



# Injury Prevention

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## Risk factors (Internal)

- Age
- Gender
- Body Composition
- Health
  - PREVIOUS INJURY
  - JOINT STABILTY
- Physical fitness
- Anatomy
  - ALIGNMENT
- Skill Level
  - sport specific
  - technique
  - POSTURAL STABILITY



## Risk factors (External)

- Human factors
- Protective equipment
- Sports equipment
- Environment
- Competitive season especially transitional phases



# Strategies

- Warm-up
- Stretching
- Screening



# DYNAMIC WARM-UP



# 1 Physical condition of the athletes

- This will determine the level of intensity at which the dynamic warm-up should start, the rate of progression of the intensity and the total workload of the session.



## 2 The activity for which the athletes are preparing

- The dynamic warm-up should be planned to gradually increase in intensity to achieve optimal physiological preparation for the subsequent activity.



- It is important to bear in mind that it is a warm-up and not a conditioning or endurance session.



- It is also important to select exercises that match the ability of the athletes.



The physiological elements that need to be considered include:

- Limb and joint involvement including range, speed and force of movement.
- The energetic or metabolic pathways.
- Specific neural activation and co-ordination of movements.



- The efficiency of the design of the dynamic warm-up is very important in that it should not result in undue fatigue or energy utilisation beyond what is required to reach an optimal state of preparation



- The exercise selection must be specific to the subsequent activity and include part of the sport or training session done in a controlled manner.



## Dynamic warm up

- 2x 30 metres swing skips
- 2x 30m high skips
- 1x 30m skipping kicks
- 2x 30m slides
- 2x 30m carioca
- 1x 30m double-leg hops
- 1x 30m bounding
- 2x 30m fast skips with quick down-stroke
- 2x 30m fast hands-quick feet

Exercise	Volume
1. Jog – Easy pace jogging with turns every 50 m, increasing speed	6 – 8 x 50m
2. Ankle Rotations – Standing on one leg draw large circles with the toes of the other foot	8 reps of each per leg
3. Walking lunges – Walk in a controlled and continues way with a longer stride, gradually lower the knee of the back leg to the ground	40m
4. Standing single leg calf raises – On one leg perform dynamic heel raises and a controlled return	8 reps per leg
5. Walking with high knee drive – While walking drive and swing leg high into the chest with a flexed ankle and drive the opposite arm to shoulder height	40m
6. Parallel squat – Feet at shoulder width, squat down to where the thighs are parallel with the ground while keeping chest upright	10 reps
7. Walking backwards – Walk with a balance, move and swing foot high past the buttocks.	40m
8. Front Lunge – Alternating steps to the front with a strong drive off the ground with the front foot and a stable trunk, arms and head	8 reps per leg
9. Jogging carioca – Sideways running Italian football style, trail leg to move past the lead leg, once behind than in front, with exaggerated hip rotation	2 x 40m each way
10. Lateral Lunge – Sideways step with a strong leg drive back to the midline and a stable trunk, arms and head	8 reps per leg
11. Jogging buttock kick – Forwards running with exaggerated knee flexion, fast leg slow travel	40m
12. Shoulder Shrugs – Draw large circles with the points of the shoulders, to the back and the front	10 reps each ways
13. Prone leg curls – Lying down flex each alternative knee explosively taking the foot to the buttocks.	8 reps per leg
14. High knee skipping – As in walking with knee drive but more explosively so that the skip is performed	40m
15. Straight arm circles – Move the arms in large circles past the ear and the side of the body	8 reps each way
16. Standing hamstring kicks – Standing on one leg perform and controlled leg kick with gradually more vigour	8 reps per leg
17. High knee carioca – As in jogging carioca, but now when the trail leg is passing to the front lift the knee high by flexing the hips.	2 x 40m
18. Sumo squat – With heels shoulder width apart, turn the feet out as far as possible, then gradually squat while keeping a stable trunk.	10 reps
19. Back slaps – With the arms abducted to the horizontal, vigorously cross the arms over the chest and slap your back and then open the arms in a controlled vigorous manner and repeat.	10 reps
20. Shuttle – Perform 4 continues 5m sprints with alternating turns, gradually increasing the speed and effort, rest for 15 s and repeat.	2 sets (4x5m) 15 sets



# Stretching



## Stretching

- Best time to stretch is **after** a training session
- Stretching under control of the athlete
- Stretch should be comfortable and not cause pain
- Maintain good posture and stability on each stretch



## Stretching

- Hold each stretch for 30 – 60 seconds
- Practice a minimum of four repetitions per stretch
- LOW forces for LONGER duration at HIGHER than normal muscle temperatures



## Stretching, in children

- The kinesthetic awareness not fully developed
- Standing stretches not advisable
- Incorrect body alignment may compromise safety and effectiveness



- Who is at increased risk?
- Why?
- How do injuries typically occur?



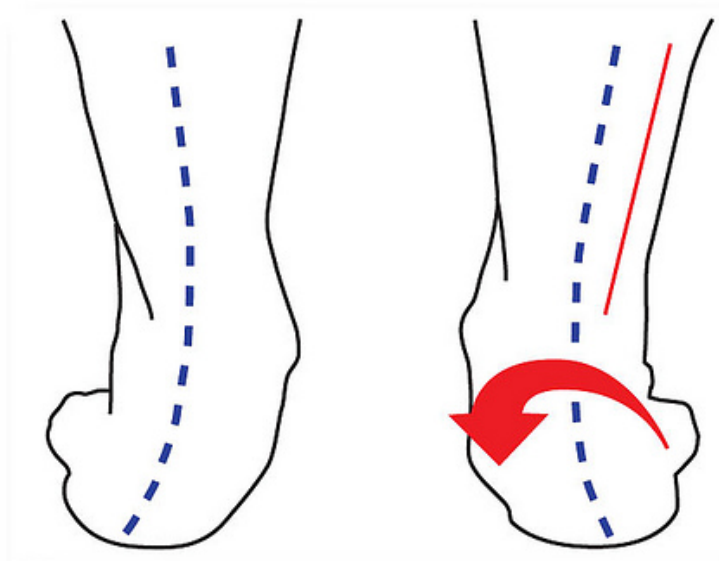
## Screening

Musculoskeletal screening is invaluable for revealing deficits in muscle/ joint flexibility and in muscular stability/control that might lead to overuse injuries.

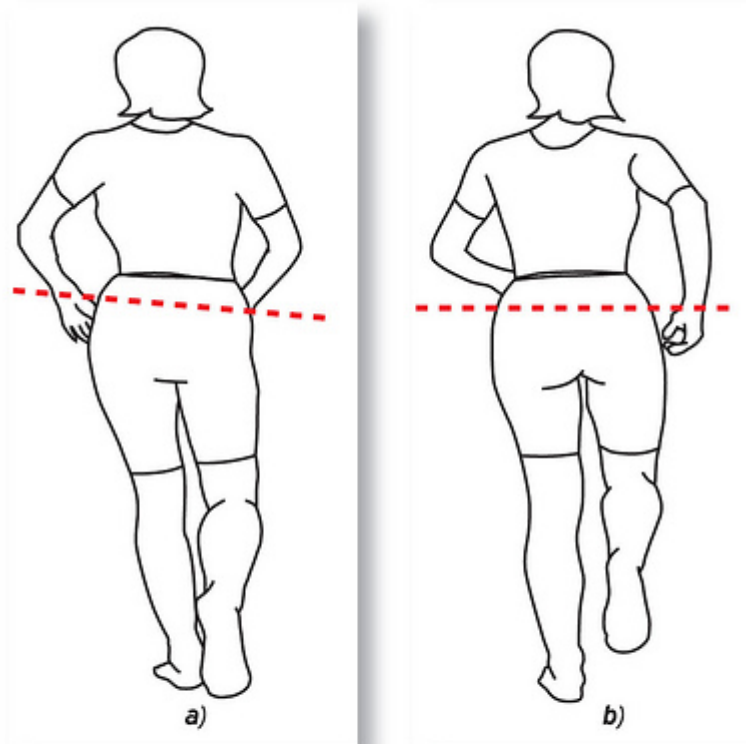


## Screening

Improving body mechanics to enable an athlete with potential to maximise it.



**Figure 4: Severe heel eversion**



**Figure 6a: Trendelenburg gait  
– inadequate pelvic stability;**

**Left Figure 6b: normal gait –  
adequate pelvic stability**



## Functional tests

- Double leg squat
- Repeated single leg squat
- Forward lunge
- And...
- Flat hop test



**1a. Squat - front view**



**1b. Squat - side view**



2a. Lunge - front view



2b. Lunge - side view