



## Development of sport for the spinal paralysed

by Sir Ludwig Guttmann,  
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In other publications we have already discussed the sociological aspects of sport and defined its aims for the physically handicapped. Stressed was its curative, recreational and psychological significance, as well as its value in reintegrating severely paralysed people into the community.

This second part describes the development of an international sports movement—the first ever of its kind—for one of the most severely disabled groups, that of spinal paraplegics and tetraplegics.

### Clinical sport as part of medical treatment

It was during the dark days of World War II that the British Government, anticipating the casualties from the Second Front, asked me to set up a Spinal Injuries Centre at Stoke Mandeville Hospital in Aylesbury. At that

The No.109-100 issue of the "*Olympic Review*" presented a study on the importance of sport for the severely physically handicapped written by Sir Ludwig Guttmann. In the following article, the famous neurologist traces the history of sport for paraplegics.

time, persons sustaining severe spinal cord injury (rendering them paralysed and wheelchair-bound for the rest of their lives) were still considered as they had been throughout centuries—as hopeless cripples with a short duration of life, outcasts of society. The "defeatist attitude" of the medical profession towards these unfortunate people was best characterised by the following prevalent situation: soldiers sustaining spinal injury in combat were not instantly evacuated by air transport as were those with head injuries. The reason for this attitude of medical men and the community at large was that complications

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resulting from spinal injury, such as ascending infection of the paralysed bladder into the kidney, and from pressure sores, were considered inevitable consequences.

A radically new approach was needed. This was successfully achieved by the introduction of a comprehensive management covering all aspects of the complex problem of spinal paraplegia and tetraplegia. It is after all a disorder involving at least seven or eight specialities of medicine and surgery in a single patient. It was shown that if a spinal paraplegic received adequate treatment from the start and throughout all further stages, not only were the above complications and others kept under control, but avoided altogether. It was also shown that such patients, despite their profound disability, could be returned to the community as respected citizens and given useful employment. Instead of living on pensions and charity as they had for centuries, many of them even became taxpayers!

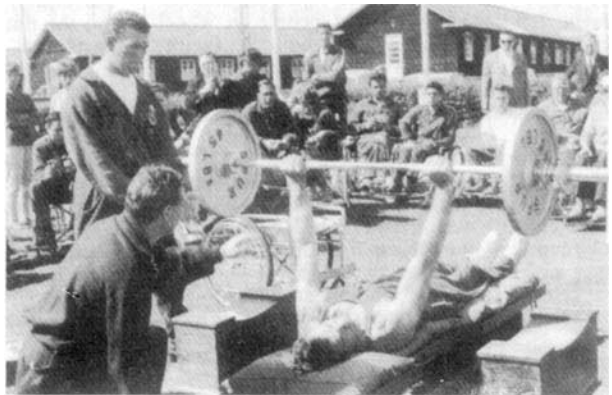
It is beyond the scope of this article to go into the details of all the medical and surgical procedures necessary to restore as far as is possible the emotional and physical well-being of these patients, but two measures were found to be invaluable—*work* and *sport*, introduced as features of clinical management. It would have been indeed an almost unpardonable omission *not* to have included such an activity as sport in a country like Britain where interest in it is so high. Sport would moreover constitute an effective means of combatting boredom in hospital. Its enormous value in the physical, psychological and social rehabilitation of the

patient also soon became apparent. The first games introduced were snooker, skittles, table tennis and archery, and the first team game was wheelchair polo, soon to be followed by basketball. So a sports movement was initiated in which paralysed men, women and children could take part after their discharge from hospital.

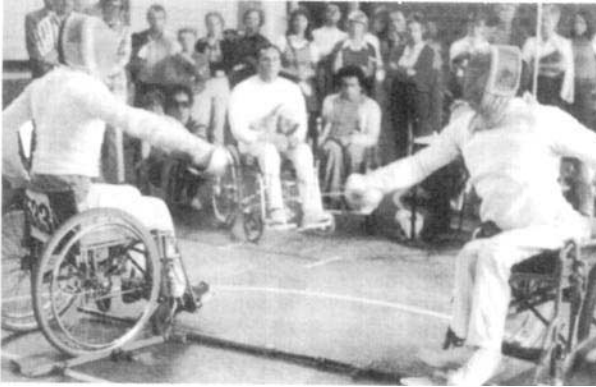
It was on 28th July 1948 that the first Stoke Mandeville Games, as this sports movement became to be known, took place on the same day the Olympic Games were opened in London. It was a demonstration to society at large that sport is by no means the prerogative of the able-bodied; even people with a disablement of such a magnitude as spinal paraplegia could become sportsmen and sportswomen in their own right. From these small beginnings, with only sixteen paralysed members of the Armed Forces, an annual national sports event developed. It rapidly grew in terms of competitors and events. In 1952, the games became the first *international* sports movement of its kind ever held. Called the International Stoke Mandeville Games for the Paralysed, it began when a small visiting team of paralysed Dutch ex-servicemen came to Stoke Mandeville.

These games, now considered as the “World Games for the paralysed”, differ from those of the able-bodied on two counts:

1. Not only champions are allowed to take part (even beginners are included in some events);
2. The games take place every year in the last week of July for three consecutive



Weightlifting contest during the International Games at Stoke Mandeville



*Fencing competition at the International Games in Stoke Mandeville*

years at the Stoke Mandeville sports-ground, and every fourth year, if possible, in the 'country where the Olympics are held.

The Stoke Mandeville Games were held abroad (Rome) for the first time in 1960 immediately after the Olympic Games; 350 paralysed men and women from 24 countries competed in their own sports in the Olympic stadium in Rome. This sports event proved highly successful not only as far as the standard of performances was concerned but also as an education to the public. The late Pope John XXIII gave a special audience in the Vatican City after the Games to all the competitors and their 300 escorts. In 1964, the Games took place in Tokyo with 400 competitors, and within five days we had over 100,000 spectators in the Olympic stadium to watch them. They proved particularly important from the point of view of social reintegration; the Japanese Government, having realised what people in wheelchairs could do in sport, built a factory within six months for employing paralysed and other severely disabled. They now have four such factories, which are combined in the Sun Industries and are under the leadership of a former graduate of the National Spinal Injuries Centre, Stoke Mandeville, Dr. Nakamura. In the 1972 Olympics the events were held in Heidelberg in Germany, as the Olympic stadium in Munich was not suitable for the accommodation of wheelchair athletes. One thousand paralysed wheelchair athletes and 400 escorts representing 45 countries took part, and the enthusiasm of the population and authorities had to be seen to be believed. The 1976

Games for the Paralysed took place in Toronto<sup>1</sup>; at least 1,400 wheelchair athletes, amputees and blind took part.

The sports events practised at the World Games for the paralysed are: archery, darts, darts and archery), field events (javelin distance and javelin precision, shot put, discus, and throwing the Indian club), fencing (foil, épée and sabre), weightlifting (press ups from lying in supine position), table tennis, snooker, bowls (indoor and outdoor), basketball, track events (wheelchair races), slalom, pentathlon and swimming (including underwater swimming).

### **Classification of the competitors**

The extent of the paralysis due to spinal cord injuries depends, of course, on the level of the injury. The higher the level, the greater are the number of essential parts of the body paralysed. This applies as much to the function of the motor system as it does to the various modalities of sensibility, in particular to that of joint and muscle sensibility, which is responsible for postural control. It is thus necessary to classify the spinal sportsmen and women in competitive sport both with respect to neurological deficit and functional ability. Throughout the years a panel of experienced doctors in this field has evolved a method of classification; its aim is fairness between participants in the same class and priority to the more severely disabled. Priority is given

<sup>1</sup> See "Olympic Review" No 107-108 page 565.

during medical examination to real functional loss in addition to the neurological level; it is essential to distinguish between complete and incomplete lesions (the latter still allow some motor or sensory function) and between retention or non-retention of postural sensibility. It must be remembered that, in all spinal injuries above the pelvis, the paralysed person has difficulty in keeping his balance if postural sensibility is absent. For instance, polios, also the victims of a spinal cord affliction, have an advantage in the swimming events because their sensibility is intact. The various sports may be classified differently for the same athletes. It is thus essential for the examining doctor to have practical experience of the different sports activities involved.

The basis of classification is the subdivision into:

*1. Three types of cervical lesions.* The existence or abolition of reasonable contraction of triceps determines the division in the first two classes. The strength of triceps contraction is appraised from the basic muscular testing scale from 0 to 5 of the British Medical Research Council (MRC).

*Class 1 A:* These are upper cervical lesions with non-functioning triceps against gravity (i.e. below grade 3 MRC scale).

*Class 1 B:* Lower cervical lesions with moderately (3) good triceps, wrist extensors and flexors, but with paralysis of the long finger flexors or finger extensors (i.e. below grade 3 MRC scale).

*Class 1 C:* Lower cervical lesions with good triceps (4—5) and strong, long finger flexors and extensors to power 4 MRC scale, but having no interossei or lumbrical muscles of functional value. Here, lesions at the first thoracic segment are included as this segment also innervates the abductor pollicis brevis and to some extent the interossei muscles.

*2. Paralysis affecting the trunk and abdominal muscles as well as the lower limbs.* There are two types:

*Class 2:* Involving T2 to T5 inclusive, the intercostal and paravertebral muscles as well as the abdominal muscles being paralysed, associated with loss of balance in sitting position.

*Class 3:* Lesions involving T6 to T10 where the paralysed muscles are either completely

or partially paralysed, with the ability to keep balance while sitting, ignoring non-functional or very weak function of the lower abdominal muscles (MRC grade 1—2).

In these two groups the examiner pays particular attention to the preservation or loss of control in balancing the trunk in a sitting position and in the wheelchair.

*Class 4:* T10 to L3, provided quadriceps power is non-functional (MRC grade 1—2).

*Class 5:* L3 to S2 inclusive, provided that quadriceps function is MRC grade 3 and above. Special attention in class 5 should also be drawn to the existence or absence of the gluteal muscles, in particular gluteus maximus (grade 3 or below according to the MRC scale). In this instance the competitor may be entered in class 4.

*Class 6:* These are people with slight muscular deficit of the feet only.

Not eligible for entering into competition are those with minimal deficit, as they can enter competitions of the able-bodied.

## Points system

A points system has been developed in relationship to muscle charts of the lower limbs to facilitate the classification of competitors with incomplete paralysis, especially for the participation of classes 5 and 6.

Five points are counted for both the right and left flexors, adductors, abductors and extensors of the hips. The same applies for flexion and extension of the ankles. Traumatic cases having ratings from 21 to 40, and polios with those of 16 to 25, qualify for class 5. Equivalent ratings for class 6 are 41 to 60 and 36 to 50 respectively.

L. G.

(to be continued)

