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Ground contact in distance running

by Tony Benson

In: Modern Athlete and Coach 39 (2001), 3, 35-37

What is the most efficient foot plant in distance running? The author describes the landing on the heel and the landing on the outer edge of the foot in relation to running speed. Neither is an optimum landing position if an athlete wants to run fast. One is too slow (or for slow runners) and the other is too stressful (or for runners with very strong feet and leg muscles). In the ensuing paragraphs, several experts are quoted with their respective recommendations. The author puts forward four main points:

1. The foot should land relatively lightly (ie with minimal noise)
2. The foot, lower leg and thigh should be swept backwards at the time of landing, creating an active striking action
3. The landing should be as close to the centre of gravity (ie as close under the body in both the sagittal and frontal plane) as possible
4. The landing must avoid the increased braking effects which accompany an exaggerated 'forward reach of the foot by extending the heel'.

The faster the athlete runs the more the landing position should move forward along the outer edge of the foot. The slower runner always has the option to adapt to the 'slower technique' (the heel landing) because it is more natural while the faster runner can readily adapt to the 'slow' technique because he is a distance runner anyway. The author concludes that the choice should be left to the athlete.

The second Russian revolution in Pole Vault

by Alan Launder

In: Modern Athlete and Coach 39 (2001), 2, 7-10

The author stresses the importance of Petrov's technical model, which allowed the athletes to grip higher and make more effective use of stiffer poles. He points out the new aspects of Petrov's model, especially the "pre jump" and the "rock back". Some characteristics of the technical elements are:

1. The rock back and upswing must be completed before the pole begins to straighten
2. A 'soft front arm', which allows the vaulter to fractionally extend the take off drive before the rock back is initiated,
3. A long acceleration swing of the straight free leg which is whipped from the extended take off position through the chord of the pole.

The author concludes that Bubka is able to put more energy into the pole and to both make and keep the pole bent for fractionally longer. This enabled him to grip higher on stiff poles and make better use of the recoil energy of the pole. Finally, the author describes with the example of a young female vaulter that it is possible for young athletes to master at least some elements of the above mentioned advanced technical model.

Muscle fibre types and training

by Jason R. Karp

In: Track Coach (2001), 155, 4943-4946

To design a training programme that will work best for each individual, it is important for the coach to understand at least some of the complexity of skeletal muscles. First of all the author describes the characteristics of the three types of muscle fibres:

1. Slow twitch (ST or Type I)
2. Fast twitch A (FT-A or Type IIA)
3. Fast twitch B (FT-B or type IIB) fibres.

He goes on to explain the recruitment of muscle fibres and the determination of fibre types. Finally, the author discusses the importance of the fibre type proportions within one athlete and among different athletes and illustrates, with examples, the importance of correct (individual) loading in speed, endurance and strength training.

A new solution for tendonitis - eccentric exercise

by Peter Blanchonette

In: Modern Athlete and Coach 39 (2001), 3, 19-20

Common Achilles tendon injuries are responsible for the loss of valuable training time and in severe cases can cause a career to end. A research project in Sweden has shown some interesting results in treating and preventing tendonitis by using a training programme with eccentric exercises.

All the participants of the study had long standing chronic Achilles tendonitis and none of them could run without pain. 30 subjects were placed in two groups of 15. One group had surgery on the injured tendon, while the other completed a special 12-week exercise programme that only exercised the calf muscle eccentrically. The exercise regime involved calf raises with the leg straight and with the leg slightly bent, lifting up onto the toes using the good calf and lowering on the injured calf.

At the end of the 12-week period all 15 participants of the exercise group had resumed running at their pre-injury level with minimal, if any, pain. In a follow-up study, two years later, 14 of the 15 participants were still running pain free. The participants of the surgery group had significantly less strength 24 weeks after surgery.

Three possible explanations for these findings are:

1. The tensile strength of the tendon
1. The effect of a 'lengthening of the muscle-tendon unit and consequent reduction in strain during ankle joint motion"
2. With the energy pathways in the tendon becoming more anaerobic, the tendon may need to adapt to these new anaerobic demands.

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