Toe Running: The Good, The Fad, and The Ugly

By: Molly Quinn-Shea
Heel Strike

Forefoot strike
BORN TO RUN
A Hidden Tribe, Super Athletes, and the Greatest Race the World Has Never Seen
Christopher McDougall
Ground Reaction Forces

Heel Strike

![Graph showing ground reaction forces over time with peak and slope annotations.](image-url)
Conflicting GRF
Injuries?

- No change in injury rates!!
- Heel strike runners absorb more force in knee
  - Patellofemoral pain syndrome accounts for 20% of all running-related injuries
- Forefoot strike runners absorb more force in the ankle/calf
  - Increased risk of metatarsal stress fractures, Achilles tendonitis, and plantar fasciitis in toe running
- Transition period is the most dangerous
Efficiency?

- Some found evidence that reveals forefoot running is more efficient
  - Efficiency: energy demand
  - Higher cadence, lower stride
- Others found this efficiency only comes into effect when running at 6:25 mile pace or faster
  - Majority of sprinters run on balls of their feet
  - Marathon runners who start with forefoot or toe running often fatigue and finish with heel strike
- Highest efficiency with training or “preferred type of foot contact”
  - May decrease initially with foot strike change
What the studies did agree on...

- Forefoot strike
  - Higher knee flexion
  - Higher plantarflexion
  - More muscular demand from foot and calf muscles

- Heel strike
  - Straightened leg
  - Stresses on knee, hip, and back
Interviews

- Runners: running style, running experience, pace, injuries, exercises, etc.
  - A lot of variety

- Physical Therapists: patients with running related injuries, personal opinions on running style, practicing technique with runners, specific stories, etc.
  - Focus on stride and the whole body...not just the foot
  - Pay attention to placement of injury
  - Will not change foot strike unless obvious pain relation
Take Home Messages

- Research inconclusive—no “right” or “wrong”
  - Potential advantages and disadvantages
- Influence of media
- Whole body mechanics
- Are we born to run?
Thank you for coming!