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Reducing risk of injury due to exercise

Stretching before exercise does not help

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It used to be so simple. Prevention of musculoskeletal injury during exercise meant conditioning, warm up, and stretching. We could not argue with these basic principles—until we began to look for the evidence to support such advice. Stretching is long established as one of the fundamental principles in athletic care. No competition is complete without countless athletes throwing shapes along the trackside, trainers and coaches each favouring their own particular exercises, and locker room experts, kinesiologists, and self appointed specialists inventing new contortions for long forgotten muscle groups. Sport is rife with pseudoscience, and it is difficult to disentangle the evangelical enthusiasm of the locker room from research evidence. But in this issue, Herbert and Gabriel (see p 468) question conventional wisdom and conclude that stretching before exercising does not reduce the risk of injury or muscle soreness.[1]

They are not the first group to examine the evidence behind stretching and injury prevention. Shrier, in a systematic review of the literature, identified 293 articles but included only those with a control group.[2] Three prospective clinical trials showed that stretching was beneficial, but each included a co-intervention of warm up. A fourth, cross sectional, study found that stretching was associated with fewer groin or buttock problems in cyclists, but only in women. In contrast, five studies, of which three were prospective, found no difference in injury rates, and three suggested that stretching was harmful. Shrier concluded that stretching before exercise does not reduce the risk of injury. If we were to argue that only evidence from randomised controlled trials should be used to determine clinical practice, the conclusions of this review may have been different, but the findings were later supported by a large randomised controlled trial.[3,4] So it seems that stretching to prevent muscle injury and muscle soreness is not supported by evidence from quality clinical research studies. These findings are contrary to what many athletes and coaches believe and what is common practice. On the other hand, these findings may not be too surprising if we consider the complex mechanical properties of biological soft tissues and their response to cyclic loading.[5] It may also be that the research evidence is incorrect and that there is some, as yet unproved, benefit.

Nevertheless, evidence for the value of stretching is only one of a myriad of unanswered questions about musculoskeletal injury. As we begin to examine even the basic principles of acute injury management we find a paucity of research evidence. Much of common practice is based on historical precedent rather than randomised controlled trials, which comprise about 10% of the published literature in sport and exercise medicine.[6] Even the most accepted treatments find little support when critically evaluated. For example, the mnemonic "ice"—representing ice, compression, and elevation—has become the mantra of sports physicians and physiotherapists. It is used to guide the early treatment after acute musculoskeletal injury. Empirically, it seems logical that ice should be effective. But how much evidence is there to support the use of ice and what is the optimum clinical strategy for its application? Basic questions such as how long, how often, and for what duration we should apply ice remain unanswered. The advice given in various textbooks varies a lot, and little evidence is available in the form of original research.[7,8] Again, reducing swelling by compression after injury seems appropriate, but when we look more closely we see that various bandages, strappings, and supports offer variable degrees of compression.[9] Double tubigrip, the favoured compression bandage of accident and emergency departments, seems to offer little benefit. Early movement gives the best result, so it may be better not to apply any bandage that may restrict ankle movement and simply advise on appropriate exercises.

Thankfully, there is emerging evidence to guide some aspects of clinical practice.[10] Ankle sprain, one of the commonest sporting injuries, has always been difficult to treat. There is now evidence to show that taping or bracing can reduce the incidence of recurrent ankle sprains. The protective effect of taping seems to be limited to people with previous injury, in whom postural control, position sense, and postural reflexes are altered. Furthermore, there is evidence that balance training can improve sensorimotor control in athletes with previous injuries.

Much of sport and exercise medicine and the management of musculoskeletal injury has developed empirically, with little research evidence. Some of the basic principles of caring for acute injuries of the soft tissues have never been questioned, yet there is often little evidence to support common practice. The culture is changing, and Herbert and Gabriel make a valuable contribution to the debate on stretching.

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Treatment of advanced non-small cell lung cancer

Should include short courses of radiation, with palliation as the aim

In spite of a worldwide intensification of the battle against tobacco consumption, the incidence of lung cancer continues to rise in parallel with the increased consumption of tobacco. This is especially so in women in Western countries and in men and women in developing countries.

Major strides have been made in our knowledge of the biology of lung cancer. But we still await the impact of this information on prevention, early diagnosis, and cure rate, which has been essentially unchanged during the past couple of decades, with a five year survival rate for non-small cell lung cancer of 8-14%. The figures vary somewhat from country to country, with almost half the patients dying within the first year of diagnosis in spite of the best clinical treatments.[1]

Non-small cell lung cancer includes squamous cell carcinoma, adenocarcinoma, and large cell carcinoma. It accounts for 75-80% of all new patients; the remaining are small cell carcinomas. Of all patients with newly diagnosed non-small cell lung cancer, 70-75% have locoregional or advanced, unresectable disease. Recent large studies and meta-analyses have clearly shown the benefit of combined modality treatment (chemotherapy with or without surgery with or without radiotherapy) with improvements in median and two year survival for patients with locoregional disease, while the treatment of advanced disease is still being debated.[2 3]

Until the late 1990s, the most commonly accepted symptomatic treatment consisted of palliative radiotherapy. A recent Cochrane review of 10 randomised trials using varying doses of radiotherapy concluded that there is no strong evidence that any regimen gives superior palliation.[4] A recent British study with 148 patients challenges this conclusion by showing that fractionated thoracic irradiation (30 Gy in 10 daily fractions) afforded better relief of symptoms and reduced anxiety compared with single fractions (10 Gy), but did not increase survival.[5] According to the Cochrane review, there is evidence for a modest increase in survival (6% at one year and 3% at two years) in patients with good performance status given higher doses of radiotherapy.

With palliation as the aim, most patients should be treated with short courses of one or two fractions—as in the study in this issue by the Medical Research Council's lung cancer working party—using either 17 Gy as two 8.5 Gy fractions one week apart or less frequently 10 Gy as a single dose, based on two previous MRC trials (p 465).[6] Patients were randomised with a reasonable stratification to supportive treatment plus either immediate or delayed thoracic radiotherapy. The study included 230 patients with non-small cell lung cancer that was locally too advanced for surgical resection or intensive radiotherapy with curative intent. Cytostatic chemotherapy was not permissible in any group. The median time to start of thoracic radiotherapy was 15 days in the intermediate group and 125 days in the delayed group. No differences were noted in primary study measures such as percentage of patients alive and without moderate or several local symptoms, nor were there any differences in secondary measures, such as quality of life, adverse events, or survival. Interestingly, 58% of the patients in the delayed group did not receive thoracic radiotherapy at all, thus reserving the much needed capacity of oncology centres for other patients in need of irradiation.

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This study took place over a six year period in the mid-1990s. In the meantime evidence has emerged, based on meta-analysis including Cochrane analyses, that combination chemotherapy with cisplatin in a similar group of patients results in improvement in one year survival by 10% provided that the patients had a good performance status at the time of diagnosis.[7 8] Symptomatic improvement is reported in 60% of all such patients. Further, patients with progressive disease during chemotherapy have been shown in two recent randomised studies to benefit from single agent chemotherapy, based on both survival and control of symptoms.[9 10]

The picture has thus changed since the conclusion of the trial reported in this issue leaving a number of questions open for future studies. These include a clarification of whether or not delayed chemotherapy is as effective as immediate chemotherapy for certain

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