

The first step is to determine a safe starting point. Jogging is very stressful on certain parts of the body, most notably the calves and Achilles. Running is a jumping skill and a 1km jog contains between 750 and 1250 steps. Even short runs contain a lot of small jumps. It is important to build strength in key tissues over shorter distances with moderate effort (lower pace and flat surfaces). Only once tissues are strong and have the necessary capacity will they cope with higher stresses arising from faster paces, longer distances, and hills. A common failure in jogging programs is placing the cart ahead of the horse. Running skills (strengthening and economy) should be built *before* seeking goals around levels of aerobic fitness and performance. Build slowly and be patient.

Are you an experienced runner? Irrespective of your level, have you run regularly for at least the last two years: This means you have consistently run three out of every four weeks, two or more times each week. If so you can consider skipping levels 1 and 2 and advance to level 3. If you are not an experienced runner then you are advised to go through a strengthening phase. The strengthening phase may involve some aerobic stress depending on your prior fitness and leanness but it also may not. Either way, aerobic stress is not the goal of this phase. The goal is to make your body stronger and ingrain an easy, relaxed gait pattern.

IMPORTANT

If you have a history of illness or injury that might affect you adversely during exercise then you should consult your doctor before beginning a jogging program.

What shoes do I need? If you are not certain what your feet and ankles require in the way of support for running then I suggest speaking with a sports physio or podiatrist before beginning jogging.

LEVEL1 - DISCOVERING YOUR STARTING POINT

FITNESS TEST - 3km effort trial

On a flat surface, run 3km at a moderate pace - between 6 and 8min per km. To discover what speed this is for your body, time yourself over the first km and lower your pace downward as needed for the remainder.

Once you have completed the 3km effort trial answer the following questions:

1. Did you complete the 3km without stopping?
2. What kind of fatigue did you experience (what was your limiting factor):
 - I. General aerobic exhaustion – high HR, trouble getting enough oxygen into your body
 - II. General muscle fatigue. You did not experience fatigue or exhaustion in one muscle but in many
 - III. Specific muscle fatigue/ discomfort. For example your calf muscles may have tightened and become extremely uncomfortable or sore
- If you completed the 3km without stopping and you did not experience specific fatigue or soreness or significant general fatigue then you can consider advancing to level3.

- If you did not complete the 3km then you should begin with a strengthening phase (level2). There are two additional assessments needed so that you can track progress of your limiting factor:
 1. At what time during the run did the onset of significant fatigue or discomfort begin (e.g. after 10min)?
 2. What was your total level of fatigue/ discomfort at the end of the run? Use a scale of 1 to 10, where 10 means you could not have run one more minute and a 5 means you could have run at least the same distance again

Whether or not you completed the 3km, if you did experience discomfort in a specific muscle or joint you need to be sure it is a normal type of pain and not an injury. There are two different kinds of normal post-exercise pain. The first type of discomfort resolves quickly (minutes to hours) and does not affect performance of everyday activities. The second type may be delayed in its onset and the pain and loss of normal function can be severe. However, it will fully resolve after a few days rest. An injured muscle may not resolve without treatment and you are likely to experience specific pain during normal daily activities. If this is what you believe you experienced then please consult your doctor or physio for treatment. Do not run again until fully healed and seek guidance before resuming to avoid injuring the tissue again.

LEVEL2 – STRENGTHENING/ ECONOMY PHASE

The goal of the strengthening phase is to improve the condition of your muscles and soft tissues. The more information you have (i.e. what your limiting factors are) the more detailed your planning can be and the more certain the outcomes. Learn to understand your bodies needs by its responses.

IMPORTANT

Record the details of every run in an exercise diary (distance, time, and location [this is an indicator of course difficulty]) including your assessments of fatigue (above) for any muscle specifically affected during your jogging.

STRENGTHENING PROGRAM:

The strengthening program operates in 4weekly cycles. The last week of each 4week cycle is rest from running. During this week you may supplement with any other aerobic (walking, cycling, swimming etc.) or anaerobic activity (e.g. circuit weight training) but you need to avoid jumping and high impact leg activities. The rest week allows tissues to fully recover before a greater level of jogging stress is introduced.

The starting distance and progressions are shown in the table below. The bottom line represents your time to onset of fatigue in the effort trial and subsequent runs, while the upper line provides the starting distance. For example if your time to onset of fatigue was 9min or less then the distances in the first phase of your strengthening phase are 1km.

JOG DISTANCE (km):	1	1	1	1.5	1.5	1.5
TIME TO ONSET OF FATIGUE (min):	7	8	9	10	11	12

2	2	2	2.5	2.5	2.5	3	3	3
13	14	15	16	17	18	19	20	21

Complete two runs over the same distance and course each week for 3 weeks, and then take one week's rest. Take 3-4 days rest between runs subject to readiness. If your muscles are still tired take another days rest. After the week4 rest you may advance to the next distance in sequence, e.g. from 1km to 1.5km. Remember that it is important that you assess fatigue/ discomfort for every run: the time to onset and the total level at the end. Fatigue represents your conditioning level and as your conditioning improves, your time to onset will increase (i.e. it will take longer to exhaust tissues) and the total level of fatigue will reduce. Using this idea as a guide you can progress the distances upwards in each strengthening phase according to a pattern of reduced fatigueability. Note that this kind of response is generally linear – don't be precious or disappointed if things don't progress precisely as you want them to. Provided you do the work your body will adapt. The key is time and, therefore, patience.

All runs during the strengthening phase must be on the flat. Using your effort trial as a guide; program levels of fatigue/ discomfort to not exceed 7/10 at the runs end. In addition to distance, the variables you can control are your run speed and continuous jogging vs jog: walk. A 1min on: 1min off jog to walk ratio is effective. It is important that you not completely exhaust muscles as this is the basis for an injury – listen to your body.

Once you can run continuously for 3km, irrespective of speed, and your muscles and tissues are appropriately adapted, i.e. little or no significant discomfort or fatigue in *specific* muscles or tissues, then you may advance to level3.

LEVEL3 – FITNESS PHASE

Provided your body is strong and stable, jogging can be used safely to advance aerobic capacity and running performance. Even so, there is a risk of a problem anytime tissues are stressed beyond their capacities. There are two ways to minimise the risk of an injury from overloading: 1) track your capacity/ level of conditioning as you go with an assessment of fatigueability (notes above & below), or 2) use very stable stimuli – no sudden changes or peaks and troughs. I recommend using both.

HILLS

Hills are very effective at strengthening muscles; notably the calves and Achilles but, precisely because they stimulate these tissues so strongly, hills also injure them more easily. The introduction of hill running is another variable in the loading equation; make a single change at one time *and* give thought to the combined effect of hills and distance. Begin with a small amount (<100m total elevation) and progress very slowly. Remember the introduction of hills doubles muscle stress.

FITNESS TEST - 5km effort trial

On a flat surface run 5km at a moderate pace – between 6 and 8min/km. Afterwards, assess your fitness/ conditioning: On a scale of 1-10 rate your total level of fatigue/ exhaustion. Your starting cycle in the fitness phase, as a function of your self-assessment of fatigue, is shown in the table below:

5KM FATIGUE ASSESSMENT:	8+/10	7/10	5-6/10	<5/10
MAX RUN DISTANCE (km):	3-4	5-6	7-8	9+
MAX WEEKLY MILEAGE (km):	12	15	18	24+

The number of weekly runs is up to you provided the maximum distance and total weekly mileage are not exceeded. As a rule the more days between runs the better. Each cycle is 12weeks – maintain the same loading for not less than 12weeks before progressing to a higher cycle. With all runs we are aiming for a final fatigue level of 7/10 or less. Don't make the mistake of believing that progress (fitness/ higher performance) can only be attained by constant or frequent increases in stress. Capacity for any task is also enhanced by reducing energy cost. In biomechanics this is termed task efficiency; in jogging it is referred to as economy.




Jogging economy

Should I jog on my heels or the balls of my feet? This is a very controversial topic and lots of very clever people have contrasting opinions. My view is this: Humans walk on their heels and they sprint on their toes. No instruction is needed; these are intuitive and automatic behaviours reflecting our anatomy. Jogging is between walking and sprinting and it is sensible to believe that as we accelerate from a walking pace to a sprinting one our feet pass through a phase in which moderate to medium pace corresponds with a ball strike. It is very likely that variations in our anatomy – leg length, muscle strength etc. – engender small differences in jogging biomechanics but the principle of loading from the balls of the feet (and not the heels) is sound in my view.

Post Exercise stretching and body management

It is vital to stretch muscles that have been used a lot during exercise. In the case of running these are the calves and Achilles, and may include the hamstrings, hip flexors, quads, and glutes depending on how your body responds. Tissue massage using trigger pointing devices (foam rollers, balls etc.) can also be very effective at helping muscles to release and relax. Icing sore tissues late in the day can also be very helpful. If a muscle remains very tight or sore, hurts during every day activities, or pain/ discomfort doesn't resolve after a few minutes during exercise then I recommend seeing a sports physiotherapist.

RELATED READING & RESOURCES:

-  *Stretching*
-  *Foot and ankle strengthening*
-  *Quick movement*

These and other resources are available free to all at: <http://sportperformance.co.nz/resources.html>