

PART 1:

Pain in the Military

By Norman Marcus, M.D.

EP is presenting a series of articles on an important but frequently overlooked cause of common pain problems. Low back pain is a major cause of disability not only in civilians but in the military as well. Although the most common diagnosis for patients with pain in the low back is non-specific low back pain, generally referring to sprains and strains of muscles and other soft tissue, muscles are rarely considered the cause of the pain in most pain centers. This issue and the next two issues of *EP* will include articles on pain in the military, the role that muscles play, and how treating muscles can help eliminate persistent pain that plagues so many of our returning warriors.

Smaller fighting units are more sensitive to loss of personnel. A major reason for losing soldiers from active duty is because of non battlefield injuries (NBI). In addition to the suffering of the injured troops, this problem affects the ability of the military, predominantly the Army, from performing its roles in war and peace.

Low back pain is the most disabling medical problem in the military

Musculoskeletal pain is the major reason for soldiers to be unable to perform their duties and low back pain is the most common disabling complaint. Disease and non-battle injuries have always caused more casualties than battle related injuries. Diseases such as Yellow Fever, Malaria, and Hepatitis A, have essentially been eliminated as the major causes of disability in the military and are replaced by injuries that occur in non-conflict situations. Recent studies by my colleague Steven Cohen, M.D. and his associates, and Ron L. White, M.D. with

whom he co-authored, have shown that the number one reason for doctor visits and medical evacuations at a pain center in a combat support hospital, and at a military treatment facility in a noncombat area, was low back pain. Musculoskeletal pain is a major problem beginning with basic training and extending into fitness routines in active duty. The amount and level of intensity of the training, prior levels of physical fitness, and possibly equipment (e.g., footwear) and heavy protective battle dress, are all thought to contribute to the development of musculoskeletal pain. In the combat theater, 86% of the 34, 006

personnel who were medically evacuated from Iraq had sustained an injury and the most common diagnoses were: musculoskeletal and connective tissue disorders (n = 8104 service members, 24%), combat injuries (n = 4713, 14%), neurological disorders (n = 3502, 10%), psychiatric diagnoses (n = 3108, 9%), and spinal pain (n = 2445, 7%). The most common NBI complaint in Operation Iraqi Freedom was pain in the low back and pain radiating down the leg (sciatica). What is striking about back pain (BP) is that it is more likely to result in the soldier never returning to active duty than almost any other diagnoses except psychiatric. In those soldiers in whom disposition data was available, only 2% returned to duty with their unit.

Back pain persists after active duty with one study noting 47% of 793 Operation Iraqi and Enduring Freedom veterans reporting some degree of at least moderate back pain during their initial visit to a Veteran's Administration hospital. (Gironda, Clark et al. 2006) Returning soldiers suffering with Post Traumatic Stress Disorder (PTSD) appear to have a higher rate of back and other pain complaints than those without PTSD. Over 95% of the 53 soldiers studied with PTSD experienced musculoskeletal symptoms, compared to less than 50% of former soldiers without PTSD. These statistics show that there may be an increased number of soldiers with PTSD who have back pain but there is still a huge number complaining of back pain without PTSD.

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The authors concluded that back pain is an under-reported problem and that episodic back pain in the military, as in the civilian population, is a frequently encountered problem of living.

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Another dramatic study demonstrates how complicated the topic of back pain in the military is. Carragee and Cohen studied 154 (54%) of the 285 special operations reserve soldiers that reported no BP or history thereof for the past 3 consecutive years. Over the next 18 months these soldiers completed the annual US Army Medical Questionnaires, as well as monthly numerical rating scale pain scores, Scales for Impairments from Back Pain, and questions regarding back injuries. At the study's conclusion, soldiers again completed the annual medical certificate, and the results of this final BP assessment was compared with those from monthly surveillance reports. The results showed that even though 97% of the group still reported no back pain on the annual medical survey, the monthly evaluations showed that 84% had mild, 64% had mild to moderate, and 14% had moderate to severe back pain. The authors concluded that long interval survey data may not reflect the true incidence of back pain and that episodic back pain in the military as in the civilian population is a frequently encountered problem of living.

Americans have been found to have herniated or bulging discs and as high as 70% with degenerated (flattened) discs, without any pain. So finding something on your MRI frequently doesn't help and often makes the problem worse because you may feel you are damaged goods with the diagnosis made on your scan. Your doctor may use that diagnosis as a target for an injection or a surgery, but that diagnosis may have nothing to do with your pain. Why do they call it NSLBP—essentially saying we don't know what causes it? Sprains and strains of muscles and other soft tissues, not the spine or the nerves coming out of the spine, are thought to be the cause, but there is no agreement as to how muscles cause pain, or on how to evaluate and treat muscles. Ignoring muscles has contributed to the annually increasing cost of neck and back pain in the US, \$86 billion in 2005, as much as we spent on cancer. Despite the \$34 billion increase in cost from 1997 to 2005, the results are worse.

Back pain in war and the threat of war and deployment is more complicated but not totally different from back pain in civilian life. As we saw above, back pain is something almost everyone encounters in

how this works in the next issue.)

Anxiety and depression may be found in anyone with persistent pain. Therefore it is not possible, as some have suggested, to assume that a psychiatric problem underlies most soldiers with persistent low back pain. Emotional factors will nevertheless contribute to the pain experience and in some cases may be the most important factor in the ongoing pain complaint. Previous issues of EP have explored the problem of PTSD and Traumatic Brain Injury (TBI).

Muscles, the overlooked gorilla in the room

Muscles represent approximately 40-50% of the body by weight, yet are absent from our evaluation and treatment protocols for common pain syndromes such as low back and neck pain. There are many reasons why this has happened but the most important one is that it is difficult to determine if the tender muscles and knots in your body where you feel your pain are the actual source of the pain or are only representing pain that was referred from another area. Muscle pain does that. If you have a painful muscle, let's say in your low back, you might feel the pain in your buttock and not even know that it is your back that is causing your discomfort, or it could be the other way around where a buttock muscle caused pain in your low back. In some situations a tight muscle, for example in your but near your hip, could squeeze the nerve that goes into your leg, the sciatic nerve, and give you pain and other symptoms down your leg that could be mistaken for pain coming from your spine from a herniated disc. The reason that this is so important is that as we said above, so many people have abnormalities on their MRI without pain. When imaging studies were done in some hospitals, such as NY/Cornell, more

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80% of Americans will have back pain at some point in their life

Another way of saying this is: it is normal to have back pain and abnormal never to have had it. The big question is, what causes back pain? One clue is that the number one diagnosis for back pain is Non-Specific Low Back Pain (NSLBP). It is not herniated disc or degenerated or bulging discs. Actually, up to 40% of

their life. Even though at times the pain will take its toll on sleep and the ability to do all the things we want and need to do to have a good life, many of us, despite the discomfort, manage to keep going. Stress can be a cause of back pain, and conversely, anxiety and depression may result when we cannot function effectively. When we have these emotional problems the pain is actually made worse. (More on

than 90% of the MRIs of the low back were read as abnormal. You will frequently find something on the MRI that is not the actual cause of the pain. You may have surgery or nerve blocks and get no or only partial relief. When the surgery fails as it does in some studies in as many as 50% of cases you will get a new diagnosis, Failed Back Surgery Syndrome. So if your muscles haven't been examined as a potential reason for your back pain you will have no way of knowing whether or not they are a cause. But if your doctor does examine you and finds tenderness in an area, if he/she can't tell if this is the real reason for the pain or just a referred spot, then what?

Muscle Pain Detection Device (MPDD)

I, with the Stevens Institute of Technology, have invented an instrument that determines which muscle, if any, is the cause of pain in any region in your body. Since muscles make up so much of your body and are thought to be the most common cause of back pain, chances are one or more muscles will be found that can be treated to decrease or eliminate your pain. The MPDD works by being able to stimulate your muscles without stimulating your skin, and getting one muscle to contract at a time. If the muscle being tested is the only muscle in the part of your body that is painful then that is the probable reason for at least some and maybe all of your pain. If no muscle is painful to stimulation this is also important because then you and your doctor know that other treatment such as surgery and nerve blocks will have a better chance of being successful.

Four reasons for muscle pain

There are four ways that muscles cause pain: 1. Tension, 2. Deconditioning

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(weakness and /or stiffness), 3. Spasm, 4. Tender spots that need to be needled and that we call Muscle Pain Amenable to Injection (MPAI). For those of you who are familiar with trigger point injections, these injections are different and I will explain below.

Tension. When we are tense because of worries, resentments, or deadlines, our bodies may tighten up in specific areas, quite often in low back and buttock muscles, and in the shoulders and neck. If a muscle is squeezed for too long it can become painful. Most of us have had the experience of feeling an uncomfortable tightness in our bodies in a stressful situation when someone we worked with was a "pain in the neck or ass." The important thing here is recognizing that something bothers you and that you can see the relationship between what you are feeling emotionally and the pain in your body. Even if there is another reason for your pain, doctors have known that stress can make any kind of pain worse. Learning how not to tighten up when we are stressed is an important skill that can help you with tension pain. Learning how to relax is easier said than done, but we'll have some tips later on.

Deconditioning (weakness and/or stiffness). Not getting enough exercise or spending too much effort strengthening without paying attention to stretching can both produce painful problems in muscles. If you are in the military chances are you have the strength but there is a good chance you may have muscle stiffness. We are going to give you some very simple exercises below to

learn how to relax and to begin to stretch some important muscles associated with back pain. We will also discuss some training tips if you are having a hard time getting back in to an exercise routine because of your pain.

Spasm. When your muscle seizes up making it hard to bend or to turn your neck, this is a spasm, an involuntary contraction of the muscle that is painful if you attempt to move more than the muscle in spasm will allow. Spasms, which can last for days, in contrast to a cramp which last seconds to minutes, should not be forced to release. Making a cramped muscle move, such as calf muscle that painfully contracts when we are asleep, frequently breaks the cramp but a muscle in spasm needs to be coaxed back to health. Ice and gentle movement will frequently allow the muscle to slowly increase its range of motion and decrease the pain. We also have a special protocol to electrically stimulate the muscle that breaks the spasm.

Muscle pain amenable to injection. If you have pain for more than 3 months in your back, neck, or shoulder, chances are that one or more muscles have tender areas that are causing your pain. Muscles have pain nerves and these nerves are mostly found where the muscle attaches to the tendon and where the tendon attaches to the bone. When you or your doctor try to find the painful spots in the muscle you frequently cannot touch where the muscle attaches to the bone and therefore may not detect the muscle responsible for your pain.

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Trigger points are tender nodules in muscles that are always contracted in a very small spot and this contraction causes the blood supply to that area to be reduced which reduces the amount of oxygen available for the cells and causing a series of chemical changes that can go on for years.

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The MPDD, when it makes your muscle contract, actually causes your muscle to be pulled at its attachment site, making the painful area respond and at the same time stimulating the knots (trigger points) in the belly of the muscle to also cause pain. Trigger points are tender nodules in muscles that are always contracted in a very small spot and this contraction causes the blood supply to that

area to be reduced which reduces the amount of oxygen available for the cells and causes a series of chemical changes that can go on for years. The injections for MPDI are into all of the areas where the pain nerves are found in contrast to trigger point injections which are only into the knots in the muscle. So even if you have had pain for years, identifying a painful muscle and treating it can eliminate your pain.

In the next issue we will look at the various ways muscles can be injured, how stress is translated into pain, exercise, and how our lives and minds are changed when we live with pain for a long time. •

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The Marcus Method. Together with the Stevens Institute of Technology's Biomedical Engineering Department, Dr. Marcus developed The Muscle Pain Detector (MPDD), a state-of-the-art pain-detection instrument which electrically identifies the specific muscle(s) causing pain in a region of the body. This device has been validated in a double-blind randomized controlled trial at the NYU School of Medicine. Visit his website at www.backpainusa.com.

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