

## Specific training for sprint hurdlers with long-term injuries

Jonathan Ridgeon

“The author details various reduced-weight-bearing methods of training which can help athletes to continue their event-specific work during periods of injury. He also discusses the psychological implications of long-term injury, arriving at the conclusion that if an athlete remains active throughout periods of rehabilitation he will be better prepared, both physically and mentally, for his eventual return to competition.”

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### 1 Introduction

Many athletes will suffer at some time in their career from a serious injury which may deprive them from training and competing for many months or even years. If an injured athlete is inactive during the period of rehabilitation, he will return to competition physically and mentally unprepared. If, however, he has maintained a training load of event-specific but reduced-weight-bearing work whilst injured, training and competition can be resumed at a relatively advanced level.

My experience of hurdle-specific training methods for injured athletes results from two years of personal injury and lengthy rehabilitation periods. In this article I will discuss various possible training methods which avoid a harmful degree of weight bearing on the injured limb; ways in which circuits, weights and mobility sessions can be adapted and continued during injury; and finally stress the importance of psychological preparation both effected by the athlete and supported by the coach and/or medical advisor.

### 2 Training theory within long-term injury

The most important thing to remember is that training is intended to improve, and not to hinder, an athlete's performance. It is vital, therefore, that no training be conducted which aggravates the particular injury from which the athlete is suffering. So,

although I outline seven possible training methods in this article, any which cannot be executed without pain should be discontinued. If there is pain, professional advice from a physiotherapist or a doctor should be sought.

For an injured athlete considering reduced-weight-bearing training, the first step is the consultation of the original training plan. This 'normal' weight-bearing load is then translated into specific alternative training sessions. It is worth noting that reduced-weight-bearing training is less fatigue-inducing than 'normal' training, so that the athlete's training load can be higher during injury than was originally intended.

This type of training is particularly useful if the injury in question is only short term: it helps to develop and to maintain event-specific fitness, and it is equally useful for the maintenance of mental sharpness. If injury coincides with the pre-competition phase, or in fact with the competition season itself, sessions should be of a shorter and more intense nature.

One disadvantage of reduced-weight-bearing training is that, unless experienced in the kinds of techniques involved, the athlete may require two to four weeks to become sufficiently proficient and conditioned in order to complete full workouts.

I believe that a good training regime for an injured athlete is to complete one or two sessions a day (depending on their state of fitness and time commitments) six days a week, with one rest day to allow recovery. If two sessions are completed on the same day this is ideal; however, the first should be a quality running alternative performed whilst the athlete is still physically fresh. Such sessions include pool running, bike work or swimming. The second session of the day should be a strength session such as weights or circuits. Within the limiting confines of injury, as much variety as possible should be incorporated in order to ensure that different energy systems are used and to maintain mental freshness. Regular time-trials in

the pool or on the bike can give an incentive to train harder and can monitor improvement.

### **3 Reduced-weight-bearing training methods**

#### *3.1 Pool running*

A few lengths of swimming should act as a warm-up to this session. Pool running is where an athlete employs a full running action in sufficiently deep water so as to be unable to touch the pool bottom. They should move forward slowly. Pool running has its own dangers, as it can exert stress on the lower back and hamstrings. To minimize this, and to help maintain correct running form, an athlete should wear some type of flotation vest and attempt to keep as upright as possible. To ensure that a high knee lift, good arm action and upright body position is achieved - and held even when fatigued - it is important that a coach watch the athlete pool running sometimes, particularly in the early stages of learning the technique. Due to the risk of injury I would suggest that pool running be restricted to no more than four sessions a week.

Pool running is totally non-weight-bearing, and can be an easy way of translating track sessions into comparable alternatives. An example of an endurance session could take the form of 3x6x30 sec. running bursts, with 30 sec. rest between runs.

At the other end of the training spectrum, speed sessions consisting of 10 or 15 sec. surges with longer recoveries will give the desired results.

#### *3.2 Swimming*

Swimming is not as event-specific as pool running, but is still useful and has an extremely low risk of injury. It may take several sessions for an athlete to become well enough conditioned in the specific muscle areas required for swimming, but, once achieved, workouts developing both speed and speed endurance can be planned.

Different strokes will work slightly different muscle groups, but I use freestyle as my main stroke for most sessions. Sessions can consist of repetitions over 25-100m, with recoveries varying according to the emphasis of the session.

Typical sessions which I conducted were as follows:

- a) 20x25m, recovery 1 min. - speed endurance
- b) 10x50m, recovery 2 min. 30 sec. - speed endurance
- c) 10x4x50m medley swims (butterfly, backstroke, breaststroke, freestyle) - endurance

### 3.3 *Bike riding*

The most interesting way to conduct bike sessions is to use the open road, but this can be dangerous and surges can be interrupted by hazards such as traffic lights. I would therefore suggest that a stationary exercise bike be used for the majority of sessions. An added advantage, if the correct type of exercise bike is available, is that it allows the rider to stand upright whilst exercising, making the training tougher and a little more specific. Furthermore, if peddle straps are used, the rider is able to pull up on the peddles as well as pushing down, thus allowing the hamstrings and calves, as well as the quadriceps, to be worked. The disadvantage of bike riding is that only a limited knee lift can be achieved.

Just as with pool running, speed bike sessions can take the form of 10 or 15 second bursts - for example 2x5x15 sec. bursts with 2 min.-2 min. 30 sec. recovery.

A speed endurance session may take the form of 5 surges, each lasting 45 sec. with a 5 min. recovery between them. Many other similar sessions can of course be implemented; but, whatever the session, a gentle warm-up period of 5-10 min. of steady, easy biking is sensible.

### 3.4 *Weights*

For a sprint hurdler to gain the necessary strength and explosive power, weights are essential. Serious injury will prevent

dynamic lifts such as cleans, snatches and squats, but weight training can still be carried out on a reduced basis. All upper body work should be possible, as well as certain multigym exercises for the legs, such as hamstring curls and leg pushes. As the injury recovers, an increased number of more dynamic weight exercises can be cautiously introduced, providing they cause no pain. The number of repetitions completed on each weights exercise should be kept to a small number - between 3 and 10 - as would be the case if there were no injury. I would suggest that during injury three weights sessions per week are ample.

It is important to return to a full weights programme as soon as possible after recovery. This is because the sprint hurdler requires a high degree of specific strength and explosive power in areas such as the lower leg. Without the use of weights, it is difficult to develop this.

### 3.5 *Circuits*

As is the case with weights, circuit training is a useful method of generating explosive power. Jumping exercises, however, should almost certainly not be carried out during a period of serious injury. Sit ups, press ups, speed ball exercises and leg raises, for example, are ideal. The use of little or no recovery between exercises can improve basic fitness. As recovery from injury progresses, more explosive circuit exercises can be cautiously introduced.

### 3.6 *Mobility*

Sprint hurdles as an event requires excellent mobility. Mobility cannot be maintained without work. Therefore, before sessions, the injured athlete should complete an extensive stretching session.

In order to prepare the muscles for stretching, it is normal for an athlete to jog. As this will probably not be possible during serious injury, a few minutes of easy riding on an exercise bike can replace the pre-stretch jog. Mobility can be further helped by a gentle warm-down stretch at the end of each session.

### 3.7 Visualization

When an athlete suffers from a long-term injury, it is not only their physical state that must be maintained at a high level. An athlete's mind must also be kept athletically attuned to the art of hurdling. Many athletes when fully fit ignore the importance of sport psychology, but, when injured, it is vital that an athlete incorporate some psychology work into a training programme.

One of the major drawbacks of training during a period of injury is that, with the exception of a few static trail leg drills, actual hurdling cannot be practised. Visualization can however create clear pictures in an athlete's mind of the hurdling action; this reminds the body of the act of hurdling. By scheduling perhaps three visualization sessions a week, lasting 20-30 min. each, an injured athlete can effectively maintain a degree of hurdle work in their training.

It is wise for an athlete embarking on visualization training to have their skills sharpened by a sport psychologist, but I will give a brief outline of one of the techniques here.

Before visualization can begin, the athlete must relax the body and focus the mind. Relaxation can be aided by lying in a dark room and by practising deep-breathing drills. Once relaxed, the athlete should visualize their own body actually sprinting or hurdling, as if they were actually seeing it through their own eyes. Visualization should be carried out at full speed. The athlete should concentrate on various aspects of training and competing in different visualization sessions, working on sprinting, starting, carrying out rhythm runs over hurdles, or visualizing racing itself. As the athlete practises visualization, the ability clearly to see themselves hurdling or sprinting in their mind will dramatically improve. Through regular use of visualization, an athlete will be able to resume hurdling after a long period of injury at a

much higher level than would have been possible without it.

## 4 Other requirements for an injured athlete

### 4.1 Medical support

The assistance of a physiotherapist should be sought to aid recovery from injury, to give advice on what training can and cannot be safely practised during injury, and to guide an athlete back into full training. The physiotherapist should also assess if any biomechanical faults could have led to the original injury, and, if so, address them to prevent further problems arising. Massage can also be vital in preventing muscle soreness, particularly during the period when the athlete is coming out of a long spell of injury and starting to run again. Medical monitoring is important to prevent an athlete pushing back into full explosive weight-bearing training too quickly. Athletes are generally unable to be sufficiently objective to make these decisions for themselves.

Further to the visualization training described previously, the power of the mind has been proven to be able to speed up the recovery process of injuries. It is suggested that an athlete, once in a state of relaxation, concentrate on the injured area and imagine it healing. An accurate anatomical picture of the injured area in the athlete's mind helps the healing visualization.

### 4.2 Confidence support

An athlete who experiences a long-term injury will probably suffer problems of confidence, motivation and self-discipline. If these problems are left unchecked, they will cause an athlete's return from injury to be hampered, or, even worse, may lead to an athlete retiring from the sport. To offer the injured athlete support and encouragement, it is important that the coach or medical advisor keep in close contact with them and attend some of their training sessions. Sport psychologists can be of great additional benefit in maintaining

confidence and dealing with any negative thoughts which may develop. I believe that it is unlikely that any athlete, no matter how talented and strong-minded, can emerge from a period of long-term injury fully motivated and confident without the close support of a coach or medical advisor.

### **5 Making the transition back into full training**

With the correct surgery (if necessary), rest, physiotherapy and rehabilitation an athlete will eventually recover from long-term injury. After a programme of reduced-weight-bearing training, full training should be taken very slowly and carefully. A return to a proper schedule will take several weeks, and will need monitoring by a coach and/or physiotherapist.

The sprint hurdler will start back into full training by striding on grass in training shoes; over a few weeks he will build up the number and speed of repetitions. Spiked shoes may then be worn. Hurdling should only be attempted - and even then just slow drill work for a number of weeks - once sprinting at a fast pace without pain has been mastered.

About a month after full recovery (this will of course vary according to the nature of the original injury), full hurdling can be

introduced, but at a reduced hurdle height and spacing. Throughout this period, weight training and other strength sessions will become progressively more explosive in nature.

It is wise to remember that in any athlete's rehabilitation programme setbacks will occur. These setbacks normally result from the body having minor short-term breakdowns, as it takes time for the body to learn to cope with explosive weight-bearing exercise again. The athlete must expect such breakdowns and guard against their demotivating influence.

### **6 Conclusion**

The negative effects of serious long-term injury can be minimized if the event-specific training and practises outlined in this article are followed. It is sensible for a coach or physiotherapist to stimulate the athlete's enthusiasm in times of injury by presenting variety in both type and emphasis of training session. Regular test sessions, on the bike or in the pool, provide a competitive outlet. Finally, an athlete who has suffered a serious injury must resist the temptation of rushing back to resume full training. Unless the body is fully prepared, further injury will result. □