

## Exposing the myth of "Pushing Off" the Mound May 12, 2010

A [new study just published](#):

### LOWER EXTREMITY MUSCLE ACTIVATION DURING BASEBALL PITCHING

Looked at muscle activation of the lower body during pitching in 4 different phases:

- Phase 1: Starting stance to the top of the leg kick
- Phase 2: From the top of the leg kick to Foot Strike
- Phase 3: From Foot Strike to Ball Release
- Phase 4: Ball Release until 0.5 seconds after Ball Release

#### What Did They Find?

- **Both legs are equally important.** As pitchers approach Foot Strike (Phase 2):



both legs are used equally:

most muscles of both extremities. During phase 2, all muscles were bilaterally eliciting moderately active to highly active contractions with the exception of the BF on the stride leg.

and it's during Ball Release (Phase 3):



that the legs work the hardest:

Phase 3, which is defined from SFC to ball release, generates the highest EMG activity in musculature from both lower extremities. The GAST, VM, GM, and BF of the trail

**Pitchers DO NOT Push Off The Mound.** There are 2 common approaches to pitching:

Many coaches believe that a pitcher should “push off” the pitching rubber with the trail leg during the stride to increase initial forward momentum, whereas others suggest that pitchers should demonstrate a “controlled fall” toward home plate. Eccentric contractions of stride leg hip flexors control

but the evidence points NOT to pushing off but rather a "controlled fall":

tative “ramping” effect of the EMG activity of the trail leg during phase 2 of the pitch. The progressive increase in EMG levels for the trail leg in phase 2 suggests that pitchers do not explosively “push” off the mound during the stride. Rather, pitchers may be controlling their rate of force production up suggest that pitchers may, indeed, be demonstrating a controlled “fall” in the first part of the stride phase. The

Disproving yet another commonly-taught pitching mechanic:

These data seem to contradict a long-standing tradition disseminated by many pitching coaches who suggest that the initial phase of the windup, up to SFC, is an important phase where pitchers forcefully “push off” the pitching rubber.

Focus on your hips, NOT your legs, to build velocity:

*"The Quicker You Go, The Harder You Throw."*



## Have A Question About This Newsletter?

Call (631-352-7654) or Email ([PitchingDoc@msn.com](mailto:PitchingDoc@msn.com)) Dr. Arnold!

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