4 Training and Safety Requirements in Jogging and Running

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RUNNING has traditionally been used by athletes for athletic competition training. However, today running is being used increasingly by people engaged in all walks of life for reasons such as physical fitness, weight control and longevity. This paper is primarily concerned with running in context to physical fitness. The term physical fitness is a relative one and is the ability to perform ones daily normal physical activity without undue stress with some reserve for extraordinary or emergency situation.

Jogging is a simple method for individuals of all ages to maintain fitness and ranges from walking to all out running. The physician with his knowledge of human physiology is of immense value to people who request health guidance on physical fitness by jogging or running.

Keeping in mind the physiology of running, and the physical demands placed on the body by running, let us consider the question of introducing the individual to jogging and running. Training him is a matter of constructing an exercise programme that would develop physically what the individual would need for his running, viz., the skill and his energy capacities.

Specificity of Training

For a training programme to be most beneficial, it must develop the specific physiological capability required to perform the given skill or activity, and the one physiological capability related to running and to exercise in general is the supply of energy to the working muscles in the form of ATP. Running is an exercise of low power output and long duration in which the absolute amount of ATP, rather than its rate of utilisation, is more important and therefore the predominant energy system is aerobic, and hence development of the aerobic capacity of the runner should be the main objective of the training programme.

Training Prescription

The question that now comes up is as to how the training programme should be initiated. If the individual has been sedentary, any such programme must be preceded by a routine medical examination including an electrocardiographic (ECG) examination. The ECG is monitored for coronary ischaemia as reflected by ST segment depression and for ectopic beats. This provides valuable information for exercise prescription since heart rate and blood pressure responses to progressively greater exercise loads can be recorded, and based on this individualised programme can be outlined.

The establishment of the exercise intensity level is the next key issue. A starting point for most individuals is to do jogging or running at a level sufficient to raise the heart rate to 80—85% of the maximum level. Direct determination of the maximal heart rate is difficult but reasonable estimates for males and females can be made from the equation :

Maximum heart rate = 220 — Age.

Another approach is to take the maximum heart rate for the individual's age, subtract the resting heart rate, multiply the difference by 0.5 and add this to the resting heart rate to arrive at the recommended training heart rate. For example, if the maximum heart rate for ones age is 165 per minute and the resting heart rate 75 per minute, the recommended training heart rate will be 120 per minute. But a word of caution here. Training benefits in the

form of cardiorespiratory endurance are produced even at lower exercise intensity levels than was orginally thought; so start low and increase progressively.

It is always a good idea to perform some preliminary 'warm up' exercises before commencing running or jogging. Warming up makes sense for several reasons. It raises body and muscle temperature facilitating enzyme activity which in turn increases the metabolism of skeletal muscles. The increased temperature also increases the amount of blood flow and oxygen reaching the skeletal muscles. Abrupt strenuous exercise may be associated with inadequate blood flow to the heart; warming up lessens this danger. Injuries associated with muscles and joints are less likely to occur during running if preceded by a warm up period.

Warming up may be achieved by streching and calisthenics. Streching exercises should include the major muscle groups and joints of the body. These exercises should be performed without bobbing or jerking and the final streched position should be held for 10 — 15 seconds. Calisthenics should be performed after streching routines and involve active contraction of muscles involved in running in place, half squats, bent knee sit ups and bent knee leg raises.

It is also a common practice to do a 'cool down', i.e., to perform light exercises immediately following endurance running for faster recovery from the fatigue of the exercise and is done in the reverse order of warm up. i.e., calisthenics first followed by streching exercises.

A young man may proceed fairly fast in increasing load. The older man (above 45 years) should recheck with his physician about every six weeks during the early part of the programme.

A simple yet effective programme of jogging is starting the first day with five sets of *run 50 steps walk 50 steps*. Each succeeding exercise day the number of sets is increased by one until ten sets are reached at which time the walk interval is reduced to 40 steps and so on. The rate of run and walk can be adjusted to the pulse rate goal by monitoring the pulse rate either during walk phase or immediately after run phase.

Based on the existing evidence concerning exercise prescription for healthy adults, the American College of Sports Medicine has recommended the following quantity and quality of training for developing and maintaining cardiorespiratory fitness in healthy adults :

a) Frequency of training 3 - 5 days a week.

b) Intensity of training 60 - 90% of the maximal heart rate.

c) Duration of training 15 - 60 minutes of continuous aerobic activity.

d) To maintain training effect, running must be continued on a regular basis. A significant reduction in capacity occurs after two weeks of detraining with participants returning to pretraining levels of fitness after 10 weeks to 8 months of detraining.

The two concepts of exercise that must be emphasised are : (i) concept of life style, i.e., if one wants to get fit and stay fit, this has to be a part of ones life style and has to be a regular routine; (ii) concept of overload, i.e., if one continues doing what one used to do, fitness remains at that level. Constant load maintains and overload improves fitness.

Safety

Coming to safety requirements, all sports activities are potentially associated with medical problems and likewise running and jogging have their share of problems too. The common conditions associated with running and jogging are :

a) problems of overuse,

b) traumatic problems, and

c) problems caused by the environment.

Overuse problems like tendinitis and bursitis generally affect the musculo-skeletal system resulting from specific repetitive activities during running. If the musculo-skeletal system is not prepared for the demands placed upon it, it breaks down resulting in an inflammatory reaction. The common overuse condition in runners and joggers

is Achilles tendinitis. Stress fractures of metatarsals and chondromalacia patellae are relatively rarer.

Traumatic injuries as a result of accident falls, skids or slips whilst running over wet, slippery or uneven patch of ground may result in any type of musculo-skeletal injury, but the more usual ones are muscle strains especially of the hamstring and quadriceps muscles, and knee and ankle joint sprains.

Environmental problems would be those resulting from excessive ambient temperatures during summer and cold seasons and their effects on an exercising individual.

Awareness of the medical problems encountered amongst runners helps in the prevention of injuries. But other factors which are equally important for injury prevention are :

a) initial physical examination,

b) physical conditioning,

c) the equipment, and

d) the environment.

After assessing the general state of health of an individual, the physician may advise and restrict the participation of those whose physical limitations present undue risk. This will also provide statistical data for any future use.

Proper conditioning decreases the number of medical problems in running. Most of the problems arise from body's being unprepared to do what is asked of it. A classic example is the weekend runner or jogger who does it for an hour or two having done nothing more than walk from his scooter or car to his office room or hangar during the week. Such persons are often beset with a variety of the so called 'day after' medical problems such as backaches, tendinitis and sore muscles. Therefore conditioning for running is only by running regularly with a progressive overload as already mentioned.

The only equipment used is a pair of good quality shoes of which a large variety is available. Ideally, the one with a soft top, a thick cushioned sole with an arch support, no extra heel and a loose grip must be selected. A good running shoe by itself would greatly reduce the incidence of strain and sprain injuries of the foot.

As regards the environment, running is an outdoor sport and may be practised in high heat and humidity, an environmental condition that precludes heat dissipation and thus may cause various heat disorders. Or there may be exposure to low temperatures during winters with the additional need for appropriate clothing.

It is now evident that the most important ways of preventing injury to a runner are early attention to complaints of pain and dysfunction, particularly about the major joints and keeping in mind stress injuries. With proper early attention and appropriate treatment, which usually involves nothing more specific than rest to the painful extremity, a complete healing and total resumption of activities can be anticipated. Perhaps the most effective technique for injury prevention is the encouragement of a relaxed attitude towards sports and adopting an unpressured approach. Problem cases must be referred to exercise oriented specialists so that they are not discouraged by the wrong advice from those who are unfamiliar with the concepts of exercise and its benefits.

Exercise is not always fun. It is often hard work, and requires the motivated mind over the matter of our instinctively lazy character as human beings. As we get older, good health, fitness and a real sense of well being do not come automatically.

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