

## **What causes pain?**

By Dr. Brendan Murray

If you have a direct trauma, such as being hit or falling and hitting the ground, lifting something heavy or doing a specific movement that creates pain. These are mechanisms of injury that most people understand. They account for approximately 10-20% of people's injuries. The other 80-90% are from an accumulation of repetitive movements that eventually cause the injury. If you repetitively move in one direction over and over again tissue can fatigue. This fatigue will cause the tissue to breakdown. Your body responds to this breakdown in one of two ways, it will create compensations to protect the fatiguing tissue or the tissue will just give way and you will feel pain.

In physics we have seen that there are many ways for physical materials to break down such as steel or rock. No matter how strong the material if you put a constant stress to it in an imbalanced way it will break. Examples are if you twist steel eventually it breaks or compress rock on one side it crumbles. We know the main ways to stress any material or tissue is to stretch it, compress it, or twist it (torsion).

Our bodies are subject to the same laws of physics but they are more dynamic and mobile. So they will actually avoid break down much better than the strongest material found in nature. If you stress bone, it stimulates it to grow along the lines of stress, same with muscle if you increase the demand (weight training) it responds by getting stronger. But if you put stress on it repetitively in an unbalanced way it does eventually breakdown. So if you are repetitively bending forward the tissue in the back is stretching and the tissue in the front is compressing (in a simplified example). Eventually if you do not strengthen the tissue or unload it will give way. In the case of the above example the ligaments in the back, disc, and muscle stretch too far causing pain.

Our first priority in this clinic is to diagnose what was injured and how it was injured. If you understand how it was injured it is much easier to correct. Initially treatment will be specific to help the injured tissue heal. In some cases that means we add support, or if the

tissue is compressed then we stretch the tight area. Some injuries may be due to both, one area being stretched while another area is being compressed.

Once we can take the pressure off the injured area, and the pain is decreasing then we will teach you how to protect it. That may mean educating you on postures or movements that you do through out your day that can irritate the injured area.

If we stopped there you would feel better. That is where most clinics stop. What the scientific literature has shown is that if you don't strengthen the musculature around the injured tissue then these injuries will become chronic. The musculature is designed to protect and control the joints. When an injury occurs to a joint (ligament, cartilage, or disc injury) the supportive musculature is short circuited and stops doing its job. If you do not re-activate the muscles the joint will not be protected, and it is susceptible to re-injury.

What we do that is different is that along with specifically diagnosing the injury, and how it occurred, we use specific low stress exercises to re-activate the muscles around the injury. As you are feeling better and healing the exercises are re-educating the muscles. These exercises are designed so you don't need to spend a lot of time doing them to be effective and you won't have a lot of different ones to do. The goal is to get you doing exercises that increase your ability to function. So you can get back in the game.