Guest Editorial

# EXERCISE PROGRAMMES AND CHRONIC OBSTRUCTIVE AIRWAYS DISEASE

A recent editorial in the *Lancet* (1980) pointed out that there have been many studies of the possible benefit of physical exercises in chronic bronchitis and emphysema, and that these have all provided evidence that some form of exercise training can increase the capacity for physical exercise. It also pointed out that training is most effective when it is directed to specific and simple tasks such as walking on the level or climbing stairs.

Two recent British studies, one from Dundee (Sinclair and Ingram, 1980) and one from Leeds (Mungall and Hainsworth, 1980) have once more confirmed the truth of the above statement and added fresh information. In both studies the patients were fairly severely affected chronic bronchitics from whom no great improvement could be expected and in whom the natural history would lead us to expect steady deterioration. Whether earlier intervention would produce greater benefit remains unanswered in spite of the importance of attempting to prevent chronic disability in a fairly widespread disorder.

McGavin *et al.* (1977) showed in an earlier British study that they could obtain, even in unsupervised severely disabled chronic bronchitics exercising at home, a mean improvement of 6,3 per cent in the 12 minute walking distance. The more recent study by Sinclair and Ingram (1980) gave even better results. They used 33 subjects, all smokers with chronic bronchitis but free of cardiovascular, neurological or musculoskeletal disease, recently recovered from an acute exacerbation, and divided them into two groups, one undertaking a daily 12 minute supervised walk together with stair climbing, and the other serving as a control. After discharge from hospital the exercise group were followed up weekly by a nurse and reassessed by a doctor every 2 months. After 8 months the exercise group had improved their 12 minute walking distance by a mean of 23,4 per cent (185 metres). The control group did not improve. As in other studies, the exercise group showed no objective improvement in cardiorespiratory function except for a highly significant increase in forced vital capacity. The exercise group felt better and more of them gave up smoking (but there was still a significant difference between the two groups of smokers).

In the Leeds investigation, Mungall and Hainsworth (1980) had only ten subjects but assessed them in great detail, using each person as his own control. They also worked with severely handicapped male bronchitics and also used the 12 minute walking test. Because there are large variations with time in cardiorespiratory indices in any one subject, they measured lung function 2-weekly and divided the study into four periods of 12 weeks each — a preliminary period without exercise, a period of graded exercise supervised by the physiotherapy department, a period without training, and in some instances a second training period. A milder modification of the well-known Royal Canadian Air Force exercise programme was used. The average improvement in the 12 minute walk after 12 weeks of training was from 961 metres to 1 049 metres (just over 9 per cent) and this improvement was virtually maintained during the following three months but not further enhanced by a second training period.

Objective measurements also changed. Forced expiratory volume in one minute ($FEV_1$) showed a small but significant increase, transfer factor for carbon monoxide was greater, and the difference between alveolar and arterial oxygen tensions decreased. Other indices of cardiorespiratory fitness did not change, and the authors suggest that this may be because these respiratory cripples could not undertake sufficiently intense training.

How physical training works is still a mystery in view of the inconsistent improvement in lung function. Motivation may play a part but if so why does the effect persist? Do they walk better because the limb muscles work more efficiently? In the Dundee study, length of stride increased but limb muscle strength did not. Whatever the effect, it takes time. The Dundee group achieved maximum benefit only after eight months. The authors of this report believe that improvement probably depends on the patients' better tolerance of dyspnoea and better adaptation to their physical incapacity.

It has been suggested that the main limitation on physical effort in obstructive airways disease depends on the mechanical difficulty of maintaining the ventilation needed for adequate oxygen intake. This year Belman and Mittman (1980) reported an attempt to train the respiratory muscles, using a machine which forced the patient to breathe at the maximum sustained ventilatory capacity, with controlled $CO_2$ rebreathing. After using the machine for 15 minutes twice a day for 6 weeks, patients could walk 12 per cent further in 12 minutes, and their endurance in leg and arm cycling

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tests improved considerably. Perhaps then the value in exercise lies in respiratory muscle training. They need to get breathless and sustain high levels of ventilation without becoming alarmed.

The *Lancet* editorial has the last word on exercise programmes. "Should we not now encourage our physiotherapists to take up this task (of arranging exercise programmes) as a form of therapy with proven benefit?"

S.G.

**References**


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## INTERNATIONAL YEAR OF DISABLED PERSONS

How much is generally known and accepted about congenital and acquired disabilities such as epilepsy, blindness, paralysis, deafness, mental retardation and mental ill health? The disabled person evokes awkwardness and is often avoided socially, being regarded as incompetent and a burden on the community. A Co-ordinating Committee, comprising the various organisations dealing with the disabled, has been established (coordinator Mrs H. Parker, IYDP, P.O. Box 1375, Cape Town 8000) to focus on aspects of disability in 1981. These will include the abilities of the disabled; achievement of independence and problems (such as lack of public transport facilities, access to public buildings and conveniences) that hinder independence; gainful employment and social life for the disabled.

To coordinate information and activities, specific fields of disablement will be highlighted as follows:

March: Physically disabled.
April: Recreational facilities for the disabled.
May: The Blind.
15 August - 15 September: Mental disability.
15 September - 15 October: Epilepsy.
15 October - 15 November: Cerebral Palsy.

## INTERNASIONALE JAAR VAN GESTREMDE PERSON

Hoeveel is algemeen bekend en aanvaar omtrent aangebore en verworwe gestremdhede soos epilepsie, blindheid, verlamming, doofheid, verstandelike vertraging en geestesongesteldheid? Die gestremde persoon verwek ongemak en word dikwels sosiaal vermy, daar hy beskou word as onbekwaam en 'n las vir die gemeenskap. 'n Koördinerende Komitee, bestaande uit die verskillende organisasies wat met die gestremde gemoeid is, is saamgestel (Koördineerder: mev. H. Parker, IJGP, Posbus 1375, Kaapstad, 8000) om aspekte van gestremdheid in 1981 te beklemtoon. Dit sluit in die bekwaamheid van gestremdes; verwerwing van onafhanklikheid en probleme (gebrek aan publieke vervoerfasiliteite, toegang tot publieke geboue en geriewe) wat onafhanklikheid kortwiek; betalende werksgeleenthede en sosiale omgang vir die gestremde. Om inligting te koördineer, sal spesifieke aspekte van gestremdheid as volg na vore gebring word:

Maart: Fisiese gestremdheid.
April: Ontspanningsfasiliteite vir gestremdes.
Mei: Blindes.
15 Augustus - 15 September: Geestesgestremdheid.
15 September - 15 Oktober: Epilepsie.
15 Oktober - 15 November: Serebrale Verlamminng.


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