Inward Bound

Preparing you for your training

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Statistics

Up to 75% of runners are injured every year

How do you prevent injuries in runners?

DON’T RUN

Injury Risk factors

- Previous Injury
- Training intensities
- Training load/volume
- Strength deficiencies
- Run technique
- Loading errors
- Terrain
- Footwear

Running Propulsion

- When running, the foot provides a rigid lever for propulsion
- Release of stored energy (Achilles tendon)
- The soleus muscle is exposed to high loads at slow speeds and more so at high speeds (6-8x BW)
- Soleus/Gastrocnemius main contributor to propulsion and support forces
- Soleus is the main contributor to forward and vertical propulsion across speeds

WHAT DOES THIS MEAN? Every runner should be doing calf work

Run Speed

- Stride Length

Influenced by how hard you press through the ground

- Cadence

Influenced by pushing through the ground more frequently

TOP 5 RUNNING INJURIES

Achilles Tendons

What it is: Tears in the tissues of the tendon that extends from the heel to the calf, causing inflammation.
Likely Causes: Overpronation, shoes that are too stiff up front and too cushioned in the heel, inadequate stretching or inflexibility, overtraining

Plantar Fasciitis

What it is: Excessive stretching of the soft tissue that connects the heel and forefoot along the bottom of the foot, causing inflammation
Likely Causes: Overpronation, extremely high arches, improperly fitting or rigid shoes, inflexible calf muscles, overtraining

Shin Splints

What it is: Injured or inflammed muscles along the inside edge of the shin. If ignored, can cause stress fractures.
Likely Causes: Overpronation, improper running form, running on hard or cambered surfaces, muscle fatigue

Runner's Knee

What it is: A catchall phrase for wear and tear on kneecap cartilage.
Likely Causes: Overpronation, worn shoes, fatigued or weak quads, overtraining

Illiotibial Band Syndrome

What it is: Thickening of the band of tissue that runs the length of the femur due to repetitive friction between the tissue and the bone.
Likely Causes: Overpronation, running on cambered surfaces, escessive hill running, worn shoes, overtraining

Biomechanics and Injury

- MORE RESEARCH IS REQUIRED
- Contralateral pelvic hip drop
- Forward lean
- Landing with extended knee @ IC
- Increase ankle dorsiflexion
- Hip Adduction
- Low cadence --> increased risk of bone stress

How can we fix our biomechanics?

Contralateral pelvic hip drop – Hip flexor, glute med strengthening

Forward lean – body awareness, back extensor strength

Landing with extended knee @ IC – result of overstriding? Increase cadence

Increase ankle dorsiflexion – increase cadence / reduce stride length

Hip Adduction – glute med strengthening

Low cadence --> increased risk of bone stress

Why do strength training?

- Important in rehabilitation
- Improved load tolerance/capacity
- Improved leg sprint stiffness → Running economy
- Running economy improvements (2-8%)
- Calf strength is forgotten too often

Running Load

- Consider the following:
  - Good footwear choice
  - Effective running mechanics
  - Good sleep/ work life balance
  - Good nutrition
  - Strength and conditioning program
  - Consistent running history

Running Load

WHAT IS LOAD?

VOLUME (KILOMETRES)

INTENSITY (HOW FAST)

TERRAIN

SURFACE

Monitoring Load

- Km/week gives an indication of external load
- RPE x Duration
- = Internal Load measure
- Increase >10% weekly load increases injury risk
  - If you increase by 10% it takes ages to get to desired distances and when running a lot of weekly km, the increase is too large

Borg's Rating of Perceived Exertion (RPE) Scale	
Perceived Exertion Rating	**Description of Exertion**
6	No exertion; sitting and resting
7	Extremely light
8	
9	Very light
10	
11	Light
12	
13	Somewhat hard
14	
15	Hard
16	
17	Very hard
18	
19	Extremely hard
20	Maximal exertion

Important Load considerations

Have training variability

Recovery – have days off!

People adapt differently to prescribed load/intensities/volume

Run Loading

- Aim to have regular loading
- Aim at least 3 runs per week
  - Smaller amounts more often?
  - Respect injuries
  - Individuals will vary
- More is better than less
- Consistent loading is essential

Where do I start?

	Run 1	Run 2	Run 3	Run 4
Week 1	3 mins running 1 min rest x 4	3km run		
	2 mins running 1 min rest x 4			
	1 min running 1 min rest x 4			~8km
Week 2	4 mins running 2 min rest x 2	1km run x 3 - 2 mins rest between runs		
	3 mins running 90 secs rest x 3			
	2 mins running 1 min rest x 4			~10km
Week 3	2km run 2 mins rest x 2	4 mins running 2 min rest x 2	3km run	
		3 mins running 90 secs rest x 3		
		2 mins running 1 min rest x 4		
		1 min running 30 sec rest x 5		~11km
Week 4	1 km run 2 mins rest x 3	2km run 2 mins of rest	5km run	~15km
	600 m 90 sec rest x 4	1km run 90 sec rest		
	200m x 30 sec rest x 5	500m run 1 min rest x 2		
	100m x 30 sec rest x 5			

Before Semester 2 starts

Division			Recovery Run 1	Recovery Run 2	Recovery Run 3	Speed/Tempo Run	Long Run
Div 6-7	Week 1	13/6/2022	15.00	3km	15.00		6km
Div 4-5			20.00	4km	20.00		7km
Div 1-3			20.00	5km	25.00		8km
Division			Recovery Run 1	Recovery Run 2	Recovery Run 3	Speed/Tempo Run	Long Run
Div 6-7	Week 2	20/6/2022	17.50	5km	20.00	6 x 1:30 with 1min recovery	8km
Div 4-5			20.00	7km	20.00	6 x 1:30 with 1min recovery	10km
Div 1-3			30.00	8km	25.00	8 x 1:30 with 1min recovery	12km
Division			Recovery Run 1	Recovery Run 2	Recovery Run 3	Speed/Tempo Run	Long Run
Div 6-7	Week 3	27/6/2022	20.00	6km	4km	2min at 5km pace, 1min at 2km pace, 30s fastest speed. 2min recovery run after 5km, 1min after 2km pace, 2min after 30s fastest speed	10km
Div 4-5			25.00	8km	6km	3min at 5km pace, 2min at 2km pace, 30s fastest speed. 2min recovery run after 5km, 1min after 2km pace, 2min after 30s fastest speed	15km
Div 1-3			40.00	10km	7km/30.00 - either is first accomplished	4min at 5km pace, 2.5min at 2km pace, 1min at 1km pace. 2min recovery run after 5km, 1min after 2km pace, 2min after 1km pace	18km
Division			Recovery Run 1	Recovery Run 2	Recovery Run 3	Speed/Tempo Run	Long Run
Div 6-7	Week 4	4/7/2022	15.00	5km	25.00		10km
Div 4-5			20.00	7km	5km		12km
Div 1-3			25.00	8km	30.00		15km

Exercise Progressions

- BW Squat → Asymmetric Squat → SL Squat to Support → Pistol Squat
- Reverse Lunge → Split Squat → Bulgarian Squat → Plyometric Bulgarians
- Glute Bridge → Split Stance Glute Bridge → SL Glute Bridge → SL Glute Bridge w Resistance Band
- Kneeling Side Plank → Side Plank → Kneeling Side Plank Hip Abd. → Side Plank Hip Abduction