

## **CHAPTER 1**

### **THE PROBLEM**

#### **1.1 INTRODUCTION**

Athletes of various ages and levels of participation explore the use of ergogenic aids. Attempts to enhance athletic performance are not new. The Olympic games date back 2700 years, which means that seeking advantage in sport likely dates back just as far. The winner of the 1920 Olympic 100m dash, Charlie Paddock, drank sherry with raw eggs before the race. In 1960, the Danish cyclist Knut Jensen died during a road race from taking amphetamines (Voy and Deeter, 1991). The use of drugs to enhance performance is not limited to Olympic athletes only. Many adolescent athletes experiment with anabolic steroids. Caffeine is widely used as an ergogenic aid by runners, cyclists and tri-athletes and creatine is a popular supplement amongst university strength and power athletes (Eichner, 1993; Sinclair and Geiger, 2000). Considerable literature exists on the topic of ergogenic aids and athletic performance. It includes studies of the potential performance benefits of alcohol, amphetamines, epinephrine, aspartates, red cell reinfusion, caffeine, steroids, protein, phosphates, oxygen-rich breathing mixtures, gelatin, lecithin, wheat-germ oil, vitamins, sugar, ionized air, music, hypnosis, and even marijuana and cocaine (McArdle et al., 1991).

The ever-growing quest among sports participants to perform better and the abundance of ergogenic supplements makes it the responsibility of the scientific community to ensure that the public are well informed. Knowledge is necessary to lead us into the right direction. The health-related safety of these products is an obvious and urgent research concern. A prudent approach should also, however, focus on issues of efficacy in order to guide consumer spending and thus protect the public from exploitation.

## 1.2 STATEMENT OF THE PROBLEM

The industry of ergogenic supplementation has become a massive commercial enterprise. A series of products manufactured by Oxygen for Life (Pty) Limited are currently on the market for use as ergogenic aids in sport relying on aerobic energy provision. These include Cellfood® and Switch™. The efficacy of these products and their dosage response within the context of improved aerobic performance requires study.

## 1.3 AIM OF THE STUDY

In cognisance of the foregoing the purpose of the study was three-fold:

- Firstly, to determine whether Switch™ and Cellfood® have a beneficial effect on the physical performance of endurance athletes;
- Secondly, to determine whether either of the two products are a superior supplement when compared to the other; and
- Thirdly, to determine at which dosage these supplements tend to be most effective.

## 1.4 HYPOTHESES

In accordance with the stated purpose of the study the following hypotheses were formulated:

- The use of Cellfood® or Switch™ would improve the physiological performance of an endurance runner.
- There is no difference between the efficacy of Cellfood® or Switch™ as an ergogenic aid.
- The efficacy of both Cellfood® and Switch™ as an ergogenic aid for endurance runners, is dosage dependant.

## **1.5 DELIMITATION**

The scope of the research undertaken was delimited to an experimental study. Within this context the products Cellfood® and Switch™ were interpreted as a form of ergogenic aid used by endurance athletes to improve their aerobic performance. Both male and female athletes of marathon clubs in the immediate geographical area of Pretoria, South Africa were used as subjects for the study. The subjects represented the average male and female marathon runner, which makes the results applicable to the general road running public living at a mild altitude elevation of 1369 meters above sea level.