Correspondence

Failure of regular exercise by swimming to influence adjuvant arthritis in the rat

Sir,

There is anecdotal evidence that enforced inactivity of a limb due to a neurological defect may protect that limb from rheumatoid involvement (Thompson and Bywaters, 1962). Paralysed limbs in rats may similarly show less adjuvant arthritis, while electrical stimulation of one leg at the time of adjuvant injection may predispose to more severe arthritis in that limb (Courtright and Kuzell, 1965).

We have attempted to establish whether rats regularly exercised are more or less vulnerable than normally caged animals to adjuvant arthritis. Persuading rats to exercise is surprisingly difficult: they easily deflect the purpose of various designs of treadmill. The problem was solved by placing the animals in a plastic dustbin half filled with warm water. On the first occasion the rats became distressed after 5 to 10 minutes of swimming; at each subsequent swim their tolerance increased until they were easily able to swim continuously without distress for 25 minutes twice daily. This training routine was established in a group of 6 Sprague Dawley rats before induction of adjuvant arthritis as described previously (Currey, 1971). Twice daily swimming for 5 days a week, each swim lasting for an average of 20 minutes, was continued

throughout the experiment. 6 rats treated in the same way, but without any swimming, acted as controls.

There was no significant difference between the joint scores for the two groups at any stage. For example, on day +21 the swimmers scored 11.0 ± 14.0 (mean $\pm$ SD), the nonswimmers 10.3 ± 8.9 . At sacrifice on day +22 the mean heart weight expressed as a percentage of total body weight for swimmers was 0.435 ± 0.06 , for nonswimmers 0.404 ± 0.06 . This difference may reflect myocardial hypertrophy due to the exercise, but it does not reach statistical significance. We have thus failed to show any influence of regular exercise on adjuvant arthritis in the rat.

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Note

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