

THE BRITISH OLYMPIC MEDICAL CENTRE



Dr. Craig Sharp explaining to HRH The Princess Royal, how the Mass Spectrometer is being used to measure oxygen consumption during a treadmill test.

In 1981, athletes, coaches, administrators of governing bodies of sport were interviewed by a small panel chaired by Charles Palmer and as a result the British Olympic Association undertook to examine how the Association could provide much needed medical “back-up” for our competitors.

The Association were concerned that athletes did not have the necessary support in comparison with those in other countries. Sports medicine as a speciality in Britain has remained relatively undeveloped. It was considered that our athletes could benefit from the continuing expansion in the technology of bio-mechanics, exercise physiology, dietetics and sports injuries. It was acknowledged that the facilities within our National Health Service served the needs of the population but the service was unable to give

special priority to athletes by virtue of their involvement in sport. With the consent of the Chief Medical Officer of Health, the Association was able to approach the Medical Research Council, which resulted in the setting up of the first Olympic Medical Centre in laboratories within a general hospital. It is hoped that the research undertaken will contribute to the on-going task of the Medical Research Council in combating ill-health and some of its contributory diseases and in turn the Centre hopes to benefit

from the knowledge available in the Clinical Research Centre. Within the Centre a competitor may receive advice and treatment free of charge over a comprehensive range of activities and all in one place. The staffing and work being undertaken is best described by an article in the Medical Research Council's Newsletter from which permission has been given to quote.

NORTHWICK PARK HOSPITAL

The British Olympic Medical Centre at the Clinical Research Centre (CRC), Northwick Park Hospital, was opened by HRH The Princess Royal on 2nd September. This venture is unique in Britain, combining both physiological assessment and clinical back up for men and women from all sports. The Chief Physiologist, Dr. Craig Sharp, is on secondment from the University of Birmingham where currently he is co-director of the Motor Performance Laboratory. Dr. Mark Harries, Consultant Physician at Northwick Park Hospital, is Honorary Director.

The chief research interest of the Centre will be to study a number of diseases common in later life but which tend to appear earlier in these extra ordinary people and to probe the physiological capabilities of elite competitors. For example, around 50% of endurance athletes develop amenorrhoea and a proportion of these are found to have osteoporosis of the thoracic and lumbar spine. Little is known about the long term consequences of bone thinning but its similarity to the common crippling disease of elderly women is striking. With the use of CT scanning and dual photon densitometry (both developed at the Clinical Research Centre) non-invasive screening of a large number of women in this group will be possible.

The link between amenorrhoea, low oestrogen levels and osteoporosis may form the basis of studies involving the Nutrition, Endocrinology and Bone Disease Research Groups at CRC. Similarly, studies of soft tissue and joint injury with the aid of arthroscopy and CT scanning may provide important information on the natural history of premature osteo-arthritis.

Fears have been expressed over the development of cardiomyopathy in certain heavily-exercising competitors. Both concentric ventricular hypertrophy and dilated cardiomyopathy are well recorded. Study of dynamic cardiac function using gated isotope scintigraphy together with 2-D echocardiography should prove an opportunity to investigate the development of disease

of heart muscle and to provide a data-base for longitudinal studies on the effects of regular exercise on cardiovascular fitness and, in particular, on coronary artery disease.

The application of mass spectrometry to the analysis of muscle tissue obtained from biopsy will provide new data on protein turnover and the storage and consumption of glycogen in skeletal muscle in which the Nutrition Research Group will be involved.

Cardio-Respiratory endurance, often referred to as "aerobic fitness", is estimated by progressive resistance exercise on ergometry as appropriate to the sport as possible. For example, treadmill running for track athletes, rowing ergometry for oarsmen and cycling ergometry for sports such as wrestling, judo and gymnastics.

Heart rate and detailed respiratory gas monitoring accompanies the test, as, where appropriate, do serum lactate assays used in order to establish the relative exercise levels at acid, the so-called "anaerobic threshold". This can be a useful guide to training intensity requirements.

Local Muscle Endurance is usually measured through "supra-maximal" work for appropriately short periods of time, from 10 to 30 seconds in terms of the total work output, time to peak power, rate of decrement, and, if the test is serially repeated, the rate of recovery. Muscle strength and speed (and their corollary, power) are measured through a variety of isokinetic dynamometers, with appropriate computational analysis. Flexibility and body composition form the final two test items available at the Olympic Centre, the latter being measured either through electrical impedance or skinfold thickness.

The range of tests done and the test menus will obviously vary very much with the different requirements of the various sports. The competitors themselves will form a pool from which different Research Teams within the Clinical Research Centre will be able to obtain their own specialised data in projects linking with the Olympic Centre staff.

The Centre sponsors an annual scholarship in Sports Medicine which is open to graduate physiologists and physicians from any IOC member country.

The Centre is run by the British Olympic Medical Trust under the patronage of the President, HRH The Princess Royal. The Association very much hopes that this Centre will be the first of many throughout the country.