

# 3

## Risk Factors for Musculoskeletal Disorders

“There is always an easy solution to every human problem—neat, plausible and wrong.”

—H.L. MENCKEN, *A Mencken Chrestomathy* (Vintage)

You have probably heard fellow practitioners, as well as some authors, proclaim that a certain method or technique will prevent injury for manual therapists. Learning “good body mechanics,” for example, has been touted in recent years as a sure-fire method for preventing MSDs. Exercising to strengthen muscles is also often mentioned as the best way to avoid injury. It certainly would be wonderful to find the “magic bullet,” a fast, easy method to avoid work-related MSDs. But decades of research have shown that reliance on just one tactic, such as using good body mechanics, focusing on posture, or building strength, is rarely effective in preventing these types of injury.

Taking a single approach to injury prevention assumes that there is only one factor that causes these injuries. Except in cases of traumatic or sudden injury, there is no single factor that causes musculoskeletal disorders. Unlike a traumatic injury (you stub your toe, it swells, it

heals, and you're better), with MSDs it is rarely possible to point to a single event and a single cause and say, "This is the moment I became injured and this is why it happened." The gradual-onset MSDs that manual therapists experience have more insidious, complex causes, which can make preventing these injuries, as well as diagnosing and treating them, quite challenging.

## **A Multifaceted Approach for a Complex Problem**

There are many factors that contribute to work-related MSDs, and only by taking all of these factors into account can one truly understand this complex issue. Even people who are in fantastic condition and have excellent body mechanics, like professional athletes, still get injured when the wrong combination of factors come together. Rotator cuff injuries are fairly common among baseball players, especially pitchers, in part because of the susceptibility of the rotator cuff to injury, but also because pitchers overuse their shoulder joints over the course of throwing thousands of pitches in a season. While manual therapists do not necessarily push their bodies to the extremes that baseball pitchers do, the nature of the work creates the potential to overuse body parts that are susceptible to injury. A multifaceted approach to injury prevention begins with awareness of your own body, its vulnerabilities, and how it responds to the many different kinds of stress placed upon it.

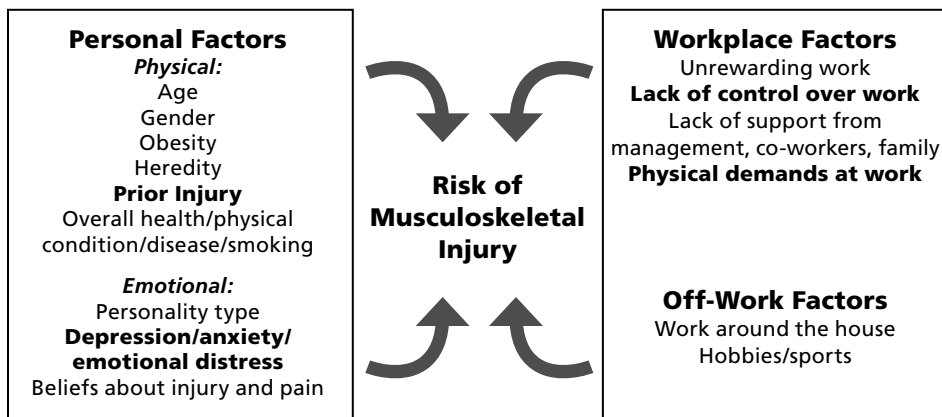
To be able to take action to protect yourself from injury, it is important to first understand the many factors that contribute to causing injury. In occupational health, we refer to these as "risk factors." The term risk factors is used in the same way that it is used by public health professionals when discussing health issues such as risk of heart disease. You may have heard that smoking, excess weight and high blood pressure are risk factors for heart disease. That doesn't mean that someone who smokes, is overweight, and has high blood pressure is going to have a heart attack. It does mean that having those factors places that person at an increased risk when compared to someone who doesn't have them.

The same concept holds true for risk factors for MSDs. For example, in a job that involves work-related risk factors like repetitive motions, forceful gripping and bent wrists, such as a supermarket cashier scanning groceries, a small percentage of workers will develop hand or wrist injuries, even though all of them are exposed to the same risk factors.

Figure 1 illustrates the many risk factors that are known or believed to contribute to musculoskeletal injury. Most of these risk factors are direct causes of musculoskeletal disorders, particularly the ones that are highlighted in bold in the diagram. For other risk factors, such as depression, it can be difficult to determine whether they play a role in causing injury or if they are symptoms of injury. After all, it is easy to imagine becoming depressed if an injury keeps you from working or enjoying your hobbies.

Musculoskeletal injuries most often occur when a combination of the different risk factors shown in Figure 1 are at play. Since multiple factors can be involved in developing MSDs, it is highly unlikely that a single method would be effective in preventing them. For the same reason, it has been difficult to find a single treatment method that is effective in resolving symptoms once they occur. Treatment methods tend to focus exclusively on the physical symptoms and disorders, while there may be psychological factors that are playing a partial role in creating or exacerbating the symptoms. To be effective, treatment needs

**Figure 1. Risk Factors for Musculoskeletal Injury. The risk factors most strongly associated with injury are shown in bold.**



to include reducing the physical and psychological risk factors to which the patient is exposed at work and at home (see more about treatment in Chapter 15).

Because multiple risk factors are often involved, it can be difficult to isolate the ones that are primarily responsible for injury. A group of people may be exposed to the same physical risk factors through their work, such as the supermarket cashiers mentioned above, but some of these workers may have additional risk factors, such as prior injuries or a lack of control over how they do their work. This would help explain why some individuals get injured and others don't, even though they do the same type of work.

Off-work activities can also contribute to injury. Gardening, which entails a good deal of bending, kneeling and use of hand tools, can contribute to lower back, knee and upper extremity conditions. Sport-specific injuries like tennis elbow (lateral epicondylitis) can occur from a combination of poor technique and overuse of muscles and tendons.

Although risk factors outside of work play a role in injury, they present a much lower risk for injury than workplace factors do. Part of the reason may be that we have greater control of our off-work activities. Think about a hobby or sport in which you participate. If that activity starts to cause pain or other symptoms, you stop and rest, or change your approach to relieve your symptoms. If you get injured, you avoid that activity for a while until you are completely recovered. Most of the time, you don't have anyone's expectations to meet except your own. You probably don't have that luxury at work. Coupled with a physically demanding job, lack of control in your work can cause injury.

Work-related risk factors like these are the primary reason that manual therapists have such a high rate of MSDs. For this reason, much of this book will deal with risk factors specific to the work of manual therapists. Remember that workplace factors are modifiable, so you can influence and change them. In Part Two, you will learn how to modify the risk factors you encounter in your work so you can prevent injury.

Some risk factors, like prior injury, are not modifiable, but are still important to consider when evaluating your overall risk of injury. These

factors increase your susceptibility to other risk factors and affect your body's ability to cope with the physical demands of your work. If you know that you have one or more of these non-modifiable risk factors, you may need to find ways to adapt the modifiable risk factors in your situation in order to protect yourself.

**The key to managing risk factors is to reduce your exposure as much as possible by modifying the risk factors that you can, and maintaining awareness of and developing coping strategies for those you can't.**

In the following section, you will learn about the different risk factors and how they can increase your susceptibility to injury. The discussion begins with personal risk factors, characteristics that are inherent to your own physical and emotional makeup. Work-related risk factors are then examined in more depth, along with similar exposures to risk factors outside of work.

## **Personal Risk Factors**

Each individual has a unique set of personal characteristics. Some of these characteristics can be risk factors, making you more susceptible to MSDs. These physical and psychological factors do not cause injury in themselves, but, when combined with external factors associated with work, sports and hobbies, they can increase the potential for injury.

### **Your Physical Characteristics**

Inherent physical characteristics that help determine your risk of injury include your age, gender, heredity, prior injuries, weight, smoking and your overall health. While the first four characteristics are not modifiable, the last three are under your control. The benefits of maintaining a healthy weight, avoiding smoking, and paying attention to your overall health go well beyond preventing MSDs.

#### *Age*

As we age, we experience a gradual decline in muscle mass, lose connective tissue elasticity, and undergo a thinning of the cartilage between joints. Healing slows with advancing age, while at the same time the body is dealing with a lifetime of accumulated soft tissue damage. As