

Preface

In this year of the London Olympic Games, our attention is drawn to sport and physical performance. Type 1 diabetes is initially a disorder of the young, and in this age group and for many older people physical activity is a very important component of lifestyle. Whilst it is of undoubted importance for physicians to optimize insulin therapy programs and other treatments to avoid or treat the chronic complications of type 1 diabetes, people with diabetes also seek to normalize their lifestyle. Some will want to advance their sporting ambitions, and the examples of outstanding sportsmen with diabetes, such the rower Sir Stephen Redgrave, or the Rugby Union player Chris Pennell, show us that type 1 diabetes per se is not a barrier to maximum physical performance in sport. These examples encourage people with type 1 diabetes to engage in all types of physical activity, and they will seek best advice on how to manage their diabetes with exercise.

There are some significant barriers for people with type 1 diabetes performing sports and exercise. They are likely to experience marked fluctuations in blood glucose control and frequent hypoglycaemia with exercise. The occurrence of hypoglycaemia may seem both unpredictable and inexplicable to the person with diabetes, which may force the response of excess replacement of carbohydrate before and following exercise, with resultant hyperglycaemia, adding to the burden of dysglycaemia. Perhaps of more concern to people with diabetes is the risk of hypoglycaemia during and nocturnal hypoglycaemia following exercise. When hypoglycaemia is severe, requiring assistance from another person, it may cause embarrassment to people with diabetes, and is likely to cause concern to parents, teachers and coaching staff as to the safety of physical activity. Excessive fatigue and weakness during prolonged exercise compared with peers without diabetes may be experienced, and this may reduce the wish to continue in sport. For the outstanding athlete with diabetes, there is potential that diabetes and insulin treatment may cause loss of maximum physical performance, which also may discourage progression in sport. We now know many of the causes of impaired physical performance and how these may be rectified through augmented diabetes management strategies.

Evidence from people with type 1 diabetes suggests that advice from healthcare professionals to people with type 1 diabetes on the management of physical exercise

may be simplistic. Over the last decade, we have established a specialist clinic to help sportspeople and athletes manage their diabetes and physical activity successfully to reduce dysglycaemia with and following exercise, and to normalize physical performance. Athletes and sports people explained in our clinic what problems they had found during exercise, and how they had tried to overcome those difficulties. This experiential evidence has produced many effective clinical strategies. These are now strongly supported by the growth in the clinical research knowledge base of the effects of diabetes on the physiological response to exercise, on the effect of exercise on the response to hypoglycaemia and on effective dietetic and insulin management of diabetes during and following exercise. There have also been significant technological improvements in the support of the management of type 1 diabetes with continuously infused insulin infusion pump therapy and continuous sub-cutaneous glucose monitoring equipment.

People with type 1 diabetes will seek to be effectively supported in any sporting ambition, presenting an interesting challenge to healthcare professionals. This book aims to provide the evidence on the management of type 1 diabetes and exercise, bringing together outstanding clinical science, clinical practice from experts in the field and the evidence of the real experts, the athletes themselves. The book outlines potential dietetic and therapeutic strategies which may be employed to promote these aims. Our aim is that if applied, the evidence will equip the healthcare professional with the knowledge base to support the development of clinical skills to support any person with type 1 diabetes perform physical activity safely and for some talented individuals to pursue their sporting ambitions to the highest level.