

Running Techniques

[Minimizing Wasted Energy]

1. **Balance between stride length & stride frequency.**
 - a. Too long & too slow incr. impact stress= over striding
 - b. Vertical displacement-energy cost of support
 - c. Decrease stride length<Increase stride rate= Increase economy & speed
 - Decr. Contact time/short= **180-182 strikes per minute** or with dominate leg= **45 strikes in :30 seconds.**(use a Metronome)
 - d. Elastic Recoil/free speed (calf, Achilles,fascia/arch)
 - no energy expenditure,
 - will not fatigue
 - never run out of fuel
 - no lactic acid build-up
 - never dehydrate
2. **Foot strike placement.**

Drill: Running Posture - Bend knees slightly, shift wt. onto balls of your feet; Heel 1/4-1/2 off of the ground. Relax quads.

 - a. Out in front foot placement/braking= coast time (center of mass arching over foot), incr. energy utilization, incr. impact stress
 - Example: balance on foot with the foot in front of you.
 - **Drill: Running in place/quick rhythm**
3. **Methods of foot strike.**
 - a. Heel strike, flat foot, ball of the foot
 - Drill: 2-legged hop** (relax quads)
 - Example of heel strike, hop on heels.
 - Create power from feet/calves (elastic recoil)
4. **Developing propulsion of foot at impact.**
 - a. Movement horizontally= large muscle groups=Gluts/Hams
 1. Toe off= knee extension/quads
 2. Pull through= knee bend/hams
 - b. If Quads are **sore** then, heel striking
 - c. If Hams are **sore** then, pull through
 - 1.**Drill: Hip Extension** (knee slightly bent 45, do not lean fwd.)
 2. **Drill: Pendulum** (30 forwards/45 backwards)
5. **Movement of foot at impact.**
 - a. Pull foot back before it strikes the ground/under ^{*}c.o.m.= minimizing braking.
 1. **Drill: Foot Drag** ^{*}[c.o.m. ← [center of mass = Hips]]
6. **Limb Movement.**
 - a. Arms set stride rate (elbows bent @ 90)/not breaking midline. ^{*}180-182 strikes per/min.
 - i. With H.R. rotate from side to side past the midline=incr. in H.R.
 - b. Legs set the stride length (short lever arm on recovery/quick)
 1. **Drill: Hip Extension with heel flick**