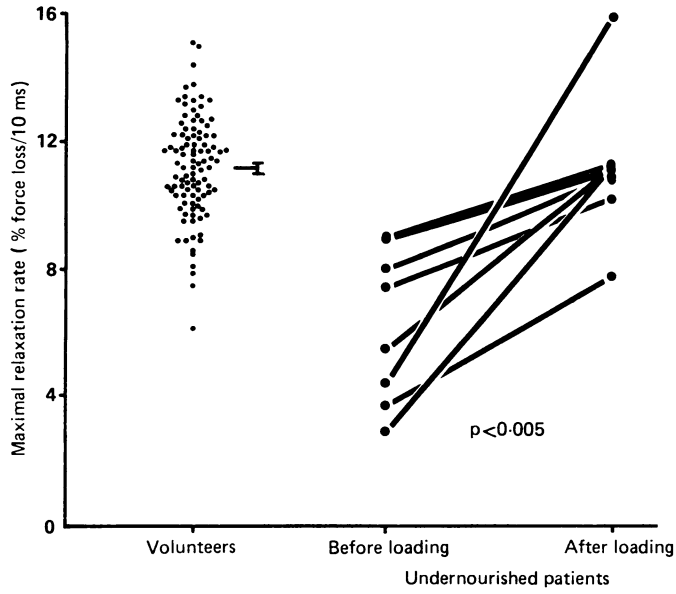

FIG 2—Maximal relaxation rate before and after glucose-potassium loading compared with values (and mean (SEM)) in 100 volunteers.

Mean (SEM) force-frequency characteristics (F_{10} : F_{30}), maximal relaxation rate, muscle glycogen content, and respiratory exchange ratio before and after glucose-potassium loading

	F_{10} : F_{30} (%)	Maximal relaxation rate (% force fall/10 ms)	Glycogen (mg/g dry muscle)	Respiratory exchange ratio
Before	54·88 (4·65)	6·34 (0·90)	16·52 (4·74)	0·79 (0·02)
After	32·82 (4·25)	11·39 (0·94)	44·48 (8·92)	0·95 (0·01)
p*	<0·005	<0·005	<0·005	<0·005

*Paired *t* test.

patients compared with that in the volunteers. After 48 hours of glucose-potassium loading it was significantly increased (table) and closer to the mean in the volunteers (11·2 (SEM 0·3)% /10 ms).

Muscle glycogen content rose significantly after glucose-potassium loading (table).

Respiratory exchange ratios approached unity after loading (table).

Discussion

Over the past few years there have been several reports that objective functional changes in muscle contraction are more sensitive than changes in the composition of the body in detecting undernutrition and monitoring repletion.[1-5] The precise mechanisms of muscle dysfunction in relation to nutritional state remain unclear, although various inferences have been made regarding changes in ultrastructure and intracellular composition.[11] None of these studies, however has been performed under controlled circumstances of energy and water-electrolyte repletion.

Our study in eight patients before surgery who were judged clinically to be undernourished showed that abnormal functional variables in muscle contraction may be reversed by 48 hours of infusion of glucose, water, and potassium. Although we did not perform conventional studies of the composition of the body in these patients, it is clear from our previous studies[12] and from direct measurement of glycogen in these patients that glycogen had been stored in their muscles together with the necessary potassium. The concomitant increase in respiratory exchange ratios implied a change to glucose substrate oxidation.

Although the effect of short term (seven to 10 days) preoperative nutritional support on postoperative morbidity and mortality is conflicting,[13-15] its major effect in depleted patients seems to be the restoration of liver and muscle glycogen stores.[16 17] We showed in this study that abnormal variables of muscle function can be improved by a short course of high carbohydrate and potassium loading with restoration of muscle glycogen content. This implies that if muscle power can be regarded as a yardstick for preoperative nutritional rehabilitation then a simple regimen of energy-electrolyte repletion may be cost effective in preparing undernourished patients for major surgery. Further studies are needed to elucidate the bioenergetics of glucose-potassium loading on muscle function.

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Correction

Splenic irradiation in treating warm autoimmune haemolytic anaemia

We regret that an error occurred in this paper by Dr H Markus and Dr J C Forfar (4 October, p 839). The fifth sentence of the second paragraph of the case report should have read: "Sixty days after admission a blood film showed appearances similar to those after splenectomy, with Howell-Jolly bodies."