

Love food and live healthy (B-SPORT+)

1. INTRODUCTION (purpose, contextualization, comments from users....)

Type 1 diabetes is typically diagnosed in children or young adults, although it can occur at any age. Sport and more general physical activity are pillars of the treatment of type 1 diabetes: they allow to obtain more excellent stability of blood sugar levels, an improvement in metabolic control and a better quality of life. However, practising sport and exercising safely is often experienced as an unattainable goal by people with type 1 diabetes. If, on the one hand, sport and exercise performance can be enhanced by modifications to basal and bolus insulin dose and nutrition, on the other hand, maintaining normal glucose levels during training can be challenging for people living with type 1 diabetes.

The proposed program aims to provide young people with type 1 diabetes with a series of online resources (e.g., videos, interactive tools) to acquire essential skills and recommendations to successfully manage the physical and psychological challenges posed by type 1 diabetes in sport and exercise.

Inspiration comes from a platform created by Diabetes UK, a British-based patient, healthcare professional and research charity. In the “Learning Zone” of the website, people with diabetes can gain access to free courses helping them to effectively manage their day-to-day life with diabetes, learning, for instance, how to exercise safely, adapt meals, and manage diabetes-related stress, thus learning how to worry less and stay motivated after a diabetes diagnosis (see [here](#) for more information). An experience already carried out in Italy, and that will serve as an example of best practice, is “Diabete Sport Training”, launched in 2014 by AGD Italia, funded by Fondazione Vodafone Italia (<http://www.diabetesporttraining.it/il-progetto/>). The project aimed to enhance the participation of young people (6-30 years old) with type 1 diabetes in sport and physical exercise, letting them try different types of sports and, in general, the pleasure of being able to do it safely. Eight sports education camps were created throughout the country. Registration to the initiative was free. Divided into homogeneous age groups, the participants were involved in numerous activities and tests: from sports games aimed at assessing the children’s motor skills, to studying the relationship between physical activity, energy consumption, insulin dosage and self-control, and practical tests on diet management. The data relating to the satisfaction of the participants in the project and on the improvement of their metabolic control supported the effectiveness and the successful achievements of the project’s objectives. A team of professionals followed the young participants from the clinical and psychological point of view, especially in the start-up and practice of sports.



Figure 1 Photos retrieved from the [Facebook page of the Diabete Sport Training project](#).

Several stakeholders among sports organisations (CONI, Sport without borders Italy) and health and diabetic associations and societies (Marathon Sport Medical Center; Diabetes Study Group of the Italian Society of Paediatric Endocrinology – SIEDP; Italian National Association of Diabetic Athletes – ANIAD), as well as the Italian Ministry of Health, were identified and asked to support the project

2. NEEDS (Overview of problems, statistics, target group description)

In Italy, around 300,00 people suffer from type 1 diabetes. Statistics have tripled in the last 40 years. Living with a chronic illness such as type 1 diabetes affects a person's entire life, requiring physical, psychological, and social adjustments that, in turn, demands high levels of self-efficacy, resilience, perceived control, and empowerment

Physical exercise and sports practice can prevent and reduce the risk of physical, psychological, and social correlates of chronic diseases. Preliminary research has revealed that rates of physical activity and sports practice among chronic disease populations, including people living with type 1 diabetes, are alarming, with over 50% engaging in only low levels of physical activity.

A recent systematic review and meta-analytic study have demonstrated that engagement in regular physical activity and sports practice for people with type 1 diabetes improves cardiometabolic health and is associated with increased longevity (Wu et al. 2019), in addition to a wide range of physical, psychological and social benefits such as:

- Reduction of the risk of developing additional chronic diseases, such as cardiovascular and metabolic diseases, osteoporosis;
- Prevention and reduction of the risk of overweight and obesity conditions;
- Regulation of sleep and improvement of the management of psychological distress, anxiety and depression symptoms;
- Promotion of a positive self-image, enhancement of the individual self-efficacy, positive management of lifestyle-related to the chronic conditions;
- Increasing self-esteem and perceptions of well-being, that in turn positively impact on quality of life;
- Enhancement of the individual motivation and adherence to prescribed treatment.

Key motivators to physical activity for people with diabetes can be clustered into three main categories:

Need for education about diabetes and exercise. Many people with type 1 diabetes say they don't know how to get active and find healthcare professionals' advices as generally inconsistent and inaccurate.

Need for psychological and social support. Empirical evidence has demonstrated that people living with diabetes are more likely to be active if they have social and psychological support.

Need for individually-tailored support. Intensive, individually-tailored support has been demonstrated to be the most effective way to get people with diabetes to start being active.

3. EXPLANATION OF THE ACTIVITY

The program aims to create an online environment that supports people with type 1 diabetes to be physically active and healthy in their day-to-day life. A multidisciplinary equip consisting of health and sports professionals (i.e., diabetologists, nutritionists, psychologists, nurses, sports doctors, athletic trainers, etc.) identified among the main stakeholders in Italy will create a series of online videos and interactive tools using a truly person-centred approach. Four specific topics will be primarily discussed:

- Eating with diabetes: healthy balanced diet, healthy eating habits, cooking tips, meal plans, drinks and diabetes, carbohydrate count, etc.;
- Sport and diabetes: informing about hypo and how to spot its related warning sign, best types of exercise, how to keep active at home, at work, or simply while sitting down, etc.;

FIVE WAYS TO MOVE MORE WHILE SITTING DOWN

Before you start, make sure you are sitting as upright as possible, with your feet on the ground or a hard surface.

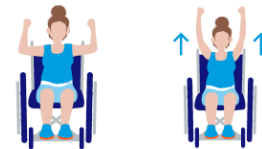
Repeat each activity for **one minute**

Chair twists



1. Slowly turn your upper body to the right while keeping your hips facing forwards.
2. Count to five and then return to the middle so you are facing forwards.
3. Repeat, but now turn to the left.

Upward punches



1. Put your arms out to your sides with your elbows bent and knuckles pointing up to the ceiling. Your thumbs should face each other.
2. Slowly punch upwards and then bring your arms back to the starting position.

Arm curls



1. Start with your arms hanging naturally. Keep your elbows by your sides and raise your right hand towards your right shoulder.
2. Bring your right arm back down and repeat with your left arm.

Knee lifts



1. Lift your right knee off the ground and then place it back on the floor.
2. Repeat with your left knee.

Marching




1. Continue with the knee lifts, but this time introduce alternate arm curls each time. This means your right leg should lift at the same time your left arm bends.

Figure 2 Examples of physical activities while sitting down. Retrieved from Diabetes UK.

ACTIVITY JOURNAL

Take some time each week to record your journey and keep track of your successes for the next 10 weeks. This will help to keep you motivated to move a little bit more each day.



	Movements I'd like to try this week For example: "I'm going for a walk in the park".	What might get in the way? For example: "I might lack motivation".	How will I overcome what might get in the way? For example: "I'm going to ask someone I know to join me".	Movements I did For example: "I walked for 30 minutes in the morning".	How did I feel afterwards? For example: "I'm proud I managed to go for a walk".
Week 1					
Week 2					
Week 3					
Week 4					
Week 5					
Week 6					
Week 7					
Week 8					
Week 9					
Week 10					

Figure 3 Example of activity journal for people with diabetes to track their progress while introducing movement in their life. Retrieved from [Diabetes UK](#).

- Emotional well-being: coping with being diagnosed, feelings about food, talk about the diabetes condition, stress, depression, diabetes distress and burnout, hypo anxiety, eating disorders and diabetes;
- Diabetes technology: what is diabetes technology and how it can improve diabetes self-care, how to access diabetes technology, how to manage emotions about using diabetes technology,

4. RESULTS

The achievements obtained by "Learning Zone" in the UK (until now) and "Diabete Sport Training" in Italy (from 2014 to 2016) demonstrate that using a multidisciplinary approach plays a key role in supporting people with type 1 diabetes to make healthy choices. Based on these previous and ongoing experiences, we expect to inspire people with diabetes to engage in a more active lifestyle and enjoy all the related health benefits.

More specifically, it is expected that a relatively high number of people dealing with type 1 diabetes will participate in the initiative by navigating the platform and consulting the free online resources tailored on the basis of the expected needs. Also, it will be evaluated the users' perceived usefulness of the resources to lead a more active lifestyle.

Results from the "Diabete Sport Training" program can be retrieved from:

<https://www.coni.it/it/news/8809-malagò-alla-presentazione-del-diabete-sport-training.html>

<https://www.gazzetta.it/Sport-Vari/Fitness/26-09-2014/fitness-sport-diabete-infantile-diabete-sport-training-alex-zanardi-90565738355.shtml>
<http://www.siedp.it/files/ATTIDELXXICONGRESSONAZIONALESIEDP.pdf>

5. KEY SUCCESS FACTORS (Communication, participation, motivation...)

- Offering advice, information and resources that are specifically tailored to people with type 1 diabetes;
- Providing the opportunity to connect with others facing similar challenges;
- Providing psychological support to improve individual well-being;
- Providing young people with a so-called “sports passport”, which can motivate participation in physical exercise and sport.

6. KEY CHALLENGES AND OPPORTUNITIES

One of the most critical point in diabetes care is the awareness among health professionals of the importance of physical exercise for people with type 1 diabetes, as well as of the prevalence and consequences of psychological problems affecting adults with diabetes.

Professionals working in health and fitness and people with type 1 diabetes, all desire more information about physical activity, health nutrition and diabetes. Diabetes education courses featuring physical activity and healthy lifestyles contents that are delivered by trusted sources identified among the main national and local stakeholders will be especially helpful in tackling the challenge: both professionals and people with type 1 diabetes will learn more about hoto approach with these issues in their professional work or daily life management, respectively.

7. ADDITIONAL MATERIALS USED (leaflets, assessment materials...)

Appendix A:

<https://www.diabetes.org.uk/resources-s3/2020-02/physical-activity-web-03022020.pdf>

<https://www.diabetes.org.uk/guide-to-diabetes/managing-your-diabetes/exercise>

<https://www.diabetes.org.uk/guide-to-diabetes/enjoy-food/eating-with-diabetes/out-and-about/sports-nutrition-and-type-1-diabetes>