

SPORTS INJURIES

INTRODUCTION

These are notes made during an evening lecture at the Farnborough Sports Centre, Hants. The speaker Colin Campbell has been in medicine for 9 years. As a sportsman he was attracted to sports problems and has been associated with sport medicine for 5 to 6 years. The talk could have been called "Sports Injuries for All". Information on such injuries was not readily available. The talk was particularly concerned with identifying the immediate actions to be taken but covered the longer term rehabilitation issues.

Colin read much of the material from prepared notes, as he was not accustomed to giving formal lectures, but he quickly got carried along with his own enthusiasm. He used an overhead projector with vufolds for both headings and illustrations.

STRAINS AND SPRAINS

Strains occur in muscles. Four grades were identified. (1) slight... (3) damage to sheath at edge of muscle, which eventually shows as a bruise, (4) tear.

Sprains occur in the ligaments, which is the inelastic soft tissue which surround joints. The knee is the most complex of the body's joints and its stability is maintained only by the soft tissue.

There are two types of injury,

1. **Violent** - the person is instantly out of action.
2. **Stress** - the person tends to continue to be active so that the injury is worsened. This is an insidious effect.

An "acute" injury becomes "chronic" after 4/5 days. By this time one should see a doctor. If there is any doubt, ask for an X-ray, as it is important to distinguish between bony and soft tissue injuries, and, if possible, eliminate the possibility of it being bone damage, such as a crack. Doctors seldom volunteer an X-ray, but there is no longer a cause for concern for one off X-rays at modern irradiation levels for infrequent examinations. Because doctors have little experience of sports injuries, one must be prepared to ask to see a specialist. Where possible, only deal with specialists who are state registered or who have relevant professional qualifications.

COMMON CAUSES OF INJURIES

A. Training

1. **Volume** - why work too often?
2. **Intensity** - control the loading by planning the work, and allow for climaxes in activity.
3. **Poor Technique** - it could be a posture related problem, especially with back injuries. Perhaps one needs a personal coach or one should join a club to share one or

pick up from other members the right advice in passing.

One needs mobility exercises regardless of the sport being followed.

4. Poor Equipment - for example wearing inadequate foot wear or using the wrong equipment.
5. Explosive Stretching - especially when the body is cold. It is important to warm up and work up mobility before beginning structured activity. Tissue will stretch when warm, but one must avoid stretching it when it is cold.

B. Failure to,

1. Mobilise before structured activity,
2. Stretch before and after,
3. Familiarise the local muscle group,
4. Jog before and after.

One must not stop immediately following the peak activity. It is important to taper off. The acid level that has built up generates pressure and hence pain that can still be there the next day. The tapering down activity should not include violent activity such as jumping exercises. It should be done at a relaxed level, such that one can talk comfortably to someone else whilst doing it.

C. Other Causes

1. Excessive use of one surface, for example running on a road camber. There is a need to give the legs a change.
2. Anatomical faults. Knee problems are usually related to feet problems. One must check for feet being canted, for slightly different leg lengths, and for the body being carried tilted.
3. Failure to maintain physical condition.

FOOTWEAR

The important problem points of footwear are met in modern sports shoes.

1. Correct Length.
2. Correct Width.
3. Midsole and Insole - sole needs hardened edges for stability. Insole should be shock absorbing.
4. Rounded Heel - of value when the heel meets the ground first in step or running.
5. Achilles Tendon Protector - may need to be cut off if rubbing.
6. Heel Cap Stabiliser - solid heel cap for support. Squeeze it to show if adequate support is provided.

7. Varus Wedge - inside shoe, is additional shock absorbing material, in a layer under the heel. Its value depends on having heel on ground impact in the activity.
8. Tell.
9. Lacing Method - avoid fancy lacing methods, lace over the top to take pressure off the upper foot.
10. Correct Shoe for the Event - eg a shoe's stitching is dependent on its use. One can not play football in a running shoe.

It is important to have a rigid upper, it helps to combat foot faults. The upper ought to be tailored, along with the inner sole, to the individual foot of course, using a plaster cast etc, with the foot in the 'neutral' position.

When a shoe is placed on a flat surface it should not be possible to rock it from side to side.

Boots do not supply significant support to the ankle (or to the calf). When skiers started using longer boots the breakages were not fewer, they just moved higher up the leg. In many sports ankle ligament protection is needed against impacts. However the trend is still away from protection (eg shin guards) and to low cut boots to allow more movement at the ankle. But basketball players are exploring longer boots because of the adverse effects arising from the high jumps involved. It is suggested that taping for better support would be more effective if a weakness was suspected. This would be done by taping down the side of the leg, from well up the calf, down under the instep and up the other side and then fixing it by taping around the lower leg at two or three levels.

WARNING SIGNS

A. Dull Ache

1. Tightness of muscles - obvious the next day.
2. Slight strain - small tear in muscle fibres.
3. RPI - behind or around the kneecap. A nagging, constant pain which can be foot defect related.
4. Tendinitis - problem may be created in the exercises. When mild, it is felt in the morning, but eases off later because of an increase in heating.
5. Sprain - slight tear in the ligaments. These have a poor blood supply, so it is difficult to act to enhance their healing.

Heat sedates. It does not otherwise help in recovery and is superficial.

B. Sharp Pain

1. Ruptured tendon.
2. Severe tendinitis.
3. Partial tear of ligaments, especially at the knee and the ankle. It bleeds internally, swells and gets worse unless treated.
4. Closed (ie undisplaced) fracture, held in place by the muscles, but needing plaster.
5. Stress fracture, may be a partial break, and have a gradual onset. It could be a week or more before it could be recognised on an X-ray. It will show up on an X-ray after 3 weeks.

C. Headache

1. Hangover - a problem of dehydration. To minimise or avoid, take a glass of water before going to bed etc.
2. Cold - an ice pack on the head reduces the pressure, (it is old fashioned but it works).
3. Flu - is a killer as it attacks the heart. Absolutely no exercise during its occurrence.

D. Lethargy

Feeling run down. Note that it may be a mineral deficiency.

BLISTERS

The best treatment is "puncture-and-tape" for a rapid cure.

Cut the blister skin, but not with a pin or needle, as the hole will heal too quickly, using a scissors or razor. Get the fluid out and then cover it with tape, preferably Zinc Oxide which is best, both over the blister and with a reasonable amount either side, like 2 inches. Leave it on for several days to keep the skin in contact. Replace it only if it is very dirty or is lifting off, and one can keep it on through showers etc. As there is no significant broken skin, there is no risk of infection. If one is prone to blisters, put tape on before hand. Avoid pads directly on the blister as pressure is not helpful. One may pad around it, if necessary.

COURSE OF ACTION

1. Advice and Examination.
2. Treatment, this includes advice and rest.

Injuries to the head and neck must be seen professionally without delay.

Spinal problems can show up through effects appearing in the shoulders and the wrists. Do not ignore the true cause, because of the risk of loss of mobility and/or strength in the limbs etc. Analyse for the source of the injury.

TREATMENT

1. Identify the cause where possible.
It may be footwear (see footwear above), technique or inadequate warm up.
2. Ice. Roll crushed ice into a damp cloth (tea towel) and apply to injured area for 15-30 minutes, twice a day. Ice baths are similar in effect except that continual immersion is impractical. Say for a maximum of 12 minutes in 6 two minute sessions.
3. Compression - by bandages or 'tubigrip'. It should be both over and above and below the injured area. This means well above and below. Get past the muscle bulk so that it does not peel back.
4. Elevation - raised to assist drainage of waste products away and allow oxygen and nutrients in. A bed base raised only a few inches will quickly assist lower limb drainage. Get the feet up at work etc.
5. Stretching - a progressive activity. It needs to be gentle and sustained, positions being held for 20-30 seconds.
6. Training Programme - reduce the normal programme if possible or use an alternate programme.

During the first 48 hours one can use anti-inflammatory drugs such as aspirin (if you are sure you do not have side effects) or Brufen and attempt to reduce the stress.

Heat has only a sedative effect. It is superficial, being confined to skin layers. It does NOT help as it does not get to the other side of the muscle.

The need in treatment is to get the nutrients to the injured area, so all the modern technological approaches that are effective lead to this. Body movement is essential to move the body fluids around.

RETURN TO FULL ACTIVITY

This can be done when there is a return to a full range of movement, strength and FULL confidence.

REHABILITATION

The worse thing is to feel sorry for yourself.

Most injuries are stress related. There is a need for a recovery programme physically tuned to the sport activity being followed. The problem with such injuries is their gradual onset and the consequent slow adjustment to it that goes on.

1. Identify the cause of the stress. Then find which is best for you - REST (inactive) versus RELATIVE REST (can be very active).

One can not train through an injury, but it is important to do something to maintain a standard of fitness.

Injuries are usually asymmetric and produce a weak side, so there is a need to get it back into balance or it will create new problems. One should assume that if there is an injury, there will always be a problem on the other side. For example an ankle injury will produce an adverse effect loading the knee of the opposite leg.

2. Exercise Therapy - a range of movement exercises.

A number of exercises were shown that stretched muscles. The general principle in doing them was to hold a position for 10 secs, increase the pressure for another 10 secs, and yet again, for 30 secs in all. Do 4 or 5 repetitions but move out of the position for 2 to 3 secs in between.

- a. down on one knee, the other against chest, body leaning forward, stretch leg out behind, arms straight down and hands supporting on ground. Press down to stretch thigh and hamstrings.
- b. lay on back, pull leg, by grasping under knee, up to chest, keeping other leg flat on ground.
- c. lay on back, curled up, and rock forwards and backwards, for the back muscles.
- d. arm supported running, if there is a bar, for 15-30 sec bursts.
- e. half squats, arms up and hands behind head on neck, good for thighs.
- f. Steps up, onto a bench or chair, for thighs and calves.

Always make an exercise of good quality, otherwise it is a waste of effort.

3. Ankles

- | | |
|-------------|--|
| First step | - no load, mobility exercises. Remember plaster accelerates muscle wasting. |
| Second step | - static exercises - rocking, or circling of the upper body with the feet on the ground. |
| Third step | - cycling, jogging on spot. |

A sprain may be repeated without a proper programme for recovery.

4. Elbows

The extensors can be damaged when holding an implement, either by gripping too hard or having a wrong handle size for the hand.

5. Heart and Lung Fitness

Swimming, cycling and circuit training, in that order of effectiveness. Swimming is very good. say twice a week.

A pulse rate of 85 is appropriate to normal daily activity and a 120-140 level due to exercise. 150-160 is called the steady state work rate with training effect.