

Treating Anterior Knee Pain and the Basketball Athlete: Part I

by Art Horne

It seems that knee pain has become so closely associated with the basketball athlete that many professionals unfortunately simply accept it as a normal consequence of training and playing. Recently, Professor Paul Canavan posted an [article about knee pain](#) and the contributing factors that you may be overlooking. In the following article I'll discuss and demonstrate specifically a number of ways in which we address some of the underlying problems that Professor Canavan mentioned when dealing with our basketball athletes.

Ankle Range of Motion

We've all heard the need for mobility at certain joints and stability at others. This simply can't be emphasized enough when dealing with the basketball athlete. When evaluating our basketball athletes we consistently find that the vast majority of them clearly lack the recommended amount of dorsiflexion needed (20 degrees – [Measurement of Joint Motion](#), Norkin and White) to ambulate properly. When viewing these athletes during play however, it *appears* that most are able to “get this motion” (passing the tibia over the talus) with little difficulty. However, the “appearance” of dorsiflexion actually comes at the expense of pronation, collapsing of the medial arch and knee valgus. Although many strength coaches and athletic trainers recognize the need for ankle range of motion, it is my opinion that not enough time is dedicated to either regaining this motion, or at least preserving what they have because most professionals do not first objectively measure dorsiflexion and thus do not appreciate the true anatomical restriction taking place.

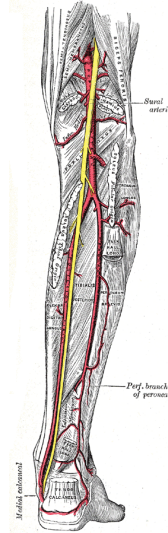


For those athletes that we find lack appropriate dorsiflexion we may address this limitation with the following:

Active release techniques to address the lateral gastroc and soleus muscle. Anyone who has ever walked into the athletic training room while I'm addressing some soft tissue restrictions knows immediately by the look on the face of the athlete that the first time doing this is clearly uncomfortable. However, athletes always end up coming back for continued treatment because it alleviates the symptoms in which they first presented. It only takes a couple of minutes of your time and I've even begun addressing those athletes that play major minutes (yes, prior to injury – novel thought right?) in order to maintain a high quality of tissue throughout the course of the season. (In one athlete who was suffering from a stress reaction of the first ray we noticed his soleus was incredibly tight which in turn, caused him to propel his body forward through this great toe and not his ankle as he should have.

Without actually treating the first ray and only focusing on this ankle ROM with soft tissue, mobilization, and self stretching did his first ray pain go away and stay away for the rest of the season. A powerful example of how restriction at one joint will cause disastrous effects at the joint above and/or below

**** Note:** care should be exercised when addressing the gastroc/soleus complex tissue to avoid undue pressure over the tibial nerve and posterior tibial artery which lies directly between the gastroc heads.



Manual ankle mobilization and mobilization with movement: a skilled athletic trainer or physical therapist will be able to address these restrictions.

Static Stretch utilizing the Pro-stretch or traditional slant board while focusing on stretching with knee straight and knee bent for 6 reps x 30 seconds each.



“Achilles Matrix” as popularized by Gary Gray. This stretch begins with your athlete assuming a traditional Achilles wall stretch position for his left Achilles. He then “drives” his opposite knee/foot in 3-planes while keeping his left heel on the ground. This stretch, as opposed to the traditional “ankle mobs/stretch” which positions the foot anterior to the pelvis, places the Achilles well behind the pelvis. In this position, the femur is placed in hip extension, thus demonstrating the need for flexibility at both the hip and ankle during normal running mechanics.

**** Be sure the athlete is experiencing a stretch prior to “knee drives” to ensure the best results.**

- i) Sagittal Plane -take right knee and drive bent knee to wall and back in marching position x10 reps
- ii) Frontal Plane – take right leg and actively reach to the right and left as close to the floor/wall interface as possible x 10 reps
- iii) Transverse Plane – bend right knee while “opening and closing” pelvis x 10 reps

To watch “Achilles Matrix” from the side click [HERE](#). To watch from behind click [HERE](#)

Hip Range of Motion

Another must with regards to mobility. We address lack of motion about the hips with some of the following:

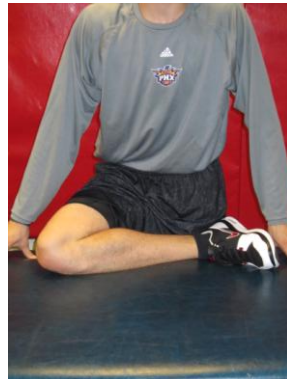
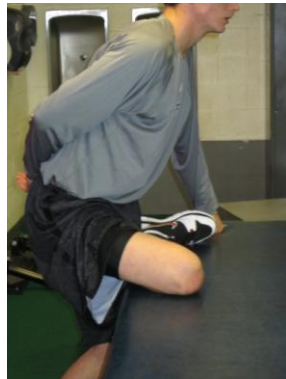
INTERNAL / EXTERNAL ROM

Active release technique and/or soft tissue work for the hip rotators: a skilled athletic trainer or therapist will be able to identify and address these restrictions.

Mobilization with motion to address lack of internal rotation (some of this may very well be reflexive and not representative of a true change, however, in the very least it allows the athlete to perform exercises afterwards pain free, or strengthening exercises that they didn't have the range of motion for prior).

Click [HERE](#) to watch brief demonstration

Static Stretching of the hip rotators both prior to training, practice and through home exercise programming.



HIP EXTENSION

Rectus Femoris length and tension: The rectus femoris stretch has to be one of the most overlooked and poorly taught stretches of all time. Because the rectus femoris crosses two joints, emphasis must be placed on having your athletes extend their hip in addition to knee flexion to ensure a quality stretch.

Although it's sometimes difficult to do on their own, the [Pretzel stretch](#) seems to be a favorite for alleviating tension in this muscle. Lay on your left side and hug your right thigh with your right hand. Pull your left heel toward your butt with the opposite hand and enjoy! An athletic trainer may also add some additional stretch while taking the femur through some slight internal and external rotation

We've all seen the athlete who lays prone to stretch their rectus femoris by pulling their heel to their butt only to have their hip lift off the table in what Shirley Sharman would call compensatory compensation. Next time you assist your athlete with this stretch utilize a PNF technique and have the athlete actively "pull" their hip back down to table for a 5-7 count. Not only will they experience a much better stretch where they are suppose to but will enjoy the benefit of added lumbo-pelvic control as well. [Stretch and repeat.](#)

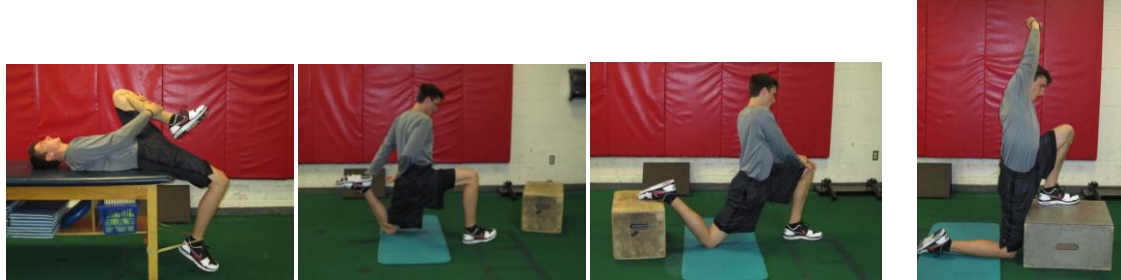
Psoas and Ilicus adhesions, tension and length:

Prone table lunge: We're all familiar with a number of ways to target and stretch the Psoas and Ilicus (see figure 1 below) but one you may not have seen, and probably for good reason as it usually requires some assistance from either another staff member or a friend is the stretch demonstrated below. With smaller

athletes I'm usually able to position myself where I can stabilize their pelvis with my forearm while extending their femur, however, I would suggest finding someone else to stabilize while you concentrate on the stretching duties while also placing yourself in a safe and effective position. I find this stretch over some other methods to be a bit more effective due to my ability to abduct the femur throughout the repetitions.

Click [HERE](#) to watch brief demonstration.

Figure 1:



Active release techniques: I must admit, I was doing a poor job of this for a very long time until I was able to learn from both Bill Hartman who spoke at the [2010 Basketball Symposium](#) hosted by BSMPG and [Pete Veteritti](#). Rather than attempt to address both these structures (psoas and iliacus) from the supine position, I've found it much easier to accomplish a positive treatment effect while addressing in a sidelying position while standing behind the athlete. In a supine position the tissues fall back posteriorly under gravity in addition to your pressure on top of them making "feel" much harder. If you are not trained or feel comfortable performing, simply know what you know, and know what you don't know and refer to a person either on your staff or within your network that is able to help you.

Stop playing summer pick-up

It's simple: Avoid offending activities. If it hurts to play ball in the summer there's no way you're making it pain free this fall.

I know every coach in American and probably the world will disagree with me, but we've all seen what summer pick-up *really* looks like. It's a slow paced, no defense, argued filled, two-hours of lollygagging. For some reason coaches always want their kids playing during the summer. Play, Play, Play – they need to play to get better! Hey, I'm all for working on *skill development*, *shooting* and *dribbling* skills in the off-season, but these things just aren't happening during summer pick-up games. If there is a time to get healthy and build strength, it's the summer time, and running for 2-3 hours each day in a slow paced game of, "dude, you fouled me," just isn't getting it done.

You want to have less knee pain *and* improve your vertical jump? Stop playing so much summer ball and get in the weight room and build some strength. There's a reason why football athletes continue to have vertical jumping ability far superior to their basketball counterparts. When was the last time you got a call to play some 11 vs 11 pick-up football?

Know when to refer

Let's face it, there are just some cases that either require a skill set that we just don't have, or some athletes just have some things going on that aren't adding up after your assessment and failed intervention.

Know what you know, but also know what you don't know.

See picture below. Can this athlete ever gain range of motion with stretching? If you were to ask him where he felt the stretch (which I would recommend for every stretch) he would explain to you that he is getting a really good stretch at the front of his ankle.

"Excuse me? No, you must have misunderstood. I said where are you feeling this stretch?"

To which he replied, "Ya, I'm getting a really good hurt at the front"

Needless to say, after x-ray examination we weren't stretching anything (notice large bone spur preventing dorsiflexion).



Soft Tissue specialists (Pete Viteritti in Boston for example) are just better than me and you at addressing adhesions and soft tissue dysfunction. This is not a knock on many young coaches, athletic trainers and therapists; these professionals usually have 20 more years of experience and mistakes than you and I. Remember: it's about the patient/athlete, not whether your ego gets hurt or not. Refer when necessary.

Next week I'll return for Part II where I'll discuss the need for thoracic mobility, Charlie Weingroff's "vertical tibia", the need for improved hip strength and eccentric loading.