a 50-fold reduced chance of developing an unpleasant headache. In this situation the use of a measure such as the routine intake of Jesmopressin (DDAVP) would be an unnecessary, if not unjustifiable, invasion.

In commenting at the end of their short report the authors suggest that DDAVP "merits trial in other clinical situations associated with lumbar puncture including . . . epidural anaesthesia." As an enthusiastic proponent of this anaesthetic technique I would not want your readers to get the impression that epidurals have a constant, close association with puncturing the dura. On the contrary, the object of the exercise, by definition, is to avoid the dura at all costs; and in experienced hands the unintentional spinal tap occurs in less than 0.5% of cases.² The prophylactic use of DDAVP, including a dose four hours prior to each epidural procedure, would indeed constitute a very pessimistic approach to the technique.

Perhaps there was a slip of the pen and the authors meant to say "spinal anaesthesia," which, despite some still-debated complications, is regaining popularity—the only serious limitation to its proper use being the occurrence of headaches. The use of DDAVP in these cases may well be of benefit, but in my experience the application of short periods in the prone position, for those in whom it is feasible postoperatively, significantly reduces the incidence of postspinal headaches. This is particularly useful after obstetric procedures when patients often relish the chance to lie on their abdomens for the first time in six months.

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¹ Brocker RJ. *JAMA* 1958;168:261-3.

² Doughty A. *J R Soc Med* 1978;71:879-84.

SIR,—The article about the technique of lumbar puncture (2 February, p 297) was correct to emphasise that positioning the patient carefully is essential. However, I was surprised to see it suggested that this should be done on a bed. From personal experience of several thousands of punctures I know that to minimise failures the patient must be placed on a hard surface such as a trolley or a theatre table, to ensure that the spine is horizontal. Even placing a fracture board under the mattress is inadequate for this purpose. The spine must be straight in both planes and the horizontal is as important as the vertical.

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Hypothermia and unawareness of mental impairment

SIR,—The report by Professor W R Keatinge and others on hypothermia during saturation diving in the North Sea (2 February, p 291) ends by commenting on the unawareness of mental impairment in the hypothermic state. I wish to report my own experiences during my student elective period testing aspects of helicopter survival units.

After two hours in such a unit at a water temperature of 4°C in the local river my core temperature (as measured by a continuous-reading rectal thermometer) had fallen to 34.5°C. Although I had suffered from violent shivering earlier, I felt fully mentally alert and was astonished to discover my total inability to

complete successfully simple mental tasks—namely, subtracting serial sevens from 100. The five other people taking part had similar experiences and I would fully concur with Professor Keatinge's suggestion that such mental confusion could readily account for unexplained incidents in working dives.

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Incidence of malignant melanoma of the skin

SIR,—I suggest that any future survey of malignant melanoma of the skin (24 November, p 1324) must take into consideration the different types of melanoma. To lump together all melanomas as the same can lead to confusion and inconclusive results. One may well suppose that melanoma arising on lentigo on the face is influenced by sun exposure, but if such cases are not distinguished from plantar and subungual melanomas the association may be difficult to establish. The recognition of various causes of skin carcinoma has depended on clinical as well as histological recognition of types.

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Cycling and health

SIR,—We were interested to read Dr Ronald Williams's enthusiastic support (22-29 December, p 1617) for urban cycling. We were particularly interested in his personal measurements of carboxyhaemoglobin (CO) after cycling in central London. In a series of 17 volunteer students and nurses recently studied we came to the same conclusion. It was found that immediately after cycling for 2 km in heavy central London traffic the levels of carboxyhaemoglobin were significantly ($p < 0.03$) lower than the resting value.

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Exercise-induced asthma

SIR,—Your leading article (2 February, p 271) points out that we still do not understand the underlying mechanisms in exercise-induced asthma. A similarly titled leading article in 1977 (27 August, p 536) said that exercise-induced asthma is "more than a matter of pharmacological and physiological curiosity" and that it "may provide clues to the pathogenesis of asthma itself."

Small clues may be of interest and even of importance, and a careful history in many cases of exercise-induced asthma reveals excessive mucus production as a precursor to the asthmatic episode. The productive cough, usually following exercise in cold air, often precedes the bronchospasm by many minutes—a fact not dwelt upon by Godfrey¹ or in either leading article. McFadden and Ingram² have shown that drying of the upper airways does take place and logically this would be followed by extra mucus production. Would this not in itself be sufficient to trigger a labile bronchial tree? I would agree that this does

not provide the answer to the question about the precise mechanism, but it may present us with another clue.

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¹ Godfrey S. In: Clark TJH, Godfrey S, eds. *Asthma*. London: Saunders Chapman and Hall, 1977:56-78.

² McFadden ER, Ingram RH. *N Engl J Med* 1979;301:763-9.

Syncope after running

SIR,—I read with much interest the short report on syncope after running by Drs Etsuro Tsutsumi and Hiroshi Hara (8 December, p 1480). The very title of this case report suggests at once the diagnosis of hypertrophic obstructive cardiomyopathy, better known on this side of the Atlantic as idiopathic hypertrophic subaortic stenosis.¹

There are several features in the report that suggest the diagnosis of hypertrophic obstructive cardiomyopathy. (1) The patient developed syncope only while standing still at the end of his running and he never suffered from the symptoms while running. The pathophysiological explanation for the phenomenon is as follows. When a patient with hypertrophic obstructive cardiomyopathy is running an increased catecholamine level and heightened sympathetic tone tend to augment the ventricular contractility, which in turn should aggravate the subaortic dynamic obstruction. However, the simultaneous increase in the venous return to the heart from the vigorously contracting calf muscles of the runner increases the left ventricular volume and overrides the tendency to obstruction. Once the patient stops running and begins to stand still, the venous return is abruptly reduced while the heightened sympathetic tone and high catecholamine level continue to operate for a few more minutes. Now the increased contractility of the left ventricle is free to provoke subaortic obstruction resulting in syncope, angina, or dyspnoea. This is also the basis for the relief of symptoms obtained by beta-blockers.

(2) There was a grade 2 systolic murmur at the apex, although we are not informed whether it was ejection or pansystolic in nature. It would also be worth while to know if the intensity of the systolic murmur increased with standing and decreased with squatting of the patient. Although usual ejection systolic murmur of hypertrophic obstructive cardiomyopathy is best heard in the lower left sternal region, it is best heard in the apical area in some patients with this disorder. Besides, a good number of patients with hypertrophic obstructive cardiomyopathy have an apical pansystolic murmur of mitral regurgitation.

(3) Their patient had an abnormal ECG suggesting ischaemic heart disease, whereas coronary arteriography did not reveal any significant lesion. (4) There was a fall in systolic and diastolic pressures when the patient was standing still at the end of the treadmill exercise test but not during the exercise. (5) The fall in blood pressure at the end of exercise was abolished by the beta-blocking agent pindolol. (6) The patient did not suffer from syncope if he continued to jog at the end of his running instead of standing still.

Normal ventriculography and haemodynamics at rest observed in this patient do not rule out the diagnosis of hypertrophic obstructive cardiomyopathy. It is well known that subaortic obstruction in hypertrophic obstructive cardiomyopathy can remain latent until provoked by several means such as isoprenaline infusion, the Valsalva manoeuvre, and postextrasystolic potentiation.

Syncope while running or exercising should suggest to the clinician the possibility of a fixed cardiac output state such as critical valvular aortic stenosis, discreet subaortic stenosis, or severe pulmonary hypertension.