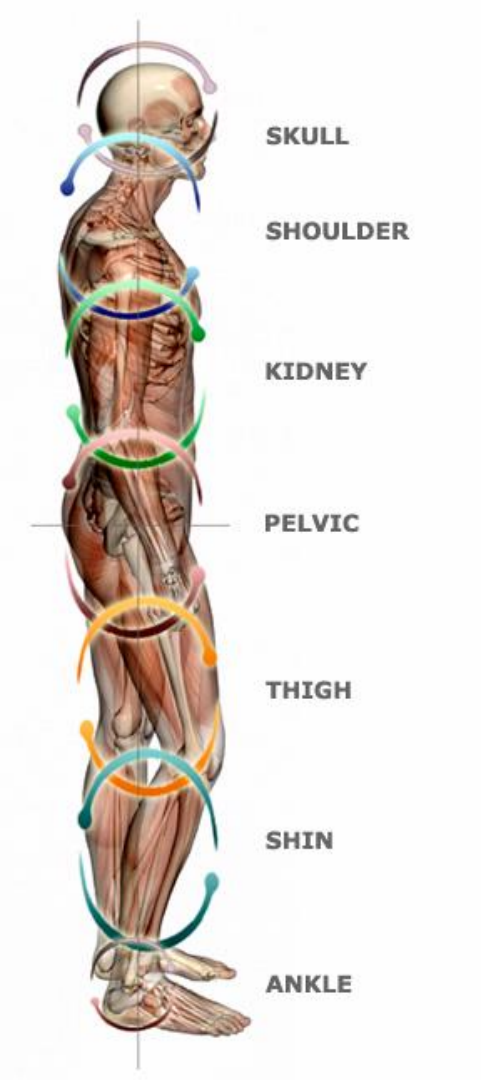
THE ESSENCE OF BULLETPROOFING

Mike Davis, DPT, ART

Musculoskeletal pain is one of the primary reasons why individuals seek medical attention. Whether you are a sedentary person or an avid gym patron, musculoskeletal pain reaches most of us at some point and time in our life. While this pain may not be totally avoidable, there are ways to manage the extent of occurrences.



The concept known as "bulletproofing" speaks to conditioning the body in a way that minimizes its chances of injury. Our ability to "bulletproof" a region of the body first lies in our understanding of how that region of the body operates. To illustrate this point, let's look at the lower extremity. Now remember there are many factors that can impact the body's ability to execute. A pistol, aka full single leg squat, is an excellent lower body exercise that involves the entire lower extremity. I have observed many people performing this movement, but very few that can execute it in a way that is biomechanically sound. Let's take a step back and discuss the basic responsibilities of the joints of the lower extremity. The foot/ankle complex is designed to be mobile by virtue of its ability to move in three degrees of freedom. The knee is a "hinge" joint with a little rotational and frontal plane play and as a result of its one degree of freedom is designed to be stable. The hip is a ball and socket joint which moves through three degrees of freedom therefore like the ankle is designed to be mobile. It is important to understand that while the foot/ankle complex and the hip are designed to be mobile, controlled mobility is the appropriate concept to employ.

It is the responsibility of the foot/ankle and hip to place the knee in the proper position to ensure its safety. The foot/ankle and hip, as stated earlier, can move through all three planes of motion where the knee is designed to move only in the S-plane. If the foot/ankle and hip do not allow and control the amount of rotational force/stress transmitted throughout the tibia and femur, then the knee will be subjected to forces for which it was not designed, which predisposes it to injury. Now let's go back to the pistol. To properly execute this movement a person must first have enough ankle dorsiflexion to keep the heel down throughout the movement.

Pistols from www.beastskills.com

If the person's weight shifts to the front of their foot (heel rises) then more stress will be place on the knee predisposing it to patellar tendon and/or patellar/femoral problems. Secondly, the amount of pronation that occurs at the foot must be controlled as excessive pronation will encourage tibia rotation. This will place a rotational stress on the knee predisposing it to meniscal and ligamentous injury. Thirdly, the hip must control the amount femoral internal rotation and adduction as excessive movement in these directions will also predispose the knee to meniscal and ligamentous injury via rotational stress. So, in general, when performing a pistol the foot should remain flat and the knee should reside in the S-plane throughout the movement. If these two things are not occurring, then it is our job to find out why and how to address it. This is where the art of "bulletproofing" lies. Is the problem mobility, stability, and/or controlled mobility? This concept can and should be applied for any movement pattern. Just because a

movement doesn't currently "hurt", doesn't mean that it is good for you and movements that hurt aren't always bad for you. You may be performing them incorrectly. That is the job of health and fitness professional. To teach people to movement in biomechanically sound movement patterns. That is the essence of "bulletproofing". The restoration and maintenance of efficient balanced posture and movement. The more the body is able perform in balanced harmony, the less likely it is to be injured.

Mike Davis, DPT, ART

Mike Davis, DPT, ART is a Doctor of Physical Therapy and Certified Active Release Technique Provider. He has treated high school, collegiate, recreational, and professional athletes of various sports including basketball, baseball, boxing, football, golf, martial arts, soccer, tennis, and track and field. In addition, he has experience in the in-patient neurological rehabilitative and acute care settings. He can be contacted via email at s2mdavis@hotmail.com.