lymphocytes of one of the patients but not in bladder epithelial cells or hair.17 Effective treatment of the mitochondrial myopathies remains limited. Acute exacerbations with severe lactic acidosis precipitated by exercise, infection, or alcohol may be improved by correcting the acidosis with a slow infusion of sodium bicarbonate. Patients with cardiomyopathy associated with a respiratory chain defect may improve with oral L-carnitine. Ubiquinone, ascorbic acid, menadione, and steroids have all been tried with varying success. Clearer understanding of the molecular mechanisms underlying these metabolic defects may lead to more effective treatment.

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Overuse injuries in musicians

Although they cause much distress, their aetiology and treatment remain controversial

Musicians suffer from all sorts of occupational ills, many of them well documented. Schumann’s hand injury, possibly neurological, caused him to concentrate on composition.1 The remarkable laxity of Paganini’s hand, possibly due to a hereditary connective tissue abnormality, gave him a technical advantage over his contemporaries.2 And there have been diverting accounts of cor anglais player’s thumb, cymbal player’s shoulder, pianist’s cramp, and horn player’s palsy.3

Nevertheless, delightful as they are, these case reports have diverted attention from the commonest complaint of many musicians: the repetitive overuse syndrome. This has been extensively described in Australia,4 but the problem occurs all over the world. Thus similar reports have come from special music clinics in the United States (P H Caldron et al, abstract to scientific meeting of the American Rheumatism Association, 1985)5 and from a study of eight orchestras from several countries, where the findings were uniform and independent of national bias.6 Clinical grading may be applied to the overuse syndrome.7 Features vary from grade 1 (pain at one site on activity) through increasing degrees of disability to grade 5 (loss of capacity to use because of continuous pain associated with loss of muscle function). The treatment differs little from that initially recommended by Poore in 1887 on the basis of a careful study of 21 pianists with symptoms in the hands and wrists that he attributed to muscular strain.8 A central feature of treatment is “rest,” but does this mean a simple change in technique or complete abstinence from movement? Poore’s comment that “directly they feel in a small degree better, they fly to the piano” reflects the reaction of most musicians today as it did then. Reassurance, a sympathetic ear, and sometimes treatment with anxiolytics or β blockers have all been advocated.

The cause of the overuse syndrome in musicians remains controversial. Although some music students have been found to have laxer joints than others,9 such a difference probably accounts for only a fraction of the problem.10 Other factors may be the dominance of one side, giving an asymmetry in muscle weight,11 and fatigability.12 Different patterns of symptoms are caused by different instruments, and players may act as their own controls, particularly when, as in string players, the function of the two arms is different.13 A recent study compared biopsy findings in the first dorsal interosseous muscle in 29 women with the painful chronic overuse syndrome with those in the same muscle from eight volunteer controls.14 Patients with the overuse syndrome all showed an increase in type 1 fibres with type grouping, decreased and hypertrophied type 2 fibres, and an increased number of nuclei and mitochondria. Such changes were different from those seen in disuse atrophy, though ethical considerations made it impossible to study a group of patients or musicians who were performing identical work without developing the overuse syndrome. Some neurologists have attributed almost half of the complaints to “inflammatory disorder of the tendons”;15 rheumatologists, less convinced that synovial proliferation is present, have preferred to draw an analogy to the focal dystonia of writer’s cramp.16 Smythe believes that all the repetitive strain syndrome in the arm is referred pain from the neck.17 Others have suggested that hyperventilation18 or even anxiety is the cause, given that the syndrome can be exacerbated by stress. Nevertheless, characteristically the symptoms can be induced by a particular repetitive technical task and are relieved by rest, only to return when the technique is repeated—findings that strongly support a mechanical aetiology, at least as an initiating event.

Recently the repetitive strain syndrome in non-musicians has reached epidemic proportions in Australia.19 20 The workers’ compensation system allows payments of a lump sum for such a work related disease, and patients have an obvious financial benefit in getting the diagnosis established; thus the cost of repetition strain injury in Australia is now estimated to be over $A1 billion. The resultant turmoil in the courts has led the Royal Australasian College of Physicians to advocate using the term “regional pain syndrome.”21 Clearly, physiological, pathological, psychological, and psychosocial