



**UNIT 35:**

**SPORT SCIENCE**

- A. Introduction
- B. Sport Science and Medicine
- C. How Important are Sport Medicine and Science to Olympic Athletes?
- D. Internet Sites for Sport Medicine and Science





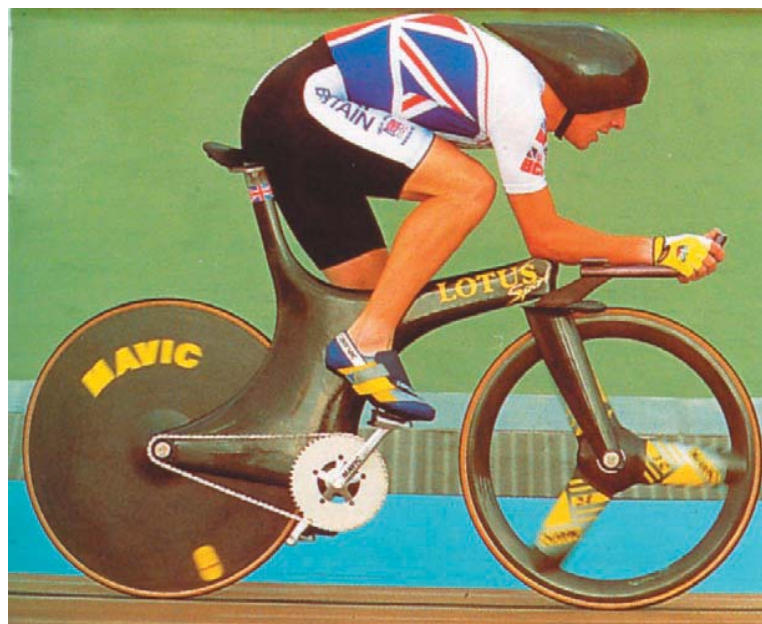
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## UNIT 35 - SPORT SCIENCE

### A. Introduction

As technology, medicine and science increasingly turn their attention to sport and high performance athletes, there are enormous quantities of new information available for the preparation of athletes for competition. These fields are becoming so complex, specialist scientists and physicians are working with those teams that have resources to spend on these areas.

So, what is sport science today, and does it help?



### B. Sport Science and Medicine

The following areas (and the examples given in brackets) reflect some of the interests of physicians and scientists working with athletes.

**Adaptive Physical Education** (working with athletes with various disabilities such as spinal cord injuries, amputations, mental retardation, blindness)

**Altitude and Environmental Physiology** (training at altitude for performance at altitude or sea level; exercise in cold or hot weather)

**Biomechanics** (measuring forces and photographing movements as athletes perform)



**Exercise Physiology** (determining maximal oxygen consumption; measuring muscle strength; body composition; flexibility; measuring anaerobic power; assessment of the cardio-pulmonary system; growth and development patterns in children)

**Medicine** (asthma; diabetes; chronic fatigue syndrome; surgical repair of joint injuries; muscle injuries and rehabilitation; exercise and hypertension; sports anemia)

**Muscle Metabolism** (use of energy substrates for different types of exercise; improving recovery from exercise; muscle glycogen supercompensation)

**Nutrition** (proper hydration for sport; use of vitamins and supplements; anorexia; establishing appropriate feeding patterns for maximum benefit; use of special nutrition for carbohydrate, fat or protein supplementation)

**Physiotherapy** (rehabilitation following injury or surgery)

**Sport Psychology** (relaxation; focusing; mental rehearsal; motivation; stress reduction)

### C. How important are Sport Medicine and Science to Olympic Athletes?

Fifteen Olympic medallist athletes were interviewed as to the most important factors assisting their performances. They ranked access to excellent coaching, good training facilities, sufficient quality competitions, quality training partners, adequate time to train, and adequate financing ahead of sport science or medical areas.

However, for those who experienced injury, access to a quality physician and physiotherapist was extremely important.

Considering the sport science and medicine areas alone, the most useful services were medical, physiotherapy and massage therapy, followed by psychology, nutrition and to a lesser extent physiology, biomechanics and chiropractic. Most athletes had limited access to physiotherapy and massage therapy, and these were ranked highest in their needs.

Indeed, if the basic needs such as quality coaching, facilities and competition are inadequate, then the application of science has limited value. There is no denying the value of first-rate medical support, in training and at Games. It is simply a question of what are the priorities for resources, what will make the most progress in athlete development.





