

My Technical High Jump Manifesto- as of July, 2007

Well, I am at work right now sitting in front of my computer with little to do at the moment, so I would like to take this time to describe my current high jump technical philosophy. I will try to keep this short and understandable.

Here are the points that I will cover,

1. Efficiency
2. Takeoff Angle
3. Bar Clearance
4. Approach Speed

(I put a visual of high jump approach terminology at the end of this post)

In simple terms, the principle behind what I consider effective jumping technique lies in efficiency. I tend to judge jumping efficiency based on the differential between a jumper's best scissor jump and their best traditional full-run jump in competition. Depending on the athlete and their leg length, in an elite jumper with good technique, this difference will be anywhere from 9 to 14 inches. I would consider anything over 12 inches to be very good jumping efficiency. In my own jumping, I reached a maximal scissor jump of 5'11", while jumping 7 feet, and I feel that I reached a very efficient method in my own jumping.

That said, as a coach, until your athlete is reaching 8-12 inches over their best scissors, there are still some technical issues that need to be resolved in your jumper. Once the jumper is over 10-12 inches of difference (unless there is still something obviously wrong, which I would doubt there would be), then the emphasis can simply shift to speed of run-up and explosion in the take-off.



My second point which I believe is very important is that of individuality in an approach. Many coaches seem to forget that the big approaches that are 15-18 feet out from the standard and start 75 feet back are reserved for those athletes that are running over 7.5-8 meters a second on their approach and are taking off up to a foot before the first standard. I prefer most jumpers in the 2 meter range to have takeoff marks of 9' to 12' away from the standard and 55-65' out

from the first mark. Jumpers in the 5'-6' foot range can be even closer, 8'-11' from the standard and 45-60' out from the bar. The variance in approach characteristics for a given height can be appropriated based on whether the jumper is a power jumper (narrower approach) or speed jumper (wider approach).

Many coaches get frustrated with their jumper for "not holding their arch long enough" or something to that nature. What very few seem to realize is that the body naturally tends to contort itself over the bar in order to clear it, according to the parabolic flight pattern given to it upon launch. If you watch some jump videos in slow motion carefully where a jumper "came down on the bar and should have held their arch", you will see that even if the jumper held their arch, their center of gravity would still be coming down on the bar, and no amount of holding the arch could prevent it.



The key to successful high jumping is finding an approach that minimizes an athletes time over the bar, while still allowing maximal force at the takeoff, and enough rotation to allow the center of gravity to rise as high as possible over the apex of the jump.

Allow me to clarify.

An approach with a big, wide radius will allow for an "easier" plant with less collapse of the takeoff leg and less stress on the ankle. It is also good for jumpers who are taller and lankier, and are unable to cope with the forces of a tight turn and plant, however, it also creates a shallower takeoff angle. What is the takeoff angle? If you drew a line between the last 2 steps of the jumper and kept drawing that line through the pit, and then connected that line with the plane of the standard, that would be your takeoff angle. Most good male jumpers are somewhere in the 40-50 degree range, while most good female jumpers are in the 35-45 range. The problem is, many coaches scheme an approach which causes this angle to fall well below 35 degrees. If your plant angle is less than 35 degrees, well.....you won't be jumping too high today, junior.

This is the reason that I believe, once a jumper knows how to run a curve well, that the radius should be as tight as possible, while still allowing inward lean, and good rotation at takeoff. If the jumper's knee is collapsing and they aren't jumping "up" then the approach can be widened a little bit (that is until they get more isometric strength and I make them go back to a narrow approach!).

Just a quick note on my view of the takeoff.....I don't have much of one, not yet at least, simply

because I feel that the takeoff is a pure function of the unconscious mind. Giving the jumper too many things to think about when taking off can be a bad idea, the setup before the takeoff is a lot more important. A lot of coaches tell the jumper to "drive the knee" when taking off. This is probably the only acceptable cue when actually taking off, although it is probably not needed unless the thigh is not reaching 90 degrees when taking off. If the cue to drive the knee is causing MORE than 90 degrees of knee drive, this is a BAD thing, because when the knee is driven beyond this point, it cannot deliver its maximal block, due to a shorter moment arm when the knee drive stops. (I could also see keeping the eyes focused on the back corner of the bar and the standard as a takeoff cue, but that doesn't really have a lot to do with the takeoff).

On to bar clearance.

I believe bar clearance comes naturally in most jumpers. What doesn't come naturally is the idea that you have to rotate in the air around the bar enough to the point that you don't have to arch and "snap" so much as arch and just extend your legs. So how does this happen, well if the takeoff angle is good (35-55 degrees) and the jumper is landing fairly far back into the pit, then the only factor left is rotation around the bar. Essentially good rotation will, at the apex of a jump, leave a jumpers body in a position that, if they lied completely flat, they would be parallel with the ground, or rotating 90 degrees after takeoff (actually, 80-90 degrees, there is a little leniency). You will see some jumpers rotate so much at the elite level, they will keep going and almost land on their head. When good rotation is attained, often the jumper will not feel like they had to "force the arch" it just happened.



Often on the high school level and sometimes on the college level, you will hear a jumper say "I was 8 inches over the bar, but then my butt hit it". The 8 inches they are referring to is often their back, which is because the body has only rotated about 45 degrees. Their center of gravity is never more than an inch or two over the bar, and because of poor rotation, they won't make it, no matter how hard they try to arch.

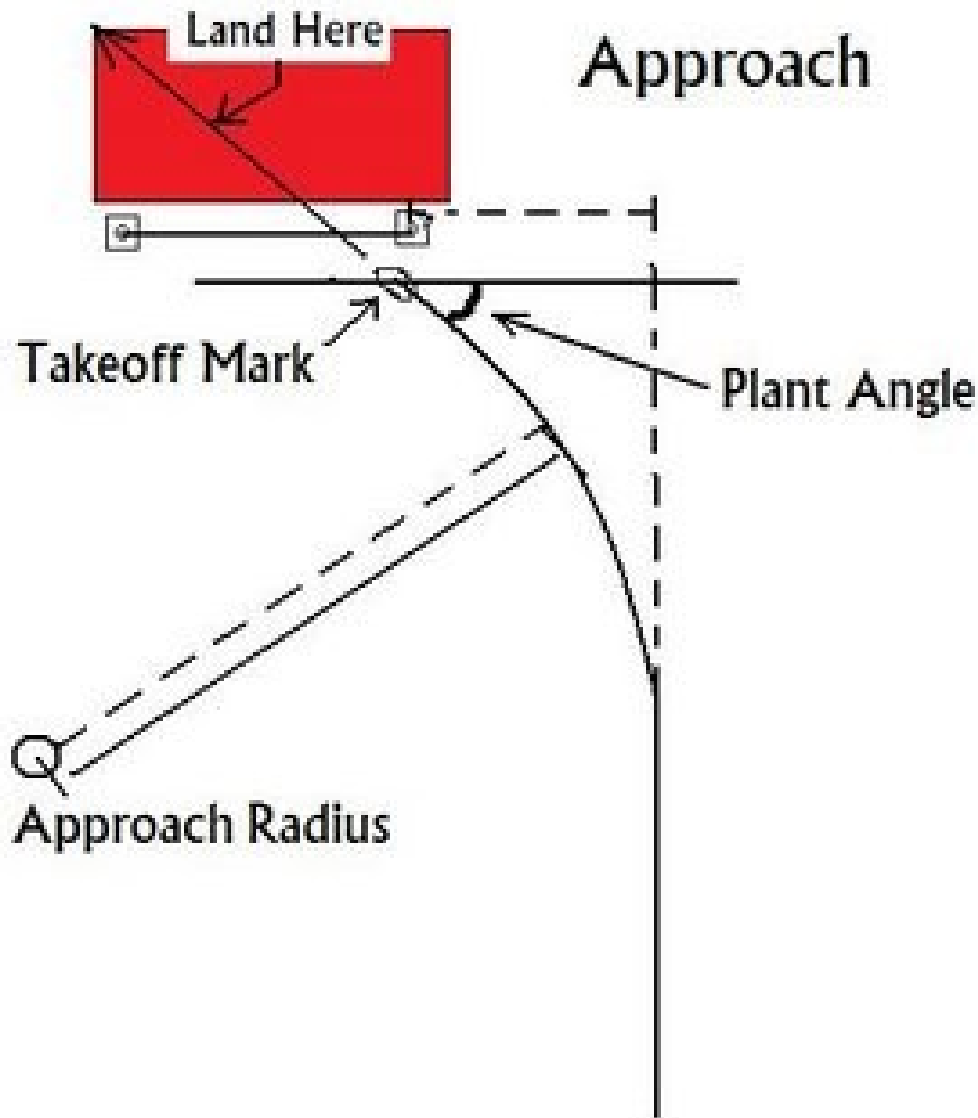
Finally, approach speed. I believe that the approach speed in high jump should be as fast as humanly possible without collapse of the takeoff leg. The takeoff speed without collapse of the takeoff will (usually) be faster in competition than in practice in the majority of cases, because

of the increased competition adrenaline, more motor units are recruited in the knee and hip extensors, take advantage of this.

Well, that's all for now, I may update this in the future, or post ramblings about one aspect or another of technical prowess in the high jump. Most of my future posts will likely take into account physiology more so than technical issues, however.

Regards,

Joel



Here is a high jump visual that I made, probably not to scale, but hopefully it clarifies any confusing terminology.

