

# Physiotherapy at the Olympic Games \*

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Most responsible athletic programmes of today make a real effort to provide participation for every young person who desires it. This is true for all of our countries. Responsible medical organisations have awakened to realise not only the tremendous increase in the importance of trauma in relation to economic loss, morbidity and mortality, but that sports medicine has attained great stature. The same precepts which serve to make sports medicine unique have contributed to the development of methods of prevention, diagnosis and treatment which can and have been applied to non-athletic situations.

There has been a sweeping evaluation and not to say reevaluation in the medical care of the young athlete, and there have also been enormous strides made in the scientific study of musculo-skeletal conditions relative to sports.

In this short paper I shall be concentrating on the soft tissue injury and types of injury in treatment and prevention, and, while one must not neglect the orthopaedic side, I shall be speaking to you from the physiotherapeutic side as a physician. Certain conclusions tend to overlap of course, so perhaps at the end of this discourse we might have a short discussion because new programmes are appearing all the time, bringing new ideas with them which may result in some breakthrough in treatment, conditioning and prevention.

I think it is true to say for all of us that methods change but general principles are remarkably constant. Athletic injury is recognised by those of us who are involved as a very special situation and in which we,



as physicians, can render a unique service. In fact, at times we have to be miracle workers or are expected to be, particularly by the athlete himself, and indeed even by the general public in whom there has been a great upsurge of interest and many of us are constantly asked to give lectures and talks to groups who are interested in the subject. The newspapers of course play up the injury to a star athlete, particularly at Olympic time.

Perhaps it is time to say that outside the confines of the sport itself scant attention has been paid to conditioning or prevention of injury.

My experience is that in the final analysis the lay public and even the majority within our medical profession has little knowledge of the actual mechanics of injury itself.

Participation in sport carries the risk of injury, particularly at high levels of competition when stress and strain are at their greatest, but the benefits derived far outweigh the element of risk involved, the athlete developing a stronger, healthier and more disciplined body than he would have as a non-competitor. Moreover there is the challenge that is so invigorating, and which results in drive and stamina so essential for work and play.

There is only one objection therefore to the athletic programme and that is physical injury, and it is our duty to accept the challenge and to be able to deal with it immediately.

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## Diagnostic judgment

The outstanding consideration 'in the treatment of athletic injury is early detection, not only of the nature of the injury, but also of its degree. The optimum time to recognise an athlete's injury is as soon as possible after he is hurt.

Accurate assessment at this stage is all-important and the initiation of appropriate treatment will often result in a rapid recovery. Packing the injured part in ice by the coach or trainer and delaying examination until the next day is to be deplored. The doctor should see the injury as soon as possible. I emphasise this point most strongly as there is a tendency to delay, resulting in discomfort, pain and even a sleepless night for the injured athlete. In all injuries, except the most trivial, there is an effusion of blood or serum, which causes pain and swelling, and early dispersal is essential, but this is for the expert medical handler and not for the novice.

Once treatment has been decided upon, it must be carried out with confidence, since delay often makes the difference between success and failure, as was already stated. In all cases of injury we must make complete recovery our goal and, in fact, I aim to get a 105% result.

From the prevention point of view in injury, the fitter the individual is, the less likely he is to suffer from injury—so training and conditioning are essential and expert medical advice must be available in all aspects of physical health necessary for the attainment of top class performances.

## Pathology

The pathology of athletic injury differs in no way from injury in other spheres of life and treatment should be governed by the same basic principles.

It is one of the fundamentals of pathology that, when a structure is damaged nature tries to restore it as exactly as possible, but owing to the variation of tissue and to the inability of the cells in different areas to replace themselves when destroyed, the effort often fails. In most cases, the best repair that can be expected is a supple, resilient, fibrous tissue scar.

Injuries occur as the result of :

1. Direct trauma.
2. Indirect trauma.
3. Postural and occupational strain—e.g. bad body mechanics. There are subsidiary causes like heat, cold, draughts.
4. Vascular changes, which may themselves result from injury, vasomotor disturbances and occlusion of a vessel thrombus or embolus.
5. Infective causes—bacteria and viruses.

In all cases of injury, traumatic effusion occurs. The form it takes depends upon whether blood vessels are torn at the time of injury or whether there is simple exudation or transudation through the vessel walls. The contents of these effusions may lead to the development of fibrous tissue changes and adhesions if normal reabsorption does not or cannot occur.

Traumatic effusion is derived from :

1. The excess in accumulation of fluid in the tissue spaces resulting directly from an increase in the permeability of intact vessel walls.
2. Ruptured blood vessels—artery or vein—the amount depending on the size of the torn vessel—in other words a haemorrhagic effusion.
3. In injuries to joints, tendons sheaths or bursae, there may be added synovial secretion derived from increased formation of synovial fluid. This secretion may act as a protection to the articular surfaces, but in excess it can make for laxity of the joint because it has the effect of stretching the capsular ligaments. If the surrounding muscles waste, the joint may become even more unstable. When structures such as ligaments, tendon or synovial membrane are torn, they are replaced by fibrous tissue which is formed in response to chemical substances released from the injured tissue. Excess fibrous tissue is absorbed at a later date.

To sum up on pathology, and without going too deep into biochemical reactions because it is the practical side with which we are concerned, my summary would be as follows :

1. Direct injury can cause tissue change, in varying degrees, from mild contusion and



*The author, Doctor O'Flanagan (left), together with the President of the IOC, Lord Killanin, with Gerard Sinnof and Eamonn Coghlan, two of Ireland's best athletes, on the President's left and right respectively.*

- bruising to death of the tissues. Direct injury can break blood vessels and cause large extravasation of blood or plasma.
2. Indirect injuries cause the tearing of the tissues on one side and compression and contusion of the tissue on the opposite side. Blood vessels may be torn and the resultant haemorrhage adds to the bulk of an effusion.
  3. Postural and occupational strain have a pathology of their own and are often a predisposing cause of acute injuries from relatively minor trauma-e.g. flat foot, acute breakdown.
  4. Interference with the circulation in any way may be a contributory cause of injury.

- b) A strain of muscle or tendon.
- c) Rupture of a few fibres.
- d) Partial rupture of a muscle or tendon.
- e) Complete rupture of a muscle or tendon.
- f) Avulsion of the tendon of origin or insertion with flake of bone.
- g) Tendonitis or tenovaginitis—acute.

A muscle may be injured anywhere along its length, especially if it is subjected to direct violence. In indirect trauma also any part of the muscle or tendon may be involved. Strain and tears, however, are most common, either at the tendon of origin, or insertion, at the musculo-tendinous junction, or where the tendon changes directions in its course.

From the soft tissue point of view, the most common injuries encountered are those of muscle and tendons. These may be classified as follows :

- a) Contusions, superficial or deep.

In contusions, the degree of change depends on the force of the impact. If severe, it may lead to death of the muscle fibres. A haematoma nearly always forms. If the tendon is involved fluid collects between the tendon and its sheath and acute teno-

vaginitis develops with pain and crepitus on movement.

If a deep haematoma results, there are two possible approaches : the first is relatively conservative ; the second may have to be more drastic whereby an attempt is made to find the bleeding point and to deal with it by ligature coagulation or packing-but this may result in the athlete being out of action for two weeks.

Conservatively, many times for a large tense haematoma under local I make a small incision and allow the haematoma to drain, following up with physiotherapeutic treatment of gentle expulsion of blood through the opening combined with gentle massage and faradism to the surrounding muscles.

The more drastic method may be for the professional athlete, particularly where there is bleeding in the deep surface of the thigh muscles associated with tearing of the subperiosteal or parosteal vessels along the shaft of the femur. If the haematoma is superficial, it may be aspirated and often the injection of urea and salicylic acid solution aids absorption and hyaluronidase.

In contusion of the muscle close to the bony surfaces, one must always be careful of myositis ossificans, e.g. elbow joint. In strain of muscle and rupture of a few fibres, the treatment is the same. The injured muscle is protected, supported and rested from strain, and a method I often use is water-proof strapping with the patient carrying out ice treatment at home, combined with physiotherapy.

Partial rupture of a muscle needs active treatment, injection therapy—varidase or similar pills by mouth. Daily physiotherapy is essential, combined with home treatment of icing as well as isometric and isotonic exercises.

Certain muscles like the hamstrings are notorious for breaking down and in these cases it is most important to attain full extensibility as a result of treatment. In these cases, elasticity is the keynote to success. If this does not happen it may be necessary to manipulate under general anaesthetic. Some surgeons advocate the injection of procaine in muscle strains and encourage the patient to start weight bearing exercises and even running immediately. Such an approach may work from time to time but the muscle often tears again and recovery is delayed and the

patient may even suffer permanent damage. I mention this because most of us here had success and failure with this method. Complete rupture of muscle may have to be sutured, the exception to this being the insertion of the recto femorus into the main mass of the quadriceps.

In achilles tendonitis, we no longer advocate the injection of hydrocortisone because it predisposes the tendon to complete rupture, which necessitates operative suture, but my cases of achilles tendonitis are helped by the injection of procaine carefully given into the sheath.

Avulsion of tendon from bone may best, if severe, be treated by the surgeon. Inflammation of tendon may best be treated by support, rest, physiotherapy and home treatment and should clear up in a few days, but if severe, may need hydrocortisone. If, however, stenosing tenovaginitis has occurred, it may be better to free the tendon by exposing and incising the sheath.

In tenovaginitis crepitana, the patient should have strong support which stops the extremes of movements, and should receive treatment in the form of deep friction massage, interferential therapy and faradism.

I think it is very important that all cases be under the expert care of the specialist in physical medicine who can assess the rate of progress in the patient, and not rely entirely on the word of the physiotherapist. Many physiotherapists now tend to be very dogmatic as to how the patient should be treated, without possessing a great degree of knowledge of the underlying pathology and clinical acumen necessary. On the other hand, it must be admitted that the standards of the physiotherapist have increased considerably. But, let me again say there is still good and bad physiotherapy, and a great deal depends on how much the therapist is interested in sports injuries.

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