



## UVM ATHLETIC PERFORMANCE NEWSLETTER

- COACH HICKOK

### HOW PHYSICS CAN HELP US WIN!

*It's all about force!*



*Well not that kind of force...*

At UVM Athletic Performance, we strength train athletes for two primary reasons, to reduce injury and to enhance performance. We achieve this by subjecting the body to external forces, using weights. The Athletic Performance staff hopes the following information will give you insight into why we do what we do in the weight room.

Keeping our athletes injury free so they can compete is the first priority here at UVM Athletic Performance. Every athlete is here because they excel in their particular sport. In order for them to continue to do this, they need to stay healthy. This benefits student athletes by allowing them to reach their full potential during their career and benefits us as coaches by keeping our best players in the game.

So how does strength training reduce injury? Here's how, as we

stress the body by using external resistance in the form of weights, the parts of the body that undergo the stress adapt and get stronger. Research has found that muscles adapt and get stronger after weight training. Research has also found that the skeletal system, tendons and ligaments also get stronger and become more resistant to injury, which many people do not know. For example if we appropriately overload the lower body by squatting we put stress on all the tissues involved and they become stronger. This is especially important when talking about structures that often get injured like the ankle, knee, hip and shoulder. Despite popular belief, when done right this includes reducing ACL injuries!

Along with reducing injuries, another goal of strength training is to enhance the "athletic platform" of our athletes. Each person comes to us with a certain level of physical athleticism; it is our goal to build on this. As their skill at their sport increases, so will their physical ability. In team sports the best way to enhance athleticism is to get faster and more explosive. We have all heard the quote "speed kills", but how exactly does weight training get you faster?

Strength is the underlying foundation for all fast and explosive movements. In other words, for an athlete to be

fast they need to be strong and have the ability to produce a large amount of force. Newton's 3rd law of Physics tells us: "for every action there is an equal and opposite reaction". For example when you run or jump, you push with your legs into the ground and in return the ground pushes back causing you to move. In order to jump higher and run faster, we must train the ability of our athlete to produce more force! This is why we utilize lower body exercises like the squat. Consider this example; if an athlete's 1 rep max increases from 200lbs to 300lbs, we know they have the ability to put 100 lbs. more force into the ground in order to overcome the weight of the bar. This increase will lead to more force applied to the ground when jumping or sprinting, resulting in a faster more explosive athlete.

Can it really be that easy, the answer is yes and no! In the collegiate setting, most often getting an athlete stronger will make them faster, especially for weaker athletes or freshman with little training experience. This is why gaining strength is our main focus. When an athlete attains a certain level of strength, things get more complicated. The focus then becomes about how quickly they can produce that force. This is a topic for our next discussion.

*...to be continued*