CORRESPONDENCE

To the Editor

Dear Sir,

SECOND INJURY SYNDROME

In the sporting context it is well recognised that a large proportion of injuries to the limbs occur as a consequence of non-contact injury.

Without doubt many of these occur at predictable and already described times:— inadequate training, particularly early in the season or when returning from another layoff is a prime cause; there is little doubt that tiredness is a major contributory factor as an analysis of non-contact injuries in a professional football club shows a significant proportion in the last quarter of a game played, particularly in adverse circumstances such as heavy rain and a muddy pitch; the third group of injuries is seen in those who have warmed up inadequately and where excessive effort is made in the first few minutes of a game and an intrinsic (non-contact) injury is sustained.

There can be little doubt that the one thing in common to these situations is failure of co-ordination so that the muscles which normally protect the rather weaker ligaments have failed to contract at the appropriate time and overload has been applied to a ligament which has consequently failed.

I believe (and hope) that it is adequately recognised that these three factors, inadequate training, inadequate warm up and excessive tiredness lead to failure of muscle co-ordination and consequent ligamentous injury.

I describe a fourth entity which can lead to non-contact injury as a consequence of poor muscle co-ordination which I believe has hitherto not been described.

I call this fourth entity the “second injury syndrome”.

CLINICAL MATERIAL

Seven patients are described. Three sustained injuries to the upper limb and four to the lower limb. All were athletes involved in either rugby or association football varying from college to national level.

All sustained a genuine non-contact injury sufficient to take them out of their chosen sport for a minimum of six weeks and which eventually came to surgery in three cases.

On questioning the patient and discussing the circumstances with either the team coach or physiotherapist it became clear that each player had sustained a severe blow to either knee or shoulder at the most up to twenty minutes before the second injury.

The common comment was “it was a very bad knock”, “I really felt it”, and the attending observer agreed that it was an unusual injury for the athlete involved.

All athletes involved had been involved in their particular sport for a number of years and were well able to classify their injuries as usual or unusually severe. In all cases it fell into the second category.

Within twenty minutes of the injury concerned the athlete was called upon for maximal exertion of either shoulder or knee and in the absence of contact sustained severe pain and this caused them to leave the game.

The pattern of events after that was typical in that no immediate medical advice was sought. All presented in the Orthopaedic Clinic between one day and three weeks after injury.

The three shoulders all had anterior tenderness and painful restriction of motion. One had avulsion of a bone fragment and obliteration of the sub-acromial space which eventually necessitated surgery.

Of the four knees all had obvious ligamentous injury. They were all treated with early mobilisation followed by ice, exercises and rehabilitation to the hamstrings and quadriceps.
Two were obviously unstable in the early rehabilitation phase. Both came to surgery, one for postero-lateral instability and the other for antero-lateral instability.

**DISCUSSION**

Within the context of increasing sport today, injuries consequent upon sporting activities are increasingly common.

On the whole they fall into two groups, namely the result of contact or non-contact injury.

I think that I have delineated a sub group of the second problem in which the non-contact injury, as in most cases, is a consequence of failure of co-ordination but in this case that failure is a previous non-disabling injury.

The ligaments themselves particularly around the knee joint fail at loads significantly less than those imposed upon the knee doing every day activities. The reason that they do not normally give way during those activities is the protection offered by the strength and co-ordination of the muscles that control the movements of the knee joint either by contraction or paying out.

If that activity is altered the risk of injury is increased. It is well recognised in failure of training, failure of warm up or failure of co-ordination on a heavy pitch. I report a situation in which failure of co-ordination is a consequence to previous injury.

I think we are all aware of the "macho" image of a man with a "dead leg" who continues to play hobbling on the wing or someone who has severely injured their shoulder but continues to jump for the ball with the other arm.

I think there is now clear evidence that such an injury causes in-co-ordination and renders the injured limb more susceptible to major second injury which may require surgery in a significant proportion of cases.

**CONCLUSION**

Any athlete sustaining a major peripheral injury leaving him with muscle dis-co-ordination (dead leg, "burner" in American football) should be recognised as someone more susceptible to injury and it becomes incumbent upon the referee, coach or trainer to bring them off the pitch to stop the risk of further injury.

It is acknowledged that this is always a difficult thing to do and this letter is presented in the hope that it may strengthen the arm of such officials and perhaps lengthen the playing career of the participants concerned.

Yours faithfully,

JOHN KING, FRCS, Consultant Orthopaedic Surgeon

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**BOOK REVIEW**

*Title:* A BIBLIOGRAPHY OF RESEARCH PAPERS ON PHYSIQUE, SOMATOTYPING AND BODY COMPOSITION RELATED TO SPORTS PERFORMANCE

*Author:* Peter Bale

*Publisher:* Brighton Polytechnic, Chelsea School of Human Movement

*Price:* £1.50 31 pages Soft cover

The author has collected some 270 references in the English language, from books, published articles and published proceedings of conferences, listed under separate sports. As many of the references quoted involve several sports, there is a certain amount of reduplication; but this does not detract from the value. Entries are arranged in alphabetical order of first authors, in each of the seventeen sports covered, and in the two general lists concerning nutrition and densitometry. The price asked barely covers the cost of the paper used for the photocopies and postage, and well worth the money even for an impecunious student with an interest in sports anthropometry. Available from Dr. Peter Bale, PhD, Chelsea School of Human Movement, Brighton Polytechnic, Milnethorpe Court, 57 Meads Road, EASTBOURNE BN20 7QD.

H. E. Robson