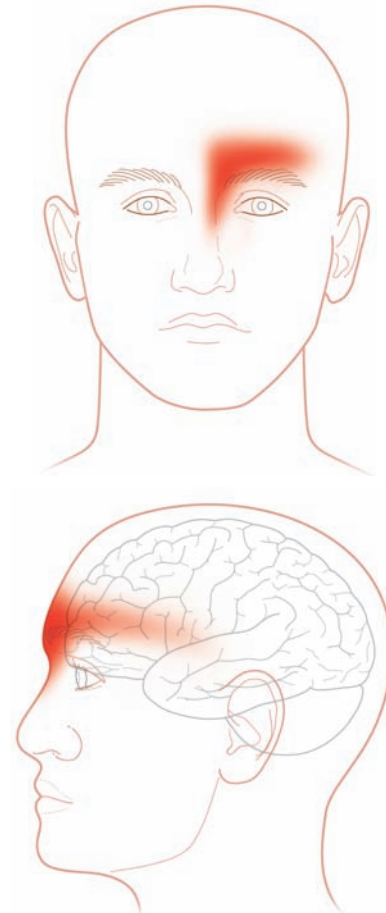
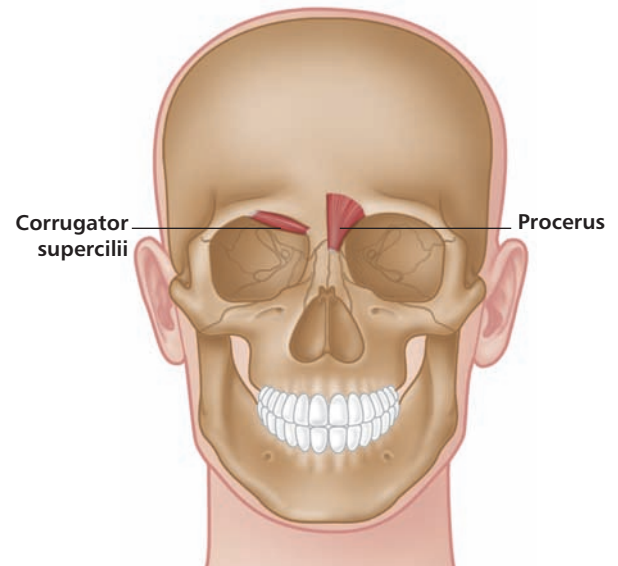
alter the brain's perception of where one is in relation to the world. TrPs in these muscles may be responsible for changing the vision, but, once eye exercises are a part of the healing routine, this problem often ceases. Starlanyl and Copeland (2001, p. 83) previously noted extrinsic eye TrPs, and the presence of TrPs in at least one of the extrinsic eye muscles has been confirmed by Fernandez-de-las-Penas et al. (2005). There are also intrinsic eye muscles that control the lens and the pupil dilation. TrPs are suspected there as well, but have not been verified, although vision exercises to stretch them have improved those functions in several patients.

**Notable Perpetuating Factors:** Muscle fatigue caused by long hours of holding the gaze in one position, such as with computer use, sewing, or reading. Allergies and irritating fumes can also stress the eyes and these muscles, as can nearby sinus infections or eye infections. Many OTC eye drops dry the eyes and should not be used continually: talk to your eye doctor for a recommendation. Avoid eye irritants such as chlorinated pools. If you use a CPAP, ensure that the air isn't blowing into your eyes.

**Self-treatment:** This includes eye exercises, looking to each corner, with special attention looking upward. Even eyes can do push-ups! Remember how an eye doctor has you follow her or his finger around in a circle? Do that eye circling now, using your own finger, and you can find the probable location of TrPs, as well as stretching those muscles that have the TrPs. They will let you know exactly where they are. Ouch! Start slowly, just one eye circle each time, but do that one circle each way several times during the day. If you feel eye pain, or signs of a headache developing as you do this, stop temporarily—understanding that it's a signal that you need to do this stretch. The next time you try the exercise, bring your finger in closer and don't stretch so much, so fast, or so often. Move your eye muscles more during the day. Eventually, you will be able to do several repetitions each way, several times a day. That will help keep these muscles supple. Become attentive to how you use your eyes: are your neck muscles doing a lot of the repositioning for you? Make sure that your lighting for close work is sufficient and without glare. Talk to your eye doctor about the use of a gentle gel eye-drop, especially one that can be kept in the refrigerator for added mechanical cooling to help ease these muscles. The application of cool moist cloths to the eyes may help ease muscle tightness in this area.

## Procerus and Corrugator Supercilii

Latin *procerus* means "long" or "stretched out"; *corrugare*, "to wrinkle up"; *supercilium*, "eyebrow."



**What They Do:** The procerus attaches to a membrane covering the roof of the nose and forming a bridge between the nose and the forehead, pulling the middle of the eyebrow down. It wrinkles the nose, and also helps the actions of the frontal bone. The corrugator supercilii muscles pull the eyebrows together and downward when you frown or intensely concentrate.

**Kinetics Comments:** These TrPs can contribute to deep vertical wrinkles between the eyebrows. The wrinkles may offer clues to facial (and fascial) asymmetry. Sunglasses can help to reduce muscular tension on particularly bright days. Tension from further down the kinetic chain, all the way down to and including the foot, needs to be “freed up.” Wrinkles between the eyes are also a sign of vagus nerve irritation in some forms of Traditional Chinese Medicine (Dr. Yun Hsing Ho, personal communications).

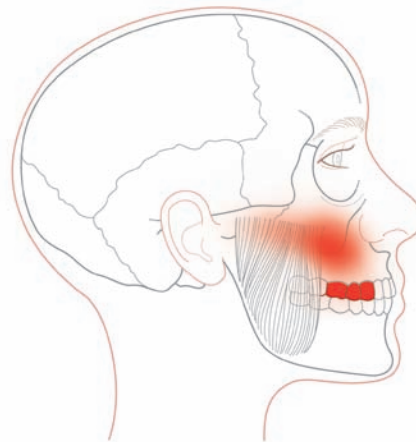
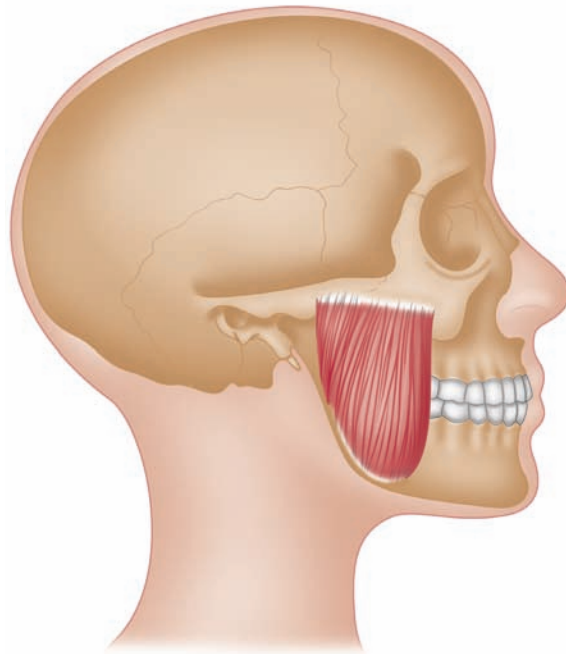
**TrP Comments:** These TrPs usually occur in conjunction with other facial TrPs. They produce a dull headache referring deep into the front of the brain, with dull pain behind the eyes. They may contribute to eyestrain. These TrPs may contribute to droopy upper eyelids (Ghalamkarpour, Aghazadeh, and Odaei 2009) or to migraine (Smuts, Schultz, and Barnard 2004).

**Notable Perpetuating Factors:** Frequent contracting of the muscles during frowning or intense concentration. Some CPAP masks and their outflow can perpetuate these TrPs, as can heavy eyeglasses or long-duration viewing of a computer monitor or television. Holding a cigarette between the lips for several seconds as the smoke trails past the face irritates the eyes and these muscles. Our tip: avoid smoking, and don’t spend so much time watching television or looking at computer screens. Be an active participant in life.

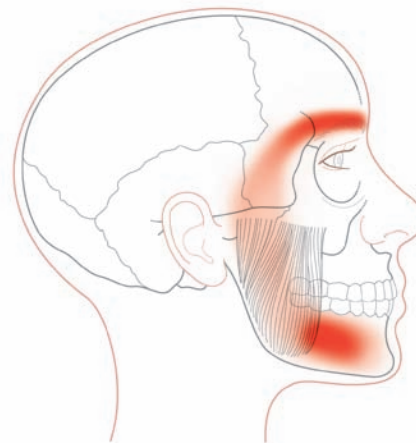
**Hints for Control:** Avoid wrinkling the brow. A light pinching of the tissue along the eyebrow area, gently pulling the skin away from the face, may help release these TrPs. It is important to hold this gentle “pinching” or “lifting” of the tissue for at least 90 seconds. Avoid letting the tissue “spring back.” Release it slowly to its starting position. Treatment of TrPs in local muscles, including eye exercises, may ease the stress on these muscles. Take frequent breaks during close work, and use adequate magnification. Ensure eye correction is current. Cool compresses, ice sweeps, or chilled eye-drops may relieve pressure from these TrPs. To our knowledge, these TrPs have not previously been described; it is hoped that more research will be done concerning them.

## Masseter

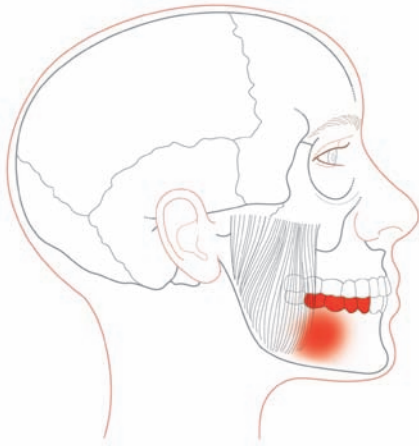
Greek *maseter* means “chewer.”



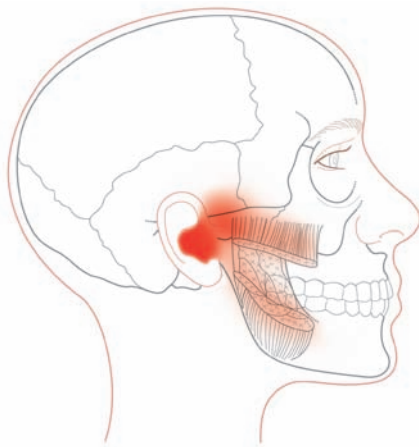
*Superficial masseter upper attachment TrPs.*



*Superficial masseter lower attachment TrPs.*



*Superficial masseter central TrPs.*



*Deep masseter upper posterior TrPs.*

**What It Does:** Elevates the lower jaw enabling upper and lower teeth to meet; the superficial masseter helps move the jaw forward.

**Kinetics Comments:** A head-forward posture stresses the masseter. Overtraining the abdominals stresses the anterior throat muscles, which, in turn, stress the masseter. Tightening the posterior neck muscles will also stress the masseter.

**TrP Comments:** If you can't open your mouth fully, this muscle is most likely the culprit. These TrPs also increase muscle tension in the area, contributing to headaches. Their referred pain can be accompanied by tooth pressure and temperature sensitivity. Masseter TrP symptoms can include earache, and may be mistaken for sinusitis. TrPs in the interior masseter may refer pain deep into the ear on that side. Interior TrPs may also cause tinnitus (ringing or other noises, including a low roaring); these noises may be constant, or may be set off by TrP pressure, and may be severe enough to be life-altering. Masseter TrPs are frequently overlooked in young children who have poor dental hygiene or have had long periods of dental work. The pain caused by these TrPs alerts patients to their presence, but they may be totally unaware that TrPs

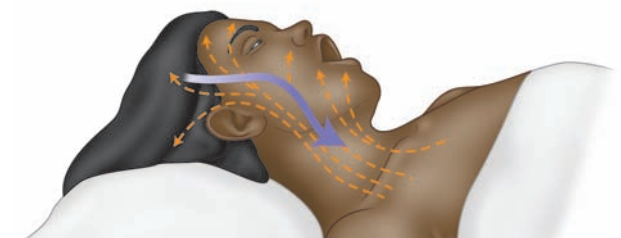
are restricting mouth opening. A healthy, relaxed mouth can open wide enough to allow the first two knuckles of a hand to enter between the teeth. Try it.

**Notable Perpetuating Factors:** Poor bite, paradoxical breathing, nail biting, pipe smoking, jaw clenching, teeth grinding, emotional stress, constant gum chewing, long periods of dental work, temporomandibular dysfunction, and poor posture (including tongue posture). With the mouth closed, the tongue should rest on the surface of the roof of the mouth, with the tip of the tongue in front of the ridge. Biting on hard objects, or chewing aggressively on tough meat, can also perpetuate these TrPs.

**Hints for Control (Patients):** Correct a head-forward posture. Work with your health care team to find the cause of bruxism and bring it under control—it's not always stress related. Nighttime bruxism can be caused by sleep disturbances. Check with your dentist to see if your upper and lower jaws match. Ensure that TrPs are treated before the bite is corrected, and that your dentist is aware of coexisting TrPs and their ability to contract muscles.

**Hints for Control (Care Providers):** Masseter TrPs are found most easily by pincer palpation, and can be treated with that same movement. The masseter and other chewing muscles may correct themselves as neck TrPs are released. Chewing muscles are often involved on both sides. Unilateral tinnitus may be a referred sensory stimulus, or may be due to referred motor unit activity of the tensor tympani and/or stapedius muscle, which lie within the reference zone. The maxillary vein may be entrapped by masseter TrPs. Earaches of unexplained origin are often due to deep masseter or clavicular SCM TrPs.

**Self-treatment:** You can learn to work these TrPs using a topical OTC anesthetic. Gently through. Interior mouth work hurts! Before any stretching program is started, speak with your dentist to ensure that there is no disc problem or other joint condition that could be aggravated by stretching. When you know it is safe to stretch, try ice sweeping as you slowly open your jaw.



— Direction of stretch  
- - - Direction of ice strokes

*Ice stroking: both sides of the face must be treated before any stretching, because these paired muscles need to work together. Follow stretching with moist heat.*

# III

## WHERE DO WE GO FROM HERE?

Now that we've looked at individual TrPs, it's time to learn how to deal with multiple TrPs, expanding on the material in Chapter 4. Like the rest of this book, this part is for both patients and care providers; after having read through it, you can then use this book as a working reference. TrP medicine is complex. It is appropriate for care providers to refer to the book during the history taking, exam, and treatment—especially at first. Patients and care providers need to understand this. The process will become easier and faster as you gain more experience. Chapter 14 covers the mysteries of history taking, physical exams, and treatments; in each of these areas, the patient is a valuable, contributing member of the health care team. We conclude in Chapter 15 with a discussion of FM and TrPs in the twenty-first century.



# 14

## Solving the Puzzle: History, Exam, and Treatment

### Preparation for an Appointment

Care providers, this chapter will cover mysteries, and they aren't the kind you read on a rainy weekend. They shouldn't actually be mysteries, but modern medicine has evolved into something that doesn't always work well for FM, TrPs and CMP. It tends to rely on tests and other things that aren't applicable, and dismiss things that don't show up. If your patient has both FM and extensive CMP, don't be dismayed if the early pattern charts are almost entirely marked in, with overlapping types of symptoms and colors every which way. Your patient may need multiple charts for each color. This complexity of pain and dysfunction may actually understate the truth, because there may be layers of TrPs yet to manifest. You will be working with your patient to bring about healing through TrP therapy and teamwork. Your patient, with your help, will evolve into a vital resource for you both. Right now, you both have a lot to work on. It is a start, because you *are* working on it. This chapter will help you use the history, symptoms, ROM and palpation to locate TrPs to identify the most troublesome TrPs and perpetuating factors. As the TrPs are treated and the perpetuating factors come under control, individual TrP patterns will be revealed on the charts. Give it time.

Patients, optimize appointments by bringing a current symptom pattern chart for each visit. A blank sample chart can be found at the end of this chapter—make copies of it to use. Start working on your chart long before the appointment, whenever you remember important things you want to say. This is especially important if you have FM as well. You can keep adding to the chart until you hand it over, but keep it brief and clear. You may want to make a color copy for yourself. If you don't have access to color copies and have different types of pain, you may want to make several charts; one for each type of pain or symptom. The reason may become evident once you look at the chart. If you have a lot of overlapping pain and other symptom coverage, you may also need several charts. Referral patterns are identified by areas that *aren't* covered as well as those that are, so be precise, and note other symptoms that may hold clues to the location of the peripheral symptoms. If you have peripheral pain generators other than TrPs, such as arthritis, other joint problem or diabetic neuropathy, include those. Include

even temporary pain generators such as sprains, as they may add to symptoms of central sensitization.

If you keep a notebook of dated symptom charts it will help detect patterns and potential perpetuating factors. Gee, every time Aunt Nellie visits I get this pain in my neck ... Is it your Aunt Nellie? Or does she sit in a corner chair and you have to crane your neck to hear what she says? You get the picture? Now you need to draw it. Include notes on non-pain sensations, such as loss of balance or bloating. For pain areas, note the nature of the pain (stabbing, burning, etc.), as that may be an important clue. Note areas of swelling or other localized symptoms. A notebook of the charts will also help keep a record of your progress. If you work with your medical team on control of perpetuating factors and peripheral symptom causes, you will have progress, but it may be hard to realize it otherwise. As one TrP is resolved, another may awaken. Don't be dismayed. This is progress. You are dealing with unwinding fascia. Some of us have tissues so tight that we can't see the muscles move under the skin when we use them. What a triumph when this changes.

Make copies of the sample blank chart at the end of this chapter; use it to record what you feel. This will help keep your medical appointments efficient, and also provide a record for you and your care providers. In the sample chart, there's a space for notes on symptom quality. Note the approximate dates each symptom appeared. If you don't remember the dates the first time, give the approximate month and year. Don't let that inability frustrate you. Frustration won't help you remember, and it can hurt. You don't need any more hurt. You'll develop a habit of noting when a new symptom appears. Mention what you've tried to control symptoms—what helps and what doesn't. Write down the three or four main questions you want answered on the next medical visit, and list any prescription or other needs. Make your notes clear and brief, and limit them to what's significant, including any changes. If you need a more expanded version for yourself, put it on a separate paper. Your care provider must be able to read it. You have limited time together. Writing legibly isn't easy for some of us. Take your time. It will help you use every minute with your care provider wisely.



Leave space for your care provider's comments and instructions. Whenever you add a new medication or change dose, update your other care providers. Keep a list of medicinal teas, herbs, and other over-the-counter (OTC) medications you take regularly (e.g. eye drops, nasal sprays, antacids, herbal remedies, laxatives), as well as OTC topical preparations (e.g. antihistamine creams). Updated lists of medications, supplements, and a brief history, including surgeries (type, reasons for, date, outcome), should be part of your home medical records. Keep a list of all illnesses and allergies (including food). It's good to have a list of nonmedical therapies you use. Include all forms of bodywork and mindwork and self-therapies. Maintain records of any medications you have tried and how they affected you, the dose, who prescribed them, and when. Samples of many forms for this have been provided (Starlanyl 1998), and you can tailor them to meet your own needs. Retain copies of relevant test results as well. All this material should go with you when you see a new doctor, and some should be with you when you travel. You're a vital part of the treatment team, with your own responsibilities and duties. Empower yourself by learning all you can to avoid pain, dysfunction, and trips to the Emergency Department. Learn to manage what you have and control the symptoms as much as possible. Pay attention to what your body is trying to tell you. You can't complain that your medical team isn't listening to you if you won't listen to your own body.

Care providers, your new suspected or known CMP and FM patients may not trust you at first. They may have suffered through, and paid for, all manner of tests, treatments and procedures. Many may have been unnecessary. They may have been denied needed answers and understanding as well as treatments, medications, and support; thus even validation, and hope. The system may have been cruel and unfair to them, and they may be expecting more of the same. They may feel hopeless, helpless, or angry; they may be physically and emotionally drained and frustrated. It takes courage for them to take one more chance. They have done so—they have come to you. You may have to convince them that you can make a difference when so many others have promised but failed to deliver, and then placed the blame on their patient. Take the time to earn their trust, because they are worth it. These patients may come with hefty records: some of the material inside will be significant, but some important conclusions may be erroneous.

Scan the charts for relevant gems before the first appointment, because you will need every minute you have together—and more. These patients may have been labeled with psychological ills because previous care providers didn't recognize TrP symptoms. They might have been given physical therapy to “strengthen” muscles weakened by TrPs, and then blamed when the therapy didn't work. They may have problems remembering sequential events, and be labeled “tangential” because

of their previous history deliveries. Or they could have been classified as hypochondriacs or malingerers. Notes from an astute bodyworker may reveal the presence of taut bands and contraction knots, indicating the presence of TrPs. You can't treat CMP without the patient's cooperation and commitment: you need to rely on your patient (and sometimes your patient's companions) to supply needed information. If central sensitization—which may or may not have been labeled FM—is present as well, and you attempt to treat the FM without treating the myofascial TrPs, the best that you can expect is that the TrPs will become latent. Those little land mines will wait until an activating factor creates a massive boom, with your patient at ground zero. TrP treatment and control of perpetuating factors is a critical part of FM management strategy (Ge et al. 2011). Current research suggests that “assessment and treatment of concurrent TrPs in FMS should be systematically performed before any specific fibromyalgia therapy is undertaken” (Giamberardino et al. 2011).

If your new patient has CMP, or you suspect it, you need to spend time with them—more than the current system provides. If you only suspect CMP, schedule a “meet and greet” session during which you can get an idea of possible TrPs and coexisting conditions. An intake assessment may require several hours, and may need to be broken up into segments. There is danger in palpating areas, and perhaps activating TrPs, without treating. There is a tremendous amount of work dealing with CMP, but, eventually, an educated patient does most of it. CMP is a high-maintenance condition, and that work is amplified by FM too. With this book, your lives will become easier. If you are fortunate, your patient will come in with this book. If they don't, see that they go out with it: it will save time, money, and effort. This book gives patients tools they need. Eventually, they will be more specific with regard to TrPs when making appointments: instead of “my shoulder hurts,” the appointment may be made for “probable coracobrachialis TrP activation with possible levator scapulae involvement.” You get more specific information from educated patients. Education is part of your job. Anticipate that, in future visits, your patient will bring their charts partly filled in; during the visit, more information may be added. Ensure that your first instructions for completing the charts are clear. Check with your patient that. Ensure that your first instructions for completing the charts are clear and legible, and check that they've been understood. You may want to make a color copy of each symptom chart as part of your progress notes. Especially if your patient also has FM or other cognitive challenge, s/he needs written instructions, including any action notes specifying what each of you needs to do before the next appointment. For example, you may need to order tests for coexisting conditions or provide stretches, and your patient may need to get tests done, modify a diet, and/or add exercises.

If your new patient comes in totally unaware of TrPs, charts and other important data, part of the first visit may be spent helping her or him fill out that chart. This is especially true if s/he says that everything hurts. You may be able to find one area that isn't totally colored in. It's education time—with these conditions it's always education time—and it's a start. And education goes both ways. You may be surprised at what your patients can teach you if you listen and observe. Find TrPs by means of history, symptoms, ROM, and palpation. As TrPs are treated and perpetuating factors brought under control, individual TrP patterns will be revealed. Other patients may come in with localized TrP pain, but in time you may find that there are TrPs all over their bodies. An educated patient will understand that this isn't a sign that things are getting worse under your care: it is simply that latent TrPs are being revealed and treated. Unraveling CMP cannot be rushed. You needn't spend extra money on diagnostic equipment: you already have what you need to diagnose TrPs—your eyes, ears, fingers, and brain. Develop (in t'ai chi terms) your ability to focus your intention to use those parts of your body as information gatherers during the diagnostic process. Learn how to use them, and invest the time you need to gain experience in their diagnostic use. You need to learn to coordinate these investigative tools that you've been given, and hone your talent to find and heal TrPs. Investing time and effort in this process will teach you priceless diagnostic skills. You will become more attentive to life; to observe, and to make connections. Base your questions on patient history and symptoms, and word them carefully. For example, avoid phrases that can lead to misunderstandings, such as “working at a computer”; the patient may work for four hours a day at a computer, and then play computer games or correspond via email for an additional six hours. Become familiar with Chapter 6 and the concept of perpetuating factors, and modify questions accordingly. Remember, it doesn't take an active TrP to cause symptoms: muscle cramps, for example, can be imitated by latent TrPs (Ge et al. 2008b).

## History

The body is an ecosystem, but it isn't a closed ecosystem—there are sensory impacts, environmental impacts, medicinal impacts, etc. Some care providers learn how to take a history as part of the process of differential diagnosis, but differential diagnosis tends, by its nature, to be exclusive. With chronic pain there are usually multiple causes contributing to that pain, only one of which is myofascial, and a list of perpetuating factors. More complex cases may involve multiple coexisting conditions and layers of perpetuating factors, only some of which may be evident at first meeting. The central sensitization and biochemical imbalances of fibromyalgia may add yet another dimension. Care providers, you need to reframe what you've learned

into the dynamics of interactive diagnoses. Patients, you need to acquire skills to take your own history, because your history holds clues to your symptoms, TrP locations, and perpetuating factors. You are the authority on your own history. Do you remember when the pain or other predominant symptom first started? If so, what was happening in your life around that time? Can you remember times when your symptoms changed or new symptoms appeared? What changed in your life just before or at that time? Learn to look for patterns—not just symptom patterns, but life patterns as well. The clues are all there, waiting to be discovered. When you take a medical history, think outside the box: this is most easily done by not putting yourself inside the box in the first place. Look for connections. The history should indicate if the pain pattern is stable, or if it has evolved over months or years. Neither FM nor CMP is progressive. Any worsening or addition of symptoms is an indication of uncontrolled perpetuating factors.

During ideal history taking sessions, patients and care providers work together as a team to hunt for clues. This is not standard medical practice. Patients may not mention important symptoms or occurrences during the history-taking process for several reasons: they may be in denial, or they may think they'll be considered irrational if they mention how they fling objects into the air when they try to pick them up, or that they become nauseated watching an airport carousel for luggage. Patients new to you may be considerably apprehensive about how you will treat them, adding to their stress level. Patients may not remember a specific physical or psychological trauma, and/or they may have PTSD. If they are in chronic pain and/or have FM, they may not be able to remember all important events, and the significance of some events may become apparent only as new symptoms appear. Patients may be unaware of a repetitive strain, especially postural strain. (Casually taken photos—not staged, professional ones—can offer great clues to postural problems.) Family members, especially spouses, educated in this discovery process may be great resources. Encourage the patient to seek constructive feedback from family and friends, taking extra care that it isn't turned into an adversarial process. For those patients who live alone, an overnight guest might help uncover clues to sleep abnormalities or other perpetuating factors. During history taking, note faulty and potentially destructive movement patterns, including breathing patterns. For example, sitting with legs crossed is often done to compensate for weak QLs. The first history is a time for ideas to emerge, and is only the beginning to a process that never ends. What happens today is tomorrow's history.

When I (Starlanyl) lectured about these conditions in Brittany, we had a morning session for care providers and an afternoon session for patients. During lunch, a doctor with new awareness in his eyes came up and spoke of his regret for not being able to also attend the afternoon

session due to office hours. He gestured to the TrP diagrams and gently admitted, “I must go and apologize to my patients.” Such a compassionate and honest revelation is uncommon. Yet the process of learning in medicine is just that; a process that never ends. You can learn nothing if you think you already know everything. Patients who have become educated about FM and CMP may have had previous experiences with defensive, suspicious, or even hostile care providers. They may have been labeled as exaggerators or considered obsessed with their health because of their knowledge of medical terms and their conditions. Everyone needs to accept that patients are an integral and valuable part of the health care team, and fluid communication among team members is essential. Patients and care providers need to learn that it’s safe to be specific, and to ask questions, and to admit that there is something they don’t know. Both need to learn to trust each other, and to communicate freely. This means dialogue: “It hurts when I move my arm.”—“When you move your arm how? Can you show me?” The patient may not know what triggers the symptom pattern until he or she repeats the exact motion, and that motion can indicate to the educated care provider where some of the TrPs are. The extent and nature of ROM restriction may give some indication of their severity, and to possible coexisting conditions. In cases of active CMP, the arm may always hurt, but a particular movement may cause it to hurt more. Taking histories for CMP patients may take much longer than for other patients, especially if FM co-exists, but many resources including time may be saved in the long run. However, insurance, legal and other systems need to become educated to this reality: for example, it is necessary to educate hospitals with policies censuring doctors who have an “inadequate” number of surgical referrals. Many surgeries may be preventable with early TrP identification and treatment.

## Exam

Although much of this section is written for care providers, our readers who are patients need to read it too. Patients need to know what to expect in an exam. There are ways in which patients can help to make the exam more efficient, and that often means preparation is required. Patients may already be aware of significant factors, such as restriction of movements or gait irregularities. Patients can learn to be specific—for example, rather than saying “I trip a lot,” say that “I trip often when I am going up the stairs” or “Sometimes I trip going across a flat floor.” Patients may be able to save time by making a separate chart showing any scars, lumps, or asymmetries. Before the first appointment, or if CMP and FM are just now being considered, it’s a good time for patients to examine their lives. Make a list of what affects your health the most, and how. This is valuable information; keep it brief and clear.

If you as a patient are aware of many symptoms in many areas, you and your care provider must decide together, before the exam, which are the four most important and life-altering symptoms that must be addressed today. These might include symptoms that could affect the ability to sleep, eat, breathe, maintain balance, or move. The clues to the locations of the perpetrators and/or TrP contributors are in the history and your charts. Care providers, plan to examine thoroughly only areas that can be treated in some way. Both parties must know the current level of pain before the exam, and then agree on a level that will not be exceeded during the exam. This can be very difficult if, using a scale of 1 to 10 with 10 being the worst possible pain, the patient is normally at an 8 or above. These numerical scales can only compare one patient’s pain from one time to another. They are relatively worthless for comparing one patient’s pain to another’s. Patients need to specify what some numerical value means to them. For example, one patient might say that at a level 9 pain, they are bedridden and cannot prepare food for themselves, but can make it to the bathroom when necessary and they can take care of their personal hygiene. Another patient might have an entirely different numerical scale. Patients, it doesn’t help anyone when you attempt to compare your pain to that of another person with these conditions. It can generate a lot of negativity. If one person can do a task at their pain level 7, it doesn’t mean you can do that task at your level 7, or that you should try. Life is a compilation of variables, not an equation of absolutes. When you begin to compare, nobody wins. Avoid situations where nobody wins. Do the best you can with what you’ve got, and never feel guilty.

Some patients may need to take a little extra medication well before the exam to minimize the possibility of the exam aggravating FM. Palpation may activate TrPs, so the examiner should palpate deeply only those muscles that s/he or another care provider on the team will treat that day, remembering that effects of the exam may be delayed. Patients can become quite ill after an exam because of materials released through movement and palpation (see Chapters 3 and 13). The exam has truly already begun during history taking, with observation as the patient gestures, speaks, and moves around. Likewise, during the exam proper, the history taking and dialogue continues. ROM testing with goniometer measurements helps to find TrPs, can help track treatment success or failure, and will provide insurance documentation. Superb range-of-motion charts are available from Round Earth Publishing (Finn and Shifflett 2003). Depending on symptoms, check for gait irregularities, and sitting and standing postures; just as in t’ai chi chuan, it’s often the transitions between postures that are the most difficult to execute and that relay the most important information.

The keys to manual examination are palpation, positioning, and patience. Palpation is the art of intentionally touching tissues to examine and discover

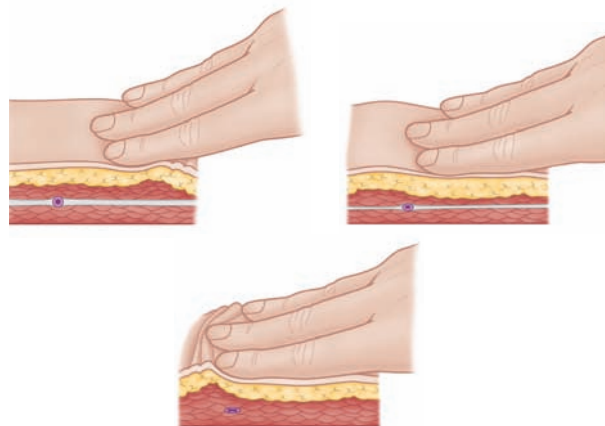
what those tissues have to tell you about the body's condition. Examiners need to develop a fine sense of touch. Palpation for TrPs, especially in CMP patients with FM, is a *gentle* art. Keep in mind that other texts and resource materials are generally concerned with single muscle TrPs, and the pain those single TrPs cause has been described as “intolerable” and “torture.” These patients are dealing with a multitude of interactive TrP symptoms that may also be amplified by FM. Respect that interaction, and respect your patient for persevering in spite of all that may have occurred before.

Examiners, remember that pressing on a TrP causes the symptom pattern. With multiple interactive TrPs you may activate multiple TrPs. Please don't deliberately provoke the TrP local twitch response if you can avoid it, because every time a TrP twitches, it releases toxic substances and the area becomes more acidic. If the patient has many TrPs—and they can have hundreds—those noxious biochemicals add up during and after an exam. Your patient may feel achy and miserable for days, and perhaps weeks, especially if FM amplifies the experience. Minimize TrP activation during exams. Please don't intentionally try to create a twitch response. *Avoid strumming palpation on taut bands:* it causes needless pain. Educate your fingers to minimize the production of unnecessary pain. Encourage a stream of feedback from your patient as you examine. Modify your technique to meet your patient's sensitivity.

There are resources to help learn the art of palpation (Chaitow 2010; Earls and Myers 2010); training is also available and desirable. You must still put in the time with your fingers palpating tissues. Practice how to use the direction of the muscle fibers to identify the muscles, and how to move your fingers gently across the fibers to encounter the taut bands. Bodyworkers have the definite advantage here. Doctors often are disadvantaged, in this modern world where touch between doctor and patient is often discouraged. So how do you get experience? Not on your patients, although every patient you touch can teach you something. Start by paying attention to *everything* you touch, focusing mindfulness and intention. Practice feeling the lines on the head of a coin. Pay attention to the muscles under the surface when you stroke your pets. Become more familiar with touching your own skin, and develop a feel, literally, for the layers of tissues underneath.

While you are sitting watching television or listening to music, palpate. For those who have their own TrPs, search out those lumps and ropy bands under your own skin. It's often easier to palpate taut bands and contraction knots on a limb that is stretched three-quarters of the way out. Move the limb around, noting how certain TrPs are more amenable to palpation from some positions than from others. Find out if the addition of a light lotion or oil or even water helps or interferes with your sense of

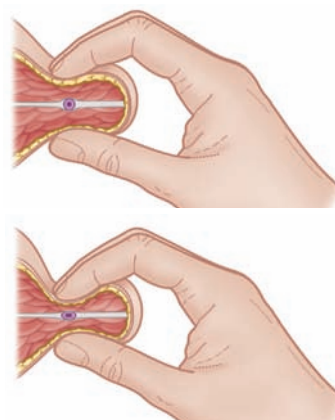
the tissues. Start with flat palpation, using the tips of the fingers, with your hand held parallel to the body surface being examined. This form of palpation is often the most useful for light exploration of superficial areas.



*Flat palpation.*

You'll develop “the touch” for changes in tissue texture, and any irregularities: the skin may move fluidly in one area, and in others may seem stuck. What do you feel in the tissues over bone or near scars? This type of palpation can be modified into a versatile treatment technique for patients and care providers.

Pincer palpation is also an excellent technique to master, but please start with light, gentle pressure.



*Pincer palpation.*

This technique is handy when you're working close to the edges of muscles; especially when you can “get around” each side of them, such as parts of the SCM. You may be able to run the edge of the properly positioned muscle between your thumb and fingers until you encounter contraction knots. If the history and the referral pattern indicate a possible TrP in the vicinity and you cannot palpate it, see if you can find the taut band and follow it to the TrP. Positioning is critical in the art of palpation for TrPs: try different alignments of the muscle. Palpation is a science as well as an art, and much of the muscle positioning has been mapped out; for example, Travell and Simons (1992) devote many pages and diagrams



to positioning the quadratus lumborum muscle. Careful positioning is necessary in palpating for location of deep TrPs, as well as for many therapies, including stretch and spray, and TrP injections.

At times, TrP locations may be resistant to palpation due to fibrosis, obesity, swollen tissue, or other coexisting conditions. The patient's pain tolerance must guide how deep you can go and how much area you can palpate. Meaningful feedback is critical to a successful exam. Patients, tell your examiner what you feel and how you are feeling; this isn't the time to chat about your goldfish. Let your examiner know if you think s/he may be close to a TrP, or when the target has been acquired. Both patients and care providers might want to ask relatives and friends to allow you to practice your palpation technique on them, but be gentle—they may have latent and unsuspected TrPs. A patient may wish to teach friends and family how to do a light palpation by demonstrating on an accessible TrP, but be sure they know to be very gentle. Just let them run their fingers gently over the surface of the skin to feel the contraction nodule. It's a chance to educate them about the reality of the TrPs causing many of your symptoms. At one time, "X" spots were used as *guidelines* to the most common locations of motor endplate zones, because that's where we thought most common TrPs were located. We've learned that motor endplates are found more extensively throughout muscles than just in the endplate zone (Gerwin 2010, p. 333), which means you can't find all the TrPs simply by looking at diagrams and checking the "X" spots. You need an understanding of anatomy, and you need to palpate all of the muscle and its attachments. We're gaining a new appreciation of the importance of TrPs in attachments such as tendons and ligaments. You can't get palpation experience looking at diagrams, or find TrPs by looking at pictures—you must *do*.

The patient must be as comfortable as possible during the exam and for TrP assessment. Patients with FM and CMP may require extra medication and/or therapy such as stretch and spray during and after the exam. The room must be comfortable to the patient in temperature, without drafts. The more relaxed the muscle, the easier it is to palpate, so it is important that patients avoid tensing in anticipation of pain. It often helps to put a muscle being palpated into a partial stretch. While it is important that latent TrPs must be treated (Ge and Arendt-Nielsen 2011), *the exam is not the time*. For now you are finding (and eventually treating) active TrPs causing the previously agreed-upon four most significant symptoms. Attachment TrPs may be harder to palpate, as this area is frequently tighter and more likely to be scarred, fibrotic, or calcified. You palpate with the fingertips. Palpation *requires* short, smooth fingertips and fingernails. You can't palpate successfully if you have fingernails like hawk talons or calluses like steel guitar players. Keep nails short, with no ragged edges. Take care of your

hands. Practice touching lightly, so that the eyes of your fingers see all that they are able.

Examiners may need to figure out a way to take notes during the exam, including a sketch of—yes—another body chart. In CMP, TrP contraction nodules in thicker muscles may occur in clumps as large as a grapefruit. The tissues around such a clump may be so tight and swollen with infiltrates that it feels like one huge nodule until some of the interstitial swelling is reduced, and such a clump may be covered with a geloid mass. TrPs are not homogeneous: the feel of each contraction nodule depends on many variables, including the amount and variety of biochemical infiltrates and excess fluid the area contains. Some contraction nodules resemble ball bearings, marbles, or even tiny hard seeds; the last can often be found around nerve endings. Sketch in any stuck tissue, but unless positively necessary, such as for reactive cramping, don't treat *during* the exam. Passively move the muscle to check if there is a crackling or popping sound when the joint is moved. Write down the presence of dermographia and location of geloid masses. Sketch atypical patterns of hair loss on the body and head, which can occur along TrP referral patterns and may be mistaken for stress reactions or other conditions.

## Treatment

Patient education is a major part of treatment. For example, patients must understand that pain caused by such-and-such a motion is an important clue to where the TrPs are located, and that continually avoiding that motion will only lead to further loss of function. Each patient is unique: a specific therapy may be more successful on some patients at different times, may not work at all on others, and may even make some worse. Finding out why may be an important part of identifying subgroups of FM, but the presence, location and number of TrPs must be taken into consideration. One thing is always certain—you need to identify and control as many perpetuating factors as soon as possible and as completely as possible. Also, any therapy program must start cautiously and slowly. A successful TrP treatment will release those toxic substances and stored wastes from the myofascia and surrounding tissues. This is true even for the gentlest therapy, and CMP patients may have a lot of TrPs to release. The body's detoxifying system can handle only so much waste and toxic matter at a time, and the rest continues to circulate in the body until it can be processed and eliminated.

Each new therapy must start cautiously until the patient's tolerance is found. For example, the positive experience of deep sleep from sodium oxybate therapy can restore the balance of some biochemicals (those that are rebalanced during deep sleep), causing release of some muscle tension, causing activation of some TrPs, thus causing



a temporary increase in pain and other symptoms. This could lead to a mistaken belief that these symptoms are drug side effects rather than TrP activations that are part of the healing process. That could be why so much of the sodium oxybate side effects list reads like a list of possible TrP activation symptoms. The dose of sodium oxybate for CMP and FM patients who can't get deep sleep otherwise should be started much lower than that for narcolepsy patients or patients with only FM and a few TrPs. It must be titrated slowly upwards, with frequent patient feedback and careful monitoring, especially at first, to achieve deep sleep with the lowest possible dose. One needs to be familiar with the whys and wherefores of drug actions and interactions, as well as the mechanisms of FM and TrPs, when dealing with these conditions and medication therapy.

All actions have consequences. For instance, obese individuals on a healthy diet may already be dealing with the release of toxins, as these are often stored in the body fat (Tremblay et al. 2004). When such a patient is also treated for TrPs, the released materials are additive, and increased fatigue and aches might, again erroneously, lead one to believe that the treatments are doing harm. Ease up on therapy according to patient tolerance: treatments must be scheduled so that the patient is able to recover from one treatment before going to the next. When the health of the patient has improved to the extent that there are fewer toxins released and detoxification pathways are improved, more frequent therapies can be scheduled. The system is currently set up to expect more frequent treatment right after an injury or new diagnosis, and less frequent treatment as a patient improves. This is not what most patients with CMP and FM need.

For both patients and care providers beginning on the healing road together, there may be the temptation to take on too much at once, or to feel totally overwhelmed by the enormity of the task. Travel on any road one step at a time. After the first exam, prepare a plan together. It would be marvelous to immediately be able to identify and map all TrPs, but it's not always possible or even advisable to do so. It may have taken some doing and more than a bit of time to get the patient in the situation s/he is in now, and there's no quick fix. Of course, there are always people who will say that there is, and they'd be happy to sell it to you. If you've read this whole book, you have some idea of the complexity of TrPs, FM and how they interact. So unless you can get a contract in writing how that miracle diet or herb or whatever is going to identify and fix your ill-fitting furniture, erase that head-on collision, or vanquish those coexisting medical conditions, shoo that denial dragon away. You can't wave a magic wand. Well, you can, but it won't do any good. Don't be overwhelmed by what you *can't* do: focus on what you can. Target the four most significant symptoms. Identify all known and suspected perpetuating factors and decide what needs to be done to control the known

ones and investigate the suspected ones. That may mean tests (such as a sleep study), exercise regimens (including correct breathing technique), and dietary changes. The patient may need to start journals (sleep, diet, pain level, exercise) so that suspected problems can be documented. That includes keeping a record of treatments too. These are high-maintenance conditions, and there is no cure yet. But there can be significant improvement in quality of life, treating symptom management, and even remission. Breathing correctly doesn't take extra funds, but the results can be profound.

The process may be overwhelming, so it's best to break it into parts. Some things may seem unchangeable, but that perception too may change with time. Make a list of what can be changed. For the primary care provider (PCP), this is also the time for the first medication check, and the start of vitamin and mineral supplementation if needed. Schedule appointments for tests and treatments. Address sleep dysfunctions and other life-altering issues. During future visits, the PCP needs to include time to check brief journal summaries (the patient prepares these), compliance with scheduled therapies and, at first, test results.

Any chronic pain conditions may be accompanied by information-processing deficits, and fibromyalgia may bring its own cognitive deficits, so please write down any instructions for patients. If there are stretches prescribed, the patient needs to demonstrate an understanding of them by performing each one in front of the appropriate care provider. Supply a written direction sheet on every new exercise. Handouts are great time-savers in chronic pain treatment; they help prevent communication failures and may therefore save time, money, and even lives. Patients and care providers need to become comfortable using this book as a reference during treatment. CMP is too complicated to expect anyone to remember all of these patterns along with all of the information that goes with each one. Familiarity takes experience, and that takes time and effort.

Proprioception and autonomic function may be impaired in CMP in many ways: there may be coexisting conditions, and/or multiple nerve and blood vessel entrapments. FM central sensitization amplifies TrP symptoms and may amplify any treatment side effects. There may be layered TrPs, especially if the muscle is a complex one such as the levator ani. So where do you start? Well, that depends on the four symptoms your patient has picked and what kind of care provider you are, and will vary with the patient and the circumstances. For example, pelvic asymmetries must be corrected before leg length, but unequal leg length may be contributing to pelvic asymmetries. Pain is almost always a major perpetuating factor. If patients are on narcotics or other heavy medication and have substantial pain, check the spine. If history indicates abrupt or repetitive trauma, check the spine. If the TrPs

don't respond to adequate treatment, check the spine. The spine is a major pain and dysfunction interaction site. TrPs are associated with disc pathology, at least in the cervical (Hsueh et al. 1998) and lumbar (Samuel, Peter, and Ramanathan 2007) areas; one of the authors (Starlanyl, unpublished work) has found this true of spinal facets as well. Typical forward and backward bending tests for disc vs. facet pain may not work if TrPs are part of the equation, because these motions may aggravate TrPs causing some of this pain. The TrP taut bands may also be “guarding” the spine. Appropriate imaging, which may include flexion/extension X-rays, may reveal perpetuating factors. There are non-surgical options for controlling spinal nerve pain; patients may require a combination of these, including spinal, nerve and facet blocks and FSM. TrP injections may prevent some degenerative disc pathology. We don't know. So much time has been wasted trying to deny the existence of TrPs and FM. It's much more cost-effective to prevent them.

Care providers should consider adding TrP therapists to their health care team. For example, dentists must be able to provide minimum TrP work to have success in equilibration when patients have head and neck TrPs. Stretch and spray could save much harm in the dental world. Handouts on TrPs are available for some dental, medical and mental health specialties (Starlanyl, website). TrP medicine opens up a new range of treatment options, no matter what your field. Which therapies have worked for the patient in the past?—build on them. What therapies are available in your area?—it is to every care provider's advantage to know who's out there and can help. When dealing with CMP and FM, patients need a health care team. They work together, first on those four targeted symptoms. What kind of therapy lends itself to those problems?—be open to alternatives. There is a whole world of treatments beyond the scope of this book to consider. Therapies often complement each other, but many aren't currently covered by insurance. One must proceed with caution with any new therapy, or any new area of therapy, for patients with CMP. Therapies that may be beneficial in the long term may cause extra symptoms in the short term due to TrP activation. Go into every new therapy with the knowledge that no matter how gentle, it may provoke TrP activation. Remember that perpetuating factors often have perpetuating factors.

## Bodywork

No book can cover all types of bodywork, although some have been described by Starlanyl and Copeland (2001), and neuromuscular aspects have been covered by Sharkey (2008). In every type of bodywork, therapists vary greatly in their skill sets and experience. For example, some massage therapists do Swedish massage only, using five flowing strokes that calm the CNS and improve microcirculation. I (Starlanyl) have a massage therapist,

Lindsay Crossman, who is adept in that technique as well as in a variety of TrP skills, Vodder lymphatic drainage, and an abundance of other healing therapeutic options. She is constantly expanding her knowledge, as are the rest of my health care team. Patients and care providers, investigate. See who is available in your area. Patients, ask your support group. If you don't have one, start one. It soon gets around who is good and who isn't. You require an excellent PCP who understands your conditions. The letters after the name won't indicate what they know about FM and CMP. Many medical schools don't yet teach what is in this book. Ask what they know. Then vote with your feet, and demand options. Some craniosacral or myofascial release therapists have some of the education, but may lack “the touch.” Patients with CMP and FM must be especially careful in choosing bodyworkers. Their bodyworkers must know and understand both of these conditions, or be willing to learn and listen. Even gentle Trager massage may cause such patients to be bedridden for a while if there is lack of understanding and dialogue before the massage begins. When CMP and FM coexist, any body work, therapy or exam can activate one TrP that develops satellites and can start a chain reaction of TrP activation, called a TrP cascade. Suddenly, all the TrPs in the whole body, or in one side, can be active, and everyone is wondering where all the pain came from. When toxic materials are released from the myofascia, cognitive function may be one of the first things affected, including communication skills. It is important to give the bodyworker feedback when necessary, and the bodyworker must be aware that the client may be profoundly affected by the treatment, either immediately, or as a delayed response.

## General Bodywork Hints

Keep a list of anything that breaks the symptom cycle or can provide temporary relief. Here are some general bodywork tips:

- Care providers, with any type of treatment, address the less painful side first, if there is one, to diminish the chance of reactive cramping or rebound (Funt 2009).
- Adequate hydration is critical to healing. Patients should drink ample, healthy water before and after treatment, and keep it handy at all times.
- Healthy posture is a priority.
- Patients: move mindfully and efficiently, avoiding jerky motions. Use your body properly. Care providers: ensure that your work table doesn't place undue stress on you or your patients.
- Begin all posture exercises carefully, performing them without repetitions several times during the day, coordinated with proper breathing.

- A muscle with TrPs is already physiologically contracted and can't be strengthened until the TrPs are resolved. Be patient.
- Repetitive exercise is inappropriate for muscles with active TrPs.
- Find a healthy exercise that you enjoy and do it regularly.

Any bodywork can provoke an emotional response, including reliving of traumatic experiences. These emotions can include rage as well as terror or sorrow. Some forms of bodywork are more apt to provoke a response than others. Shedding tears as part of a somato-emotional release can be helpful, but be aware that other reactions are possible too. When you are treating patients who have CMP and multiple coexisting conditions, including FM, preparation can be a life saver. There are four common stress responses: fight, flight, freeze, and startle. FM can amplify any stress reaction, and pain can provoke it. Remember, in FM, touch, smells, and sounds can be perceived and experienced as pain. Neurotransmitters can be unbalanced in FM, and they control the expansion and contraction of blood vessels, among other things. Care providers: monitor your patient's status during therapy and have an emergency plan in place for cases of sudden sensory overload. Your patient may be in a freeze or numb state and not able to clearly communicate to you the level of pain they are experiencing. This may rapidly advance to a startle or even shock state; appropriate care protocols may vary from decreasing as many stimuli as possible (dimmer lights, music shut-off, etc) and careful monitoring, or to shock protocol. Such a situation can happen. Patients: keep a list of activating factors for your TrPs, a list of signs that indicate your symptoms are getting out of control, and a written plan to follow if and when that occurs (Starlanyl and Copeland 2001). Have necessities on hand if you must spend a prolonged time at home, and a list of contacts you can call on for help if needed.

### Therapeutic Methods

A TrP is physiologically contracted tissue that requires physical techniques. Manual thrust chiropractic isn't appropriate for TrPs: if there's nerve entrapment, especially spinal, it could be both painful and harmful. Chiropractic Activator adjustments are often effective for bone realignment and may relieve pressure on other tissues. TrPs must also be treated and perpetuating factors brought under control, or the adjustment and the relief will be temporary, because the TrPs are still causing muscle contracture, and the bones may be pulled out of alignment by the tight muscles. Even if there is spinal or other pathology, it's often possible to significantly improve the symptom level and quality of life by treating the TrPs. TrP patients come in all varieties, from star athletes to cancer and HIV patients ... from children to geriatric patients in nursing homes. Symptom relief is

a valuable gift to provide to anyone. Treat the patient, not the imaging or the lab test. It's better to under treat than over treat—small, gradual steps are best. Any changes must be facilitated through all the systems of the body. This requires energy, and TrP areas are already in an energy crisis. We need to identify a direction and destination for our treatments. That said, the care provider and the patient are dealing with a situation that is constantly changing and shifting like sand beneath the feet. Be prepared to change the plan on the basis of the response to the previous treatment.

Areas of very sensitive TrPs can be worked by stretching tight tissues *around* the TrP, gradually working your way to the TrP itself. Skin rolling, a technique whereby the upper area of skin is picked up and rolled along the tissues, is often impossibly painful and unproductive in TrP areas, especially for FM patients. The skin surface may be cemented to the subcutaneous tissues, which adheres to the tissues beneath, and so forth down to bone. Attempting to abruptly tear those tissues apart is akin to flaying your patient, causing mind-numbing pain. The patient may also experience delayed disorientation and other sensory overload effects for days, so seek gentler options. Check muscle attachments for TrPs. Many insurance companies are unaware that some muscles have more than one attachment, and a reimbursement may reflect this: educate them.

### Barrier Release

In all therapy methods, the patient must be as comfortable as possible, and the muscle(s) to be treated must be well supported. Barrier release is a form of flat palpation that is extremely useful. If working on a limb, the muscle is slowly and gently lengthened until it begins to resist; there should be minimal if any additional pain—just resistance. The palpating fingers gently approach the area of the TrP, sliding across tissues in a flat plane until the tissues resist the progress of the fingers. At this point a palpable barrier has been encountered. Hold gentle finger pressure against this barrier until it releases, as if it is melting. This may process takes time. Take what it requires. It doesn't take a lot of pressure, but you may need to try an approach to the barrier from several different directions before you get a release. The fingers progress until they find a new barrier; work continues until all the barriers are gone or there has been as much treatment as can be tolerated. The same process may be needed with every taut band. The TrPs may, however, be too irritable to tolerate the pressure, and if the patient tenses in response, the process won't work. Moreover, excessive speed or pressure can increase pain and rupture the contraction knots. Work the fascia in a three-way stretch, restoring the elastic component and healing ground-substance deformation and tissue thickening. You are gently separating microadhesions. There can be blood vessel and nerve entrapments, so be mindful of those fragile structures. When there is a release, the

tissues beneath your fingers will shift—sometimes subtly, at times massively. This method is similar to scar TrP release. Be patient. Like the song says, breaking up is hard to do.

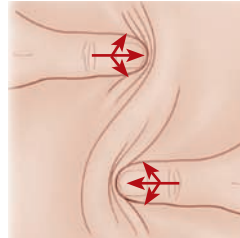
### Scar Release

When the body fails to knit traumatized tissues neatly in corresponding independent layers, it can form adhesive scar tissue that alters the proprioceptive input of the whole region (Lewit and Kolar 2000). This, in turn, results in a variety of protective compensations that can disrupt entire kinetic chains. Scars can be trouble, even if they seem innocuous. Active scars may be clinically relevant to the current symptoms, even though they are some distance away. Especially if central sensitization (FM) is involved, there may be layer after layer of irregularly formed stuck tissue down to the bone, spreading out in all directions. The surface scar may be indicative of only a small portion of the tissue damage. TrPs in scars can cause sharp, lightning-like or electric pain. Tendons, ligaments, and bones may shift to accommodate scars and adhesions. Scars can introduce an unpredictable kinetic chain branch. Look for “increased skin drag in the area of the scar, increased resistance of the skin and the subcutaneous tissues to stretch and folding, and tenderness when exerting pressure on the tissue fold” (Lewit and Kolar 2000, p. 527). Only part of the scar may be active, although this may change as treatment progresses. Utilize the barrier release method—this doesn’t involve pressing *on* the scar, but rather stretching surrounding tissue away from it. Gently mobilize large scars, especially when adhered to underlying bone. Respect FM pain amplification. Never attempt to tear the scar away from its surrounding tissue!

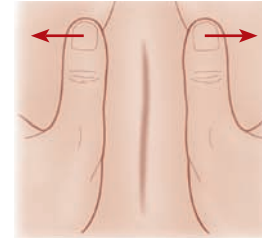
Approach a scar from some distance, granting it respect, as if cornering a wild and unpredictable creature (which in fact you are!) Use flat palpation, very lightly, until you feel the first barrier. By palpating the scar and the immediate surrounding tissue, you can feel where tissues are stuck, how deep they’re stuck, and in what directions they are stuck. Next, start to work on the scar, keeping lines of communication open and encouraging feedback from the patient. Scar release hurts—the object is to get the maximum release with the minimum amount of pain.

Material from a lovely paper by Kobesova et al. (2007) about the treatment of an active scar is presented here with the permission of those authors. The article offers hope that, even after decades, TrPs in scar tissue may be effectively treated with tissue mobilization. Deep abdominal scars are common, can be extensive, and may be hidden and unsuspected. An appendix or ovaries removed during another surgery may leave no visible scar, yet cause severe pain when palpated. Such internal scars may be causing major kinetic chain disruptions. The active scar doesn’t move freely against underlying structures: there is resistance to the skin stretching around it. Check to see if such a scar is involved in the patient’s

chief complaint. If not, note it for future work and move on. If the scar is clinically relevant, barrier palpation and similar techniques are the least traumatic ways to release the scar. The goal is to increase tissue mobility. Start by stretching the superficial area around the scar, mobilizing the skin and the immediate area beneath the visible part of the scar. Please be as gentle as possible.



*Stretching a soft tissue fold.*



*Skin stretch.*

*Deep palpation and barrier release of restrictions in the abdominal cavity.*



Drawings reproduced with kind permission of Anna Kobesova.

Mobilize the tissue in as many ways as possible, always keeping within patient pain tolerance limits; work it using barrier release.

Whether the clinician stretches or shifts the scar, there is always a free range in which little resistance is encountered. By our definition, the barrier is reached (engaged) at the first point of resistance. This definition implies that the physiologic barrier is soft; it easily gives and can be “sprung.” Very gentle digital movement must therefore be used, which allows the first barrier of resistance to be palpated, and then the resistance gradually increases under the physiologic circumstances ... Treatment involves engaging the pathological barrier and waiting; after a short delay, a release gradually occurs until the normal barrier is restored. (Kobesova et al. 2007)

Some patients can learn to self-treat scars within their reach. Any successful TrP treatment may produce multiple twitch responses. Some TrP twitches may go unnoticed: some may be very obvious. Remember, when a TrP twitches, over 30 irritating biochemicals are released into the body (Shah and Gilliams 2008). It’s much better if those substances are on their way out, rather than being stored within the tissues. As these chemicals circulate, and until they have been released from the body, patients may feel toxic. They need to drink large amounts of water before and after therapy to dilute and help flush out these materials. Tolerance to treatments can vary considerably from patient to patient, and tolerance may vary depending



on the treatment type for any given patient. One scar may take multiple sessions.

### Indirect Therapy

Chronic pain almost always involves a myofascial component (Simons, Travell, and Simons 1999, p. 267). The interactive aspect between TrPs and many other conditions can be useful, as successful treatment of such a condition can help TrPs. For example, histamine is a big player in pain, and can be controlled by medications and some therapies. It is involved in immune reactions and allergies, and influences the action of some cytokines (Igaz et al. 2001), which play a part in FM. Histamine is one of the chemicals released during TrP twitches. Don't neglect the TrP component of other major illnesses. For example, TrP release may significantly improve the quality of life of cerebral palsy patients. One study (van Wilgen et al. 2004) found that 46% of post surgery cancer patients have myofascial pain adding to their symptoms. For example, TrP therapy for terminally ill patients may allow them to eat, giving them a higher-quality life.

Patients with multiple illnesses may find that what helps one condition may worsen another. For example, people with arthritis are often given those little marble-like balls to exercise their fingers, but such repetitious work can rapidly worsen coexisting TrPs. Arthritis pool therapies may include repeatedly lifting jugs filled with water overhead. The TrPs are going to complain, loudly—perhaps not immediately, but patients may not be able to lift a teacup the next day. Pool temperature must be higher for CMP therapy than for arthritis; pools that are adequately heated for arthritis may lead to dangerous cramping in some TrP patients. A temperature of 90°F (about 32°C) is good, but may be difficult to find.

### Stretching

The concept that stretching can magically solve many pain problems is a myth. Most muscles will begin to rip and tear when they're elongated by more than 5–7% of their resting length. If muscle receptors are functioning correctly, the fibers and associated fascia are desperately trying to resist lengthening by contracting or stiffening. If tissues are tight from TrPs, movement is the key. Any involved (TrP-laden) muscle needs to be completely relaxed in order to be fully stretched, and that can be problematic. Stretching may ease central muscle TrPs but aggravating attachment TrPs. If hyperlax (often called hypermobile) tissues are involved, care must be taken not to overstretch: both the patient and the bodyworker may be unaware that hypermobility is a factor until the TrPs are resolved. We believe that some TrP formation is the body's attempt to compensate for hyperlax ligaments; these TrPs return quickly after treatment, as they exist because associated ligaments have lost the ability to stiffen—their first line of defense. Stretch only within a healthy ROM, not the maximum possible, and stretch in a dynamic manner. Holding static stretches can

result in the lengthening of more “plastic” tissues (such as ligaments). A combination of muscle inhibition and overstretched or “lax” ligaments is a recipe for formation and perpetuation of TrPs.

Standard stretches can leave shortened areas unaffected while further separating overstretched sarcomeres and firing off protective anti-stretch reflexes. This is why (static) stretching as “warmups” in exercise class can decrease flexibility. It is also why “strengthening” exercises can leave muscles weaker: more shortening of the already over-shortened fibers, further stretching of over-stretched ones. In contrast, stretching against resistance dramatically increases ROM because it restores both types of abnormal fibers to normal resting lengths. Stretching under load pulls the over-stretched sarcomeres back together while pulling the shortened ones apart. (Shifflett 2011, p. 84)

Dynamic ROM stretching involves taking a muscle through its full, healthy ROM by actively contracting its antagonist muscle—the muscle that works to balance it—so that the muscle stretch slows down towards the end of its range. This stretching is a functional elongation of all muscles involved in any specific action. We don't encourage the holding of a stretch end-point; the muscle should keep moving (dynamic), without bouncing or any other types of coercion. Dynamic ROM stretching is moving as nature intended, and should include rotations where possible, ensuring lengthening of the tissues in their order along the kinetic chain. We aren't forcing a stretch, only maintaining the available healthy ROM.

### Tennis-ball Stretch

There are many ways to use a tennis ball to stretch muscles and treat TrPs. Rest your back, buttocks, or thigh on the tennis ball against the seat while in an automobile or during a long meeting. Press gently and hold it for a few minutes or less—avoid impairing microcirculation. Move your body on the ball from one side of the taut band to the other, as feels comfortable. Keep the pain level in check: if this hurts too much, start with a softer surface such as a sofa. Don't use too much pressure, as it can cause rebound tightening. When you can work the TrPs without excessive post-exercise soreness the next day, use a harder work surface. Practice using the ball against a wall. It takes a while to learn to keep the ball in place while you work the TrPs, so don't get frustrated if the ball escapes to the floor and you need to retrieve it—persevere. Remember to work on the sides of your body with the ball. Working on the floor with a tennis ball is very beneficial, but can be more painful because it's harder to control the amount of pressure. The first time you try ball work, go over each area once or twice lightly, then see how you feel the next day and modify treatment accordingly. FM patients especially have a



tendency to lose track of how much bodywork they are doing. Use a timer. Don't use the ball across the spine or tailbone. Use deep belly breathing while you work with the ball, and keep hydrated.

A tennis ball in a knee sock can be useful for accessing hard-to-reach back areas, and you won't have to keep retrieving it. Knot two tennis balls together in a knee sock to use as a roller along the sides of your spine. Work those paraspinal muscles against the wall or on the floor. When you find TrPs, see which movements aggravate them, and which ones help. What do they tell you about your posture? If the aches and pains move from side to side, that's actually good: you're working out some TrPs, and other ones are clamoring for attention.

### Stretch and Spray

This is not recommended for the cold intolerant. Many who are familiar with TrPs are used to the phrase "spray and stretch." However, we start the *stretch* first, to stimulate the muscle spindles; this is then followed by the vapocoolant *spray*, to deactivate the muscle spindles via cooling (Sharkey 2008). The spray direction follows muscle fiber arrangement and can be applied during stretch, *from muscle origin to insertion*. Each sweep should be close to and along side, but not directly over, the previous one, with no breaks between the sweeps. The spray pattern is specific to each muscle or part of a muscle and the muscle must be rewarmed after the spray. The muscle is then put through a *passive healthy ROM stretch three times*. Muscle positioning during spray is crucial. Many of the specific muscle spray patterns are shown in Simons' and Travell's texts (Simons et al. 1999; Travell and Simons 1992), and some can be found on the Internet. Patients need diagrams. Care providers need to remember, *spray from muscle origin to insertion*. This method is also useful in combination with TrP injections.

Patients, if you have clinically significant accessible TrPs, sufficient mobility, and the ability to learn safe technique, your care providers may teach you basic stretch and spray and help you get a spray prescription. It is even better if you have a willing, trainable partner who can assist, but they need training by the professional, and also need written directions to follow. The way you stretch and spray is important, and there are safety considerations, but your care provider will give you training and written instructions. It is important that time is invested by your care providers in preparing handouts and education—this may prevent emergency calls to your PCP during the night or on weekends. Self-treatment may provide sufficient pain relief to enable you to sleep, or to get yourself to your PCP's office.

For some muscles, the handout must include balancing safety, because some areas are difficult to reach. When beginning this therapy, start slowly, with one bottle—some people are sensitive to the spray, and others cannot

master the method. *Asthmatics should not attempt to use vapocoolant, and everyone must learn to cover sensitive areas, as well as the mouth and nose to avoid breathing in expelled fumes or mist*. Check in advance that you will not have an allergic response to the spray. During the treatment you may need someone else present for health and safety reasons. Rewarming is a significant component of the therapy (Bahadir et al. 2010), and logic dictates that's true for ice stroking as well.

### Ice Stroking

Ice stroking uses ice instead of vapocoolant spray. Ice is less expensive, safe for the environment, and (unless we continue to destroy said environment) more accessible. To avoid chilling the muscle directly, water can be frozen in a paper cup, or as an ice cube placed in a washcloth. The object is to cool the surface in swift strokes; not freeze the muscle. Ice stroking works best when used in the same pattern as stretch and spray. Care providers: if you suggest ice stroking, train your patients and supply written handouts for each muscle technique. Ensure that the patient does not become chilled during the procedure, or the skin harmed. The ice must flow gently and swiftly over the surface in the proper direction, and the surface rewarmed immediately before the patient stretches again. Muscles stretch better when they are warm and supple. This therapy takes a fine hand and experience—and experience takes time.

As you try any therapy, think about what it's doing. Cold shrinks blood vessels, and therefore decreases circulation. Cold reaches the brain faster than pain signals—so does touch. You can try overloading pain receptors with touch: experiment with light skin brushing or even a feather's touch, but both of these have been known to provoke a TrP twitch response. Heat expands blood vessels to help bring circulation into an area. Find out what works for you.

### Needling

TrP injection therapy has been around for a long time, but acupuncture has been around a lot longer. Dry needling of TrPs without anesthetic is becoming more popular, because more people can do it than can do TrP injections with local anesthetic. Research indicates that it is the needling that relieves the tension caused by the TrP rather than the substance injected (Lewit 1979). Studies have been done on the merits of dry needling versus injection, but it is one of the authors' (Starlanyl's) opinion that much of the variation in success is due to the skill of the practitioners. TrP injections can be quite painful, and local anesthetic can minimize the pain. This can be an important consideration when there are multiple TrPs to be injected and central sensitization is an issue. Some local anesthetics are significantly toxic to muscles, and the one that is least toxic should always be chosen. *Steroids are not part of accepted typical TrP injection therapy*. It's vitally important that pain levels

be monitored and under control, since the body can only endure so much before it reacts. (See Bodywork section in this chapter.) Some of the best care providers have had experience with TrP injections or needling causing sufficient pain to send a patient into shock. Logic would indicate that this is more likely to occur if the patient also has FM, has insufficient pain control, or both.

It's beyond the scope of this book to teach TrP injection techniques, but good training is available. Forms of needling, in our opinion, need to be professionally taught, along with many other TrP techniques, as part of professional medical and dental training. Even with experience and observation, many practitioners do not perform TrP injections properly. When a TrP is marked with a guideline "X," the temptation is to look at the picture, take aim at the location of the "X" spot on the patient, and then inject. That's not how a TrP injection is done. *TrP injections require careful positioning of the patient, careful palpation of the TrP, careful injection of all TrP areas in the contraction nodule, and full ROM stretching after the area is injected. It is inappropriate for the care provider to say, "I've injected. Now you go home and stretch."* Stretching *must* be integrated as part of the injection process.

TrP injections, including those into ligaments and tendons, can quickly release quantities of entrapped material that must be processed by the same detoxification pathway used to detoxify alcohol, caffeine, and acetaminophen. Patients, be kind to your body and don't stress it with extra toxins. Drink a lot of good water. You may be in a brain fog for a while, and/or particularly achy, as the released materials circulate in your bloodstream until they can be processed. Some of us prefer that the TrPs are injected with a small amount of local anesthetic, and then:

... the dry needle is used to eliminate the remaining tender spots. Stretching after the trigger point injection is the most integral part of the treatment. Not stretching after injection or needling is the same as receiving no treatment at all. (Doggweiler-Wiygul 2004)

## Psychological Support

It is logical to have difficulty keeping positive in a negative environment, but pain may have positive aspects. It's a learning experience. One of the first things you learn is that you don't want to experience it. There are books and chapters (Starlanyl and Copeland 2001) devoted solely to mindwork and psychological support. Stress is caused by chronic pain, and many symptoms may be compounded by the nearly universal lack of awareness or misconceptions concerning FM, TrPs and CMP. Patients must cope with the invalidation that comes from having a condition that is poorly understood by family, friends,

coworkers, classmates, and (too often) members of their medical team. This book is part of an effort to change the way chronic pain is being treated. That's way too big a job for two authors, or even for all those now involved in FM, TrPs, and CMP. So, kind readers, we ask that you use this book to help us teach the whole world.

Patients with these conditions have often expressed to me (Starlanyl) their sense of being marginalized, misunderstood, isolated, and alone. They feel overwhelmed as they struggle to explain their symptoms to an unenlightened world. They wonder if anyone believes them, or if anyone cares. I invite them they look at this book's reference section. Then go to my website ([www. Dover.net/~devstar](http://www. Dover.net/~devstar)) and look on the care provider side for References for Research Purposes. There they will find many hundreds of medical research journal articles titles, some which have annotated notes on why that particular research is important to them. In these pages, you have already come across some of those talented authors. These dedicated researchers work to reveal the secrets behind these and related conditions. They are our hope. Whenever you feel alone, be comforted that these people and others are searching for the answers to your questions, and they are succeeding.

Healthy, function-oriented, information-oriented support groups can provide great support. If you don't have a group, start one. Avoid moan and groan groups, since negativity is a perpetuating factor. Remember these rules:

- There are always options.
- If you make a mess, clean it up and keep going.
- Find ways to navigate obstacles.
- Delegate, delete, or modify frustrating or annoying tasks.
- If you fall down, control your fall as best you can; then get up and keep going.
- If you make a mistake, accept that we all do, and learn from it; don't act as if it's the end of the world, or it will be.

Patients with FM must understand that hypersensitivity has its benefits. You may be able to grow the best plants. When you talk to your plants, they talk back. Animals may come to you. You may have empathic connection with all beings. This may get you in a world of trouble as you respond to what others are feeling rather than what they are saying, but you also have a unique ability to understand that can be very useful to help others. A long time ago, I (Starlanyl) created a word, FMily, that signifies our connection. Each of us may share more with each other than we do with blood relatives. There is an instant bond when we meet. We can use that to help each other and comfort each other. It's a priceless connection that means a great deal. We are FMily. We understand.

Don't allow yourself to believe that you lack choices. Catch yourself if you start a negative inner dialogue. Chronic pain patients must have a zero tolerance for toxic relationships. That includes your relationship with yourself. Take a good look at your lifestyle. Learn to pace yourself. This goes for you too, care providers. My (Starlanyl) spiritual, t'ai chi, and FM and CMP communities are great support. Others with these conditions often provide instant understanding. Friends are the family you choose, but choose wisely. A stroll through the woods, a good book or film, losing yourself in music, or a "walk" through a picture can provide the distraction you need to get through a tough time.

## Medications

You might not have considered some of the medications that can be of value for your symptom control toolkit. For example, remember histamine and the connections it has to chronic pain? An antihistamine may relieve some of the symptom burden, but be aware that diphenhydramine (one of the first known antihistamines) stimulates about a quarter of the population. Some people can't take it because a pill in the morning keeps them awake that night, yet others can use it as a sleeping aid when taken in the evening. Diphenhydramine should not, however, be used by the elderly. Any substance that helps in controlling a perpetuating factor can be of help in controlling the symptoms. This includes ice and moist heat.

Consider options for controlling coexisting conditions, especially anything that may help two or three conditions at once. For example, Xyrem (sodium oxybate) has been proven to provide deep-level sleep (Russell et al. 2011), and the lack of this type of sleep is a major perpetuating factor for both TrPs and FM. Deep-level sleep is when many neurotransmitters and hormones are balanced, and allowing the body to perform this natural balancing act can promote healing in a number of ways, along with the other benefits that deep sleep can bring. Right now, use of sodium oxybate is very limited in the United States because of concerns that it could be abused as a "date rape" drug. If you undergo a sleep study showing that you can't get deep-level sleep even with a CPAP, your insurance will probably cover this medication. You may be able to use a much lower dose than is common. The goal with any medication is to use the smallest amount that achieves the optimum effect. If you do have problems getting sufficient restorative sleep, use good sleep hygiene. Keep environmental stimuli low: try high-performance ear plugs (look in a gun shop) and a good, soft sleep mask with straps that won't cause TrPs. Make use of all sorts of tools in your symptom control toolbox. Atrovent Nasal Spray 0.06% (ipratropium bromide) is a prescription anticholinergic drug used to treat congestion and runny nose, which may be caused by some TrPs. TrPs are associated with excess acetylcholine at the

motor endplate, so it may provide multiple benefits. It may also allow better breathing, sleep, and allergy control. Anything that provides, or allows the body to provide, more oxygen to the tissues can be a big plus. Congestion and postnasal drip may be side effects of the body's attempt to protect its tissues from acid reflux, so work on controlling GERD as much as possible with diet and other options.

The experimental use of hyaluronidase may be a way to get at the cause of the swelling and tightness of deep fascia (Stecco C et al 2011.) One must be very careful to avoid touching joints with this biochemical, use minimum amounts, and use only on those TrPs that are resistant to other treatments. It is experimental, and must be compounded in the USA (and is very expensive there.) Other doctors have had success reversing the hardening of tissues, such as TrPs, with the anthroposophical medication *Cuprum aceticum Nicotiana*, starting at 10 pellets a day, available from Uriel Pharmacy.

Patients with mouth, nose, genital, or rectal TrPs might find that the use of topical lidocaine ointment can relieve the pain temporarily. This requires a prescription in the United States, and may make internal TrP work (and even pelvic and rectal exams) bearable in spite of painful TrPs. It won't prevent TrP cascades. Topical oral anesthetics are available OTC in many countries, and may make work on oral and nasal TrPs endurable. Even if only 5% of some symptoms are relieved, it's a help. If you have spinal illness or other significant spot-pain generators, a 5% lidocaine patch can take another slice out of your pain burden. Percentages add up. Don't leave anything out of the toolbox, except your brain. You need to be able to think outside of the box.

Drawing blood may be extremely difficult and painful if TrPs lurk in the area of the draw. Pain tends to cause the blood vessels to constrict anyway, and TrPs can further restrict blood flow. Add to that vasoconstrictive medications such as antihistamines, and veins can become absolutely unsociable. After the additional pain of a few unproductive needle sticks, the veins may go into a witness protection program. This scenario may be minimized if the patient is well hydrated, relaxed, and warm. Before the blood draw, the most accessible vein area (and an alternative) can be prepared a few minutes in advance with a compounded topical muscle relaxant, such as diazepam or carisoprodol. This relaxes the tissues surrounding the vein, and can make all the difference. The use of a butterfly needle will greatly minimize the chance of a TrP cascade developing, during which TrPs could activate from the venipuncture site all along the kinetic chain. This activation could take a week or more of extra therapy and medication to quiet down.

Muscle relaxants can be of tremendous help during long trips and other periods of prolonged immobility: they

may prevent TrP activation, and speed recovery from prolonged sitting, unanticipated hauling of luggage, and other perpetrators. Many patients with CMP and FM have found that regular use of a muscle relaxant can minimize the need for pain medication. Tight muscles hurt! Do be aware that benzodiazepines can lessen the pain-relieving ability of narcotics.

In the USA, the “war on drugs” has become a war on chronic pain patients and their care providers. The Drug Enforcement Agency focuses on drug abuse rather than drug use. Fear of prosecution results in frequent undertreatment of acute pain, with the consequence that more patients are developing chronic pain, requiring expensive pain medications that are hard on their bodies and minds. TrPs go unrecognized and patients are put through needless procedures, surgical and otherwise, in an attempt to control the symptoms. Pain generated by multiple TrPs and then amplified by FM central sensitization goes unrecognized, with consequences that, at best, constitute patient abuse, and, at worse, are orchestrated torture. Further potential aggravation of TrPs may go unrecognized, so CNS is further sensitized by inadequate pain control. Care providers may attempt to perform testing and other procedures on patients with FM central sensitization without extra medicinal support, even though these same procedures commonly require pain medications for healthy people. It is often erroneously assumed that the patients with pain are on sufficient medication already, forgetting that this medication is required just to control their existing pain. If the test must be aborted because of extreme pain, it’s then blamed on the patient, rather than on the lack of adequate pain management. Hospital administrations tend to deny capability to institute adequate pain management of TrPs and FM. FM patients are regularly “weaned” off the very pain medications that work—the ones they need to prevent their central sensitization from becoming worse. The system needs to change.

## Electrotherapies

In CMP, a muscle may fail to release because TrPs in another muscle are preventing its release. There may be scarring, shortened fascial wrappers, adhesions, fluid accumulation by excess hyaluronic acid, fibrosis, etc. This tightness may hurt, especially if FM coexists. Hypersensitivity works in many ways. Look for therapy options. Ultrasound, galvanic stimulation, microstimulation, and other electrotherapies including FSM can help soften tissues, with less trauma and fewer side effects, although all the concerns mentioned earlier regarding the release of noxious substances are relevant. FM may amplify this sensation, but FM patients may also be more sensitive and receptive to these therapies. Hypersensitivity has some good effects. The more

effective the treatment, often the worse the patient may feel afterward. FSM can be especially helpful because it is effective for treating TrPs, FM, and many coexisting conditions, as well as perpetuating factors such as scars (McMakin 2011). It is extremely patient-friendly, but, as with all techniques, is only as effective as the person controlling the equipment. Investigate options.

After any treatment, soaking in a bath with Epsom salts and ground ginger may prevent some post-therapy soreness. Many herbs and supplements, such as omega-3 oils, are anti-inflammatory. Avoid strenuous activity after treatment; this includes stopping at the grocery store on the way home. The body is learning to realign itself, and that’s hard work. Patient tolerance of any treatment depends on many variables, including what is happening in that patient’s life and how much central sensitization is present. Reread Chapter 6; identify all the perpetuating factors you can and bring them under as much control as possible. This really is the key to successfully reducing symptoms. If TrPs persist, there are unidentified perpetuating factors. Find them.

How many treatments will it take? That’s a question care providers are often asked by insurance companies. Chronic means chronic. It takes what it takes—there can be no set time limits or number of visits or treatments. Patients and conditions vary tremendously, and chronic pain medicine often seems to be a field wherein all constants are variables. Right now, the medical care system is broken. Right now, the patient pays for the shortcomings of the current system. There are things that can be done, such as treating all acute injuries and illnesses aggressively. That doesn’t necessarily mean more medication; it does mean preventing as many new perpetuating factors as possible, and controlling the ones that exist. If TrPs continue, in spite of adequate treatment, something is perpetuating them. It may be impossible to control all of the perpetuating factors. Many other chronic illnesses aren’t curable either, but they’re controllable to some extent. FM and CMP are no different. They are just less understood by insurance companies and other third-party payers. It may take some time to educate your insurance company that treating TrPs will be cheaper for them than dealing with expensive surgeries, rehabilitation, and other long-term consequences of not treating the TrPs. The systems are broken, and that’s resulted in a lot of broken people. We need to work together to put those people back together, and help them put their lives back together too. Together, maybe we can even fix the system.