

Posture/Alignment and Forward Lean and Fall

- Stand with knees slightly bent, place hand on bump behind head and pull up and make yourself “tall and proud.” Shoulders relaxed and chin slightly tucked in.
- Back/pelvis should be in a neutral position, core engaged, not overly arched or completely flat, gently tighten buttocks and draw in belly button to achieve this.
- Ears, shoulders, hip, and ankle bone are in straight line when you lean forward from your hips down.
- Arms: elbows close to body and bent > 90 degrees. Keep hands relaxed and close to heart and focus on driving elbows back.
- **Drills:**
 - o Wall fall (trust fall)
 - o Fall/Lean with rope (partner assisted) or heavy Rouge band around waist
 - o Wall fall with heel pull
 - o Wall lean and run in place
 - o Lean and run in place with rope, or heavy band support
 - o Running forward with rope around waist (partner assisted) and then release run
 - o Timber fall and run forward

Pull/Heel Lift

- Quick heel lift off the ground before back knee gets completely straight (Imaging a bungee attached to your heel and hip joint)
- Pull heel/leg under hip with toe down
- Heel should cross the mid-calf to knee of support leg (Slow run, heel lift decreases. Fast run, lift increases)
- As soon as your swing-leg knee comes through and starts to go in front of your body, think about placing mid to forefoot down and under body while pulling back, or attacking ground and propelling body forward.
- Avoid full knee extension upon landing and upon terminal push-off
- **Drills:**
 - o Standing single heel pull ↔ alternating (Pony drill) ↔ run in place pull heel under hip (focus on spring and soft land) o Walking single leg pull and fall ↔ skip
 - o Butt-kickers running forward – focus on kicking under hips, not buttocks
 - o Jump rope running
 - o Rope/Rogue heavy band drills in *Posture/Alignment and Forward Lean and Fall Drills*

Cadence/Steps per Minute (SPM)

- Cadence count: count 1 side footstrike for 60 seconds then x2 to get your SPM. Goal = increase by 5-10% (>170 SPM is optimal).
- During running, use a Metronome app or a music cadence app that helps practice your cadence.
 - o For iPhone, MetroTimer is good. Make sure your metronome is set to a 1 to 1 consistent beat.
 - o Music apps: Cue Weav (free), RunCadence Mobile (free), TrailMix: Step to the Beat (pay), or Audio Step (pay).

Footstrike Soft Landing

- Land with a soft landing/soft ankle and think about running smooth, soft, quiet, and light.
- **Drills:** (2-4 sets of 30 to 60 seconds)
 - o Double leg hopping in place with shoes ↔ add in metronome cadence.
 - o Double leg forward hopping in shoes with forward lean.
 - o Double leg hopping in place without shoes ↔ add in metronome cadence.
 - o Double leg forward hopping without shoes with forward lean.
 - o Running in place with shoes and soft landing with metronome ↔ progress without shoes
 - o Run barefoot focusing on mid to forefoot landing.
 - o Jump rope, ladder drills, short stair running.

Footstrike Placement

- Focus on landing under your hips and putting your foot down under body and “attacking ground,” engaging your hamstrings/glutes, or pulling foot back and underneath body. Foot should not land in front of knee.
- **Drills:**
 - o Pull through = hand support on wall and focus on attacking ground, extending hip, and get foot on/off ground quickly (like riding scooter or skateboard)
 - o A-Skip and B-Skip (how to get faster at drills – Noah Lyles) https://youtu.be/xiYTMBLqp8c?si=WhsWv_IT9CIsiF4z&t=74
 - o High Knees - focusing on driving down with your glutes like a piston or spring.
 - o Stair running

Running Form Methods and Video Resources

POSE Running – Dr. Romanov

<https://posemethod.com/running/>

- POSE Running Clinic (Before & After) by Posecoach Jacky POSE teaching: <https://youtu.be/oN1x3Ik1t5Y>
- PoseTV (drills and videos) <https://www.youtube.com/@posetv>

Chi Running – Danny Dreyer <https://www.youtube.com/@ChirunningWalking>

Evolution Running – Ken Mierke <https://www.youtube.com/watch?v=QZvOjDS7gvg>

Natural Running (Barefoot Running) - Dr. Mark Cucuzzella

<https://naturalrunningcenter.com/natural-running-form/>

Proper Arm Swing When Running Long Distances – by Run Forefoot channel on YouTube

<https://youtu.be/5jQwXg4YlhU>

Perfect Running Form – Techniques PRO Runners Use to Run Faster (great examples of efficient running form) – by James Dunne

<https://youtu.be/pofBa80GAwg>

NAME (print): _____ Sponsor's last 4: _____

Location of pain/injury: _____ Initial Running Cadence _____ New Cadence _____

CIRCLE ALL THAT APPLY

1. Head in excessive extension (looking up)	Quick Fix: gaze ~30 meters ahead and gently tuck chin in
2. Head in excessive flexion (looking down)	Quick Fix: gaze ~30 meters ahead
3. Excessive trunk/spine/shoulder rotation	Exercise: Core exercises, standing holding wts. and move arms in running motion while not rotating
4. Elbows were held away from the side of body	Exercise: 1. Hold wts. and move arms in running motion, 2. Strengthen shoulder external rotators
5. Elbows are flexed significantly less than 90 degrees	Quick Fix: keep elbows fixed slightly more flexed than 90 degrees and hands at heart and drive elbows back
6. Exhibits excessive forward spine bending and/or is hinging forward at the hips, and/or exhibits decreased hip extension	Exercise: Hip Flexor stretch, run tall, engaging core, lean forward from hips down (not from torso)
7. Exhibits excessive spine extension, bending backwards	Quick Fix: Fwd lean from lower body, increase cadence, engage glutes/core. Exercise: Hip Flexor, Hamstring stretch
8. Excessive knee flexion >40 deg at midstance	Quick Fix: 1. Increase cadence, 2. Run tall, light, soft, and quick
9. During mid-stance phase, excessive opposite side pelvic/hip drop > 7 deg.	Quick Fix: Strengthen gluteus medius muscles Exercise: 1. Clams, 2. Resistance band side stepping
10. Trunk lateral side-bending during foot stance	Quick fix: strengthen spine/lateral trunk/hip muscles Exercise: side-plank & standing hip abduction
11. Excessive vertical displacement of COM (hip)	Quick Fix: Increase cadence 5%. Keep elbows bend > 90 deg (pump arms back, not upwards). Run light, smooth, & quiet
12. Exhibits excessive femoral medial rotation (knee collapsing inwards)	Exercise: Side-lying Clams. Side stepping with resistance band (strengthen gluteus medius muscles)
13. Knee <20 deg flexion at initial foot strike	Quick Fix: Increase cadence. Focus on trying to land close to under body, pull leg under body, and avoid reaching.
14. Lands in Heel strike, ankle dorsiflexion > 10 deg	Quick Fix: Increase cadence. Avoid rigid ankle & land quiet, soft, & light. Slight Forward lean.
15. "Overstriding" Foot strike significantly in front of hip (COM) > 13 inches	Quick Fix: Increase cadence. Decrease stride. Mid-foot to fore-foot strike. Land by putting/pulling foot under body
16. Foot initially contacts ground in front of knee	Quick Fix: Increase cadence. Focus on putting foot down under body and/or pull leg back under body sooner
17. Excessive scissoring foot strike pattern crossing midline of body	Quick Fix: Increase cadence. Don't reach & decrease stride
18. Excessive push-off with calves and quads causing knee to fully straighten	Quick Fix: Increase cadence. Quicker heel lift/pull. Glide and run smooth and tall. Avoid "bouncing."
19. Late knee flex or activation of Hamstring/glutes: a) upon foot strike OR b) upon terminal push-off	Quick Fix: Engage hamstrings/glutes earlier. Don't fully straighten knee upon foot strike and when the leg is in terminal stance coming off the ground
20. Lack of or improper Forward Lean	Quick Fix: shift body wt. slightly forward, leaning from the hips down. Do not hinge from hips or bend from spine.
21. Lack of heel lift on swing leg	Quick Fix: Lift heel so it crosses the shin just below knee

Return to Running and Cardio Fitness Progression

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Week 1	Rest or low impact cardio machine 20 min	6 min easy run	Rest or low impact cardio, machines or pool 20 min	6 min easy run	Rest or low impact cardio machines or pool 20 min	6 min easy run	Rest or low impact cardio machines or pool 20 min
Week 2	Rest or low impact cardio machine 23 min	7 min easy run	Rest or low impact cardio, machines or pool 23 min	7 min easy run	Rest or low impact cardio machines or pool 23 min	8 min easy run	Rest or low impact cardio, machines or pool 23 min
Week 3	Rest or low impact cardio machine 25 min	9 min	Rest or low impact cardio machines or pool 25 min	10 min easy run	Rest or low impact cardio machines or pool 25 min	8 min mod pace run	Rest or low impact cardio machines or pool 25 min
Week 4 Plateau	Rest or low impact cardio machines or pool 25 min	W/u with 4 min mod pace run, then 2 x 400m (0.25mi) intervals at goal 2 mile or 5k pace (2 min rest between intervals. C/d 4 min easy run	Rest or low impact cardio machines or pool 25 min	10 min easy run	Rest or low impact cardio machines or pool 25 min	4 min mod pace w/u run, active stretching. Then perform 3 x 30s hill sprints (rest is walk down the hill). C/d 4 min easy pace run.	Rest or low impact cardio machines or pool 25 min
Week 5	Rest or low impact cardio machines or pool 28 min	W/u with 5 min mod pace run, then 2 x 600m (0.37mi) intervals at goal 2mile or 5k pace (2 min rest between intervals. C/d 5 min easy run	Rest or low impact cardio machines or pool 28 min	13 min easy run	Rest or low impact cardio machines or pool 28 min	5 min mod pace w/u run, active stretching. Then perform 3 x 30s hill sprints (rest is walk down the hill). C/d 5 min easy pace run.	Rest or low impact cardio machines or pool 28 min

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Week 6	Rest or low impact cardio machines or pool 30 min	W/u with 6 min mod pace run, then 2 x 800m (0.5mi) intervals at goal 2 mile or 5k pace (2 min rest between intervals. C/d 6 min easy run	Rest or low impact cardio machines or pool 30 min	15 min easy run	Rest or low impact cardio machines or pool 30 min	4 min easy w/u run. Then perform alternating 1 min hard – 1 min easy continuous run x 4. C/d 4 min easy.	Rest or low impact cardio machines or pool 30 min
Week 7 Plateau	Rest or low impact cardio machines or pool 33 min	W/u 5 min easy run. Do a few faster pick up sprints. Then 1600m (1.0 mi) time trial to test (goal pace) fitness and work on goal pacing. C/d 5 min easy run.	Rest or low impact cardio machines or pool 33 min	17 min easy run	Rest or low impact cardio machines or pool 33 min	w/u 5 min easy to moderate pace run, then 4 x 400m (0.25 mi) intervals at 2-5s under goal pace (1min, 45s rest between intervals). C/d 5 min easy run	Rest or low impact cardio machines or pool 33 min
Week 8	Rest or low impact cardio machines or pool 30-35 min	w/u 5-8 min easy to mod pace run, then 4 x 30s hill sprints (rest is walk down). C/d 5-8 min easy run.	Rest or low impact cardio machines or pool 30-35 min	20 min easy run	Rest or low impact cardio machines or pool 30-35 min	W/u 5 min mod pace run, then 3 x 800m (0.5mi) intervals at 2 - 4s under goal pace (2 min rest between intervals. C/d 6 min easy run	Rest or low impact cardio machines or pool 30-35 min
Week 9	Rest or low impact cardio machines or	w/u 7 min easy to moderate pace run, then 5 x 400m	Rest or low impact cardio machines or	22 min easy run	Rest or low impact cardio machines or	w/u 4 min moderate pace run, then an interval	Rest or low impact cardio machines or

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	pool 30-35+ min	(0.25mi) intervals at 4-7s under goal pace (1min, 30s rest between intervals). C/d 8 min easy run.	pool 30-35+ min		pool 30-35+ min	pyramid at goal pace: 400m - 400m – 800m – 800m – 400m – 400m (rest is 0.25mi jog between each, or 400m lap jog). C/d 4 min easy run.	pool 30-35+ min
Week 10 Plateau	Rest day	4 min w/u jog, then do active stretching. Then perform 1.5 mi (2400m) time trial test at race goal pace. Finish with 4 min c/d jog & static stretching.	Rest or low impact cardio machines or pool 33-38+ min	23-27 min easy run	Rest or low impact cardio machines or pool 33-38+ min	w/u 6-9 min easy to mod pace run, then 5 x 30s hill sprints (rest is walk down). C/d 6-9 min easy run.	Rest or low impact cardio machines or pool 33-38+ min
Week 11 Start of slight taper	Rest day	W/u 5 min run. Descending latter workout: 800m (0.5mi) – 400m (0.25mi) – 200m (0.17 mi). Run intervals a lot faster than goal pace, rest 2 min btw. each. c/d 6 -10 min easy run.	Rest or low impact cardio machines or pool 29-34+ min	Moderate to fast paced (tempo) 14-19 min run depending on how you feel.	Rest or low impact cardio machines or pool 29-34+ min	w/u 5 min run. Faster intervals on flat ground or a track. 5 x 45s (rest is 2-3 minutes btw. each). C/d is 6-12 min easy run.	Rest or low impact cardio machines or pool 29-34+ min

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<p>Week 12: Low vol. (20 to 25% less time & distance than previous week). Taper to run your race or test at end of week. Have one workout working on pacing. Take rest day, the day before your race/test.</p>							
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TABLE 3

Graduated Running Program to Return a Runner to 30 Minutes of Pain-Free Running

Stage/Level	Description
0	Pre-entry to graduated running program Pain during walking in normal activities of daily living
1	Initial loading and jogging (50% normal pace) with increasing duration
A	Walk 30 minutes
B	Rest
C	Walk 9 minutes and jog 1 minute (3 repetitions)
D	Rest
E	Walk 8 minutes and jog 2 minutes (3 repetitions)
F	Rest
G	Walk 7 minutes and jog 3 minutes (3 repetitions)
H	Rest
I	Walk 6 minutes and jog 4 minutes (3 repetitions)
J	Rest
K	Walk 4 minutes and jog 6 minutes (3 repetitions)
L	Rest
M	Walk 2 minutes and jog 8 minutes (3 repetitions)
N	Rest
2	Running with increasing intensity
A	Jog 30 minutes
B	Rest
C	Run 30 minutes at 60% normal pace
D	Rest
E	Run 30 minutes at 60% normal pace
F	Rest
G	Run 30 minutes at 70% normal pace
H	Rest
I	Run 30 minutes at 80% normal pace
J	Rest
K	Run 30 minutes at 90% normal pace
L	Rest
M	Run 30 minutes at full pace
N	Rest
3	Running on consecutive days
A	Run 30 minutes at full pace
B	Run 30 minutes at full pace
C	Rest
D	Run 30 minutes at full pace
E	Run 30 minutes at full pace
F	Rest
G	Run 30 minutes at full pace
4	Return to running

Novice Runner returning from bone stress injury (BSI)

Pre-entry stage and 3 running stages. Once runner is completely pain free for 5 consecutive days during usual activities, they may leave the pre-entry stage (stage 0) and commence deliberate progressive loading. Stage 1 introduces loading in 30-minute sessions, separated by rest days. Sessions in this stage consist of increasing durations of jogging (defined as running at 50% of normal pace) and decreasing durations of walking. The pace of running is progressed in stage 2 until the athlete can run for 30 minutes at the usual pace, with stage 3 consisting of running on 2 consecutive days followed by a rest day. The last stage incorporates individualized running until complete return to desired running activities. Progress through each stage of the graduated running program is determined by BSI provocation. If a runner is able to complete a session with no BSI symptoms and does not experience latent symptoms, they can progress to the next level during the ensuing session. However, if BSI symptoms are experienced during a session or the runner experiences latent symptoms, they must stop the session and return to the last level that they were able to successfully complete at the next session. For example, if they experienced symptoms while walking for 6 minutes and jogging for 4 minutes, they would take a rest day, then walk for 7 minutes and jog for 3 minutes each at the next running session.