Management of type 1 diabetes

DIABETES CARE

Resistance exercise before or after aerobic exercise

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓✓
WOW! factor	✓✓✓✓✓

1 To determine the effects of exercise order on acute glycemic responses in individuals with T1D performing both aerobic and resistance exercise in the same session.

2 Twelve physically active individuals with T1D (glycated haemoglobin 7.1±1.0%) performed aerobic exercise (45 min of running at 60% VO_2 peak) before 45 min of resistance training (AR) or performed the resistance exercise before aerobic exercise (RA). Plasma glucose was measured during exercise and for 60 min after exercise. Interstitial glucose was measured by continuous glucose monitoring 24 hours before, during, and 24 hours after exercise.

3 Significant declines in blood glucose levels were seen in AR but not in RA throughout the first exercise modality, resulting in higher glucose levels in RA (AR, 5.5±0.7; RA, 9.2±1.2 mmol/L; P=0.006 after 45 min of exercise). Glucose subsequently decreased in RA and increased in AR over the course of the second 45-min exercise bout, resulting in levels that were not significantly different by the end of exercise (AR, 7.5±0.8; RA, 6.9±1.0 mmol/L; P=0.436).

4 The authors concluded that performing resistance exercise before aerobic exercise improves glycaemic stability throughout exercise and reduces the duration and severity of postexercise hypoglycemia for individuals with T1D.

Yardley JE, Kenny GP, Perkins BA et al (2012) Effects of performing resistance exercise before versus after aerobic exercise on glycemia in type 1 diabetes. *Diabetes Care* **35**: 669–75

Effects of resistance exercise before and after aerobic exercise on glycaemia in type 1 diabetes

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I learnt about many of the practical aspects of diabetes management from nurse specialists, when taking part in Diabetes UK summer holidays for young people in the depths of rural Yorkshire. This was pre-carbohydrate counting, so matching insulin to food was rather hit and miss. However, when it came to managing exercise our advice was very consistent: reduce the insulin if the exercise is planned, and take extra fast-acting carbohydrate. The problem was that it didn't work. Nocturnal hypoglycaemia was very common but, equally, many people became significantly hyperglycaemic after exercise.

More recently, some well-conducted studies have indicated that it is the type of exercise that may determine the blood sugar response. Sustained aerobic exercise results in a fall in blood glucose that often requires treatment, whereas short bursts of intensive activity have been shown to increase blood glucose (Bussau et al, 2006). This surprising finding has been suggested as a method for reducing the risk of "going low" during aerobic exercise.

The study by Yardley et al (2012; summarised alongside) extends our understanding of the impact of different forms of exercise on blood glucose. Resistance training (weight lifting) seems to have a similar effect on blood glucose as short bursts of intensive activity; the authors looked at exercise order on the acute glycaemic response in individuals with type 1 diabetes performing both aerobic and resistance exercise in the same session.

The authors suggest that people who experience a decline in blood glucose during aerobic exercise should consider undertaking prior resistance exercise because doing so may attenuate declines during subsequent aerobic exercise. This may reduce the need for glucose supplementation as well as decreasing the severity of potential nocturnal hypoglycaemia.

Rather than becoming more complex, the management of type 1 diabetes is more precise and logical and studies such as those by Yardley et al help us to give our patients practical advice on managing exercise.

Bussau VA, Ferreira LD, Jones TW, Fournier PA (2006) The 10-s maximal sprint: a novel approach to counter an exercise-mediated fall in glycemia in individuals with type 1 diabetes. *Diabetes Care* **29**: 601–6

DIABETOLOGIA

Socioeconomic factors, T1D and use of antidepressants

Readability	✓✓✓
Applicability to practice	✓✓✓✓
WOW! factor	✓✓✓

1 The aim of the study was to analyse the prevalence of antidepressant (AD) use in adults with childhood onset T1D and to compare risk determinants for AD prescription among people with diabetes and matched controls.

2 Young adults (≥18 years) with T1D (n=7411) were retrieved from the population-based Swedish Childhood Diabetes Registry and compared with 30 043 matched controls.

3 ADs were prescribed to 9.5% and 6.8% of the T1D and control participants, respectively. Being female, having received economic or other social support, or having a disability pension had the strongest associations with AD prescription in both groups. T1D was associated with a 44% (odds ratio, 1.44; 95% confidence interval, 1.32–1.58) higher odds of being prescribed ADs in crude analysis.

4 The authors concluded that risk factors for AD use are similar among young people with T1D and controls, and that socioeconomic factors, rather than the diabetes *per se*, increase that risk.

Lind T, Waernbaum I, Berhan Y, Dahlquist G (2012) Socioeconomic factors, rather than diabetes mellitus per se, contribute to an excessive use of antidepressants among young adults with childhood onset type 1 diabetes mellitus: a register-based study. *Diabetologia* **55**: 617–24

DIABETES CARE

East Africans in Sweden at higher risk of T1D

Readability	✓✓✓✓
Applicability to practice	✓✓✓
WOW! factor	✓✓✓✓✓

1 The incidence of T1D varies greatly between different populations; Finland and Sweden are known to have the highest recorded population rates of T1D in the world.

2 The authors of the present study aimed to investigate the prevalence of T1D in children in Sweden of sub-Saharan ethnic origin.

3 The nationwide study identified children born between 1991 and 2008, who were still alive and registered as residents in Sweden on 31 December 2008: 35 756 children of families from sub-Saharan Africa and 1 666 051 children with patents of Swedish origin.

4 Some 8047 children with Swedish-born parents, and 107 children with parents born in sub-Saharan Africa, were found to have received at least one prescription of insulin during 2009.

5 The odds ratio (OR) for insulin medication in Swedish-born children in families originating in East Africa was 1.29 (95% confidence interval, 1.02–1.63) compared with offspring of native Swedish parents; T1D was found to be more common among children born in Sweden of sub-Saharan African parents than their counterparts born in East Africa (OR, 0.50; 95 CI, 0.34–0.73).

6 The authors concluded that Swedish-born children of East African origin have a higher risk for T1D than those born in East Africa.

Hjern A, Söderström U, Åman J (2012) East Africans in Sweden have a high risk for type 1 diabetes. *Diabetes Care* **35**: 597–8

DIABETIC MEDICINE

No rise in incidence of T1D in South Asian immigrants

Readability	✓✓✓
Applicability to practice	✓✓✓✓✓
WOW! factor	✓✓✓✓

1 Earlier studies suggest that UK South Asian immigrants develop similar rates of T1D to the overall UK population, despite the incidence of T1D being lower in their countries of origin.

2 The authors compared the rates of childhood T1D in South Asians and non-South Asians in Yorkshire between 1978 and 2007.

3 The Yorkshire Register of Diabetes in Children and Young People was used to estimate the incidence (per 100 000 childhood population <15 years/year) of T1D, stratified by sex, age, ethnicity, and deprivation. Poisson regression was used to assess trends and predict rates until 2020.

4 Incidence of T1D among non-south Asian children (21.5; 95% confidence interval [CI], 20.7–22.4) was significantly higher than among South Asians (14.7; 12.4–17.1); furthermore, average annual percentage change increased significantly over 18 years in non-South Asians (3.4%; 2.7–4.2) compared with a non-significant rise of 1.5% among South Asians.

5 Deprivation score were not found to significantly affect overall T1D incidence in this population.

6 The authors' results were contrary to previous studies; T1D incidence rose almost uniformly for non-South Asians, but not for South Asians.

7 The authors also projected that overall rates of childhood T1D will rise by 52% between 2007 and 2020, reaching 39.0 cases per 100 000 children per year.

Harron KL, McKinney PA, Feltbower RG et al (2011) Incidence rate trends in childhood type 1 diabetes in Yorkshire, UK 1978-2007: effects of deprivation and age at diagnosis in the South Asian and non-South Asian populations. *Diabet Med* **28**: 1508–13