Management of Pitchers – Why we don't run long distance

From Eric Cressey

The management of pitchers between starts is one of the most debated topics in the world of baseball training. Some pitching coaches want multiple throwing sessions between starts, while others insist that a single bullpen is sufficient. Athletic trainers debate on whether or not a pitcher should ice after a throwing session. And, specific to my realm of expertise, there are differing opinions on what kind of running programs are appropriate for pitchers between bouts of throwing.

Not to toot my own horn, but I'm a pretty well-read guy – and I can honestly say that I've never read anything along the lines of a truly logical argument for or against a specific running program for pitchers. So, I guess that's where I come in with this piece.

With that in mind, I'll be very blunt with you: I despise distance running for pitchers (and the overwhelming majority of other athletes, for that matter). While many pitching coaches are probably reading this and cursing my name already for going against the norm, I'd encourage you all to hear me out on this. Below, I'll outlined NINE reasons why distance running is not the correct course of action – and then, in my next installment, outline a new model for training between starts that we've used with great success at the professional, collegiate, and high school levels.

Why Distance Running is Not the Answer

Reason #1: Immunity Concerns

As a strength and conditioning coach, my number one priority in working with athletes is to keep them healthy. This refers not only to musculoskeletal health, but also general health. In an outstanding 2006 review, Gleeson wrote that "postexercise immune function depression is most pronounced when exercise is continuous [and] prolonged." Interestingly, this review also noted that many of these symptoms are "attributable to inflammation of the upper respiratory tract rather than to infectious episodes (1)." In other words, distance running between starts is more likely to cause and spread sickness in your clubhouse than that tramp in the right field bleachers who wants to hook up with every guy in your bullpen. Strike 1.

Reason #2: Endocrine Concerns

Here's a little excerpt from an email I got from a minor league guy I work with in the off-season:

Yesterday might have been the roughest day of my career. It started by getting back from our game Sunday night at 11:30PM. I couldn't fall asleep until at least 12:30AM, and then we had a 3:30AM wake up call to catch a bus to the airport for our flight at 6:15AM. We had a layover for an hour and a half, then got to the next city at 11AM. We drove to our hotel and I got to my

stinky room at the Sleep Inn and tried to catch some sleep – except we had to be at the field at 4PM.

Days like this are the norm for many professional (and particularly, minor league) pitchers: late nights, early wake-up calls, red-eye flights, long bus rides, and – as a result – completely warped sleeping patterns. And, as I'm sure you can imagine, the diet that accompanies these travels is less than stellar, particularly when clubhouse food isn't exactly gourmet or healthy. And, let's just say that a lot of ballplayers at the collegiate and pro levels far too much alcohol, and that has direct negative consequences in terms of sleep and tissue quality.

So, basically, we've got absurd sleeping hours, terrible dietary habits, too much alcohol – and one of the longest seasons in sports. Effectively, we've done everything we possibly can to reduce lower testosterone and growth hormone output, creating a mess of a hormonal environment. Frankly, you could get this same hormonal response by forcing pitchers to watch Golden Girls reruns while sitting on bicycle seats and downing estrogen tablets – and you wouldn't have any incidences of plantar fasciitis.

Instead, you know what's done instead? Distance running! Yes, the same distance running that is responsible for the markedly lower testosterone levels and higher cortisol levels in endurance athletes. It's like putting a new engine in a car with square wheels: studying for the wrong test.

It almost makes you wonder if some guys used performance-enhancing drugs just to counteract the negative effects of their running programs!

Strike 2.

Reason #3: Mobility Concerns

As I wrote in a previous newsletter, one of the issues with distance running is that it doesn't allow for sufficient hip flexion to truly activate all the hip flexors. Specifically, we get a lot of rectus femoris recruitment, but not much activation of psoas, which predominately is active above 90 degrees of hip flexion. Likewise, you really aren't getting much hip extension at all.

So, on the whole, by using a repetitive motion like jogging for an extended period of time, pitchers are losing mobility in their hips – and that's the very mobility they depend on so much to generate stride length and, in turn, velocity.

Frankly, runners are the athletes I see with the most marked lower extremity dysfunctions due to the lack of range-of-motion in the jogging stride – and the fact that they pile so much mileage on this faulty movement pattern. I am a firm believer that we were made to sprint, not jog.

Strike 3. The batter's out!

Reason #4: Negative Effects on the Stretch-Shortening Cycle

Here, I need to get a bit geeky for a second so that I can explain the stretch-shortening cycle (SSC). The easiest analogy I can use is that when you want to shoot a rubber band at someone, you pre-stretch it before you release your shot. Muscles work the same way; pre-stretching them (eccentric action) prior to shortening them (concentric action) stores elastic energy and helps that muscle generate more force. Anecdotally, I've heard estimates that as much as 25-30% of pitching velocity is attributed to elastic energy – or how effectively someone makes use of the stretch-shortening cycle.

Where we're different from rubber bands is that we can actually train those elastic qualities to make our tendons more efficient at collecting, temporarily storing, and releasing that elastic energy to help us run faster, jump higher, and throw harder. It's why doing plyos, sprinting, and throwing medicine balls can do wonders for a player's performance.

With the stretch-shortening cycle, we need three things, according to Komi (2):

1. a well-timed muscle preactivation before the eccentric phase

2. a short, fast eccentric component

3. immediate transition (minimal delay) between stretch (eccentric) and shortening (concentric) phases. This period is known as the amortization phase, and the shorter it is, the less elastic energy we lose (as heat).

To be honest, #1 takes care of itself. For #2 and #3, though, we are definitely working against ourselves with distance running, as the importance of the SSC rapidly diminishes as exercise duration continues. In fact, the vertical jump only predicts sprinting performance up to 300m (3).

In other words, the longer exercise goes, the more we "muscle" it instead of being relaxed. What do we know about guys who try to muscle the ball to the plate? They don't throw hard because it impairs pitching specific mobility and they don't let the arm whip through.

I will take a guy with a good vertical jump over a guy with a high VO_{2max} anyday. Distance running conditions guys to plod instead of bounce – and this definitely has implications in terms of chronic overuse conditions.

Strike 1.

Reason #5: Strength and Power Reductions

As just one example of how stressful the pitching motion is on the body, the humerus internally rotates at 7,500°/second during the acceleration phase of throwing. It takes a lot of strength and power to generate this kind of velocity, but just as importantly, it takes a lot of strength and power – and in a timely fashion – to decelerate it. We need to not only be able to generate enough force to resist and control this acceleration at end-range, but also be able to generate this

force quickly (power). To that end, you would think that conditioning for pitchers would be similar to that of strength and power athletes, who avoid distance running altogether.

Instead, most pitchers run several times a week. When was the last time you saw a marathoner throw 95mph?

Additionally, in many cases, coaches encounter Latin American players who have never had access to weight-training equipment – and this is a huge window of untapped potential. Using distance running when these athletes could be devoting more time to getting stronger is a huge hindrance to these players' development, as it conditions them to go longer instead of faster. At some point, you have to put more horsepower in the engine instead of just changing the oil.

We know that when we first get young athletes started with weight training, there is a huge transformation to make them more athletic in the 8-10 weeks that follow. You would be surprised at what good training can do for many advanced pitchers in the initial phases, too. The reason is that, unlike position players, many pitchers are (to be blunt) one-trick ponies. They know how to throw a nasty cutter, a crazy 12-to-6 curveball, or a slider with a funny arm-slot. So, it's always been "okay" for them to be completely unathletic outside of their delivery. They might get guys out, but they're long-term gambles teams because of their increased risk of injury; weak, immobile bodies break down the fastest – just like distance runners. Additionally, being able to quickly recruit muscles (and do so powerfully) is crucial for rapidly stiffening joint complexes to create stability and prevent acute injuries like ankle sprains and ACL ruptures. Strength and power athletes are much better off in this regard than endurance athletes.

Strike 2.

Reason #6: Inappropriate Intensities

In what was – at least in my eyes – a landmark study, McCarthy et al. (1995) looked at "compatibility" of concurrent strength training and endurance training. Traditionally, the attenuation of strength and power gains has been a big issue when endurance exercise is added to a strength training program. As I noted in Cardio Confusion, these researchers found that strength and power loss was only an issue when the intensity of the endurance exercise was greater than 75% of heart-rate reserve (HRR) (4). I can guarantee you that the majority of pitchers who are running distances are doing so at well over 75% HRR.

As I'll note in my recommendations at the conclusion of this article, I strongly feel that the secret is to stay well above (circa-maximal sprinting, in other words) or below (70% HRR, to play it safe) when implementing any kind of running. The secret is to avoid that middle area where you don't go slow and don't go fast; that's where athletes get SLOW! And, ideally, the lower-intensity exercise would be some modality that provides more mobility benefits.

Strike 3. The batter's out!

Reason #7: Nobody likes to babysit.

Simply put, running is babysitting. Catcher is actually the position that requires the most endurance in baseball, but we don't run catchers extra, do we? Nope – and it's because we have bullpens for them to catch, batting practice for them to take, and all the other responsibilities associated with handling a pitching staff and being a pseudo coach on the field.

My business partner actually was a division 1 pitcher almost ten years ago, and when I brought up this argument, he smiled and nodded, replying with, "When I was a pitcher, all we did was shag fly balls and run poles." Meanwhile, 57% of pitchers suffer a shoulder injury during a competitive season (5) – and that doesn't even include elbow, lower back, or lower-extremity injuries! At the major league level, pitchers are 49% of the players, but they account for 68% of the time on the disabled list league-wide (6). Running isn't going to prevent these problems; it's going to exacerbate them.

Strike 1.

Reason #8: Distance running ignores existing imbalances.

Baseball is an at-risk sport for a number of reasons. You've got an extremely long competitive season, overhead throwing, and – possibly most significantly – unilateral dominance. Switch hitters and guys who bat right and throw left (or vice versa) tend to be a bit more symmetrical, but the guys who bat and throw on the same side tend to have the most glaring issues. Many really smart dudes – most notably, Gray Cook – note that asymmetry is quite possibly the best predictor of injury. When we get pitchers after a long season, our first goals are to address range of motion deficits in:

1. lead leg hip extension (tight hip flexors)

2. lead leg hip internal rotation (tight external rotators)

3. lead leg knee flexion (tight quads)

4. Throwing arm shoulder internal rotation (tight posterior rotator cuff and capsule)

5. Scapular posterior tilt (tight pec minor and levator scapulae)

6. Throwing arm elbow extension (tight elbow flexors)

I knocked back some caffeine, splashed some water on my face, and really put my thinking cap on to see if I could come up with a rationale for how distance running addresses any of these issues. In the end, I had nothing. I came to the realization that jogging negatively affects the majority of them – and pitchers would be better off *just* shagging fly balls instead of splitting time between that and long runs. At least they move side-to-side when they're chasing fly balls.

Strike 2.

Reason #9: It's really boring!

I am a firm believer that the best coaches are the ones who engage their athletes. The best coaches I had in my athletic career were the ones who made me look forward to each training session. With that said, the only people who look forward to distance running are – you guessed it – distance runners!

Most of the ballplayers you're coaching have always seen running as a form of punishment for doing something wrong; they hate it as much as I do (okay, maybe not that much). And, truth be told, they'd hate it even more if they realized it is limiting their development as athletes. Strike 3. The batter's out – and the side is retired.

Conclusion

I have always disliked it when people criticize the status quo, but fail to offer solutions of their own. With that in mind, the next installment of this series will outline my personal perspective on how to attack the time between pitching outings.

References

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