

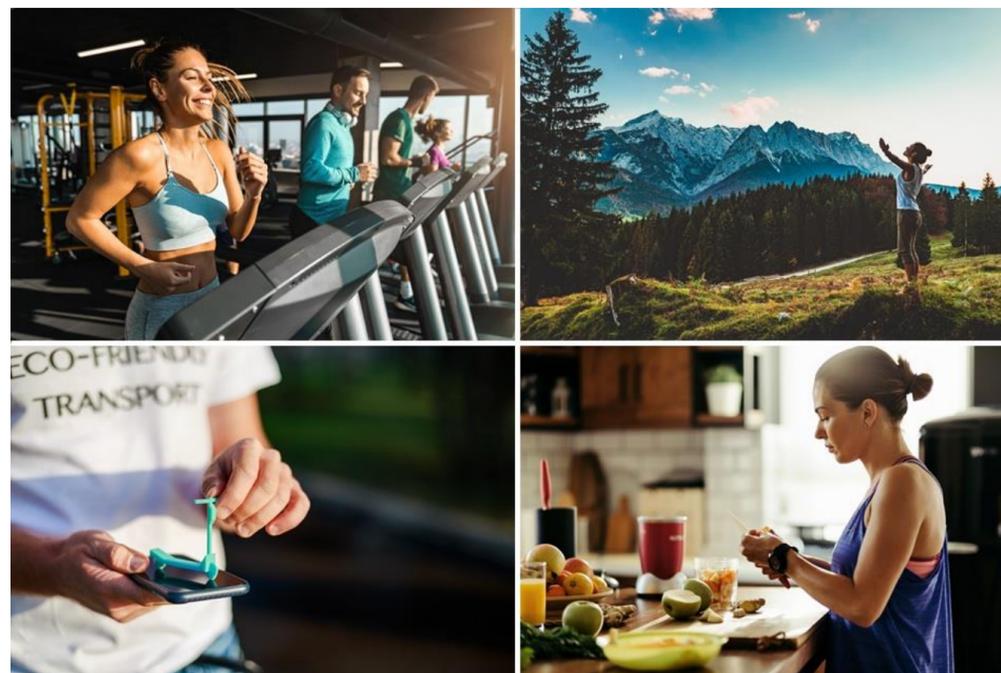


Co-funded by the
Erasmus+ Programme
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SEARCH

SPORT EDUCATION FOR ACTIVE
AND RESPONSIBLE CITIZENSHIP
THROUGH HEALTH CARING



MODULE 5

SMART SPORT CITIES



SEGMENT 5

Sport and technology,

opportunities: events, facilities, medicine, tools

Relationship between sport and technology

After analyzing the contribution of technology in developing smart cities and in planning urban spaces, it is useful to highlight that the relationship between technology and sport involves also other areas:

- Major sporting events
- Sports facilities technology
- Sports medicine technology
- Healthcare and well-being

In the future, these sectors may be increasingly developed, creating new market and job opportunities and implementing new proposals and new solutions.

Major sporting events

Today, sporting events represent a significant source of income and a showcase for the places hosting them. Just think about the media attention received by national and international championships in all disciplines.

Participation in these events will increase not only thanks to television broadcasts but also to the possibility of buying tickets online, as is already happening with concerts.

Besides events of global importance, which involve large urban centers as well as whole nations (e.g. the Olympics), even smaller sporting events can represent an important source of economic revenue and media visibility for several areas.

The benefits

Housing a major sporting event offers the host country or city a great opportunity in terms of:

- visibility, communication and promotion;
- economy as concerns the associated business generated (hospitality, traveling, shopping);
- mobility (development of mobility plans);
- opportunities for creating or improving infrastructure;
- adopting new technologies.

In this context, the receiving country seeks to offer an international audience its best image in order to show the quality of its innovations in both technology and sustainability.

Thanks to special apps, technology can also offer an *integrated* experience that will be highly appreciated by the athletes hosted and the audience involved.

Tokyo Olympics



Technology and sustainability

- Self-driving buses and taxis
- High definition shooting drones
- 5G connection
- Information robot
- Wearable translation devices (wristbands)
- Recycled metals medals
- Aircraft powered by biofuel obtained from algae

Sporting events for everybody

As well as major events, smaller events have a significant role, especially in terms of social relations and experience.

The willingness of a community to welcome and host teams and athletes can offer excellent educational opportunities, involving young people both as active players and in the organizational aspects of the event.

In this case, sporting events play a socially crucial role in generating a sense of belonging and promoting voluntary work.

The accessibility of proper technologies and infrastructures is a useful element for obtaining the assignment to carry out the sport activity and for managing it safely and correctly.

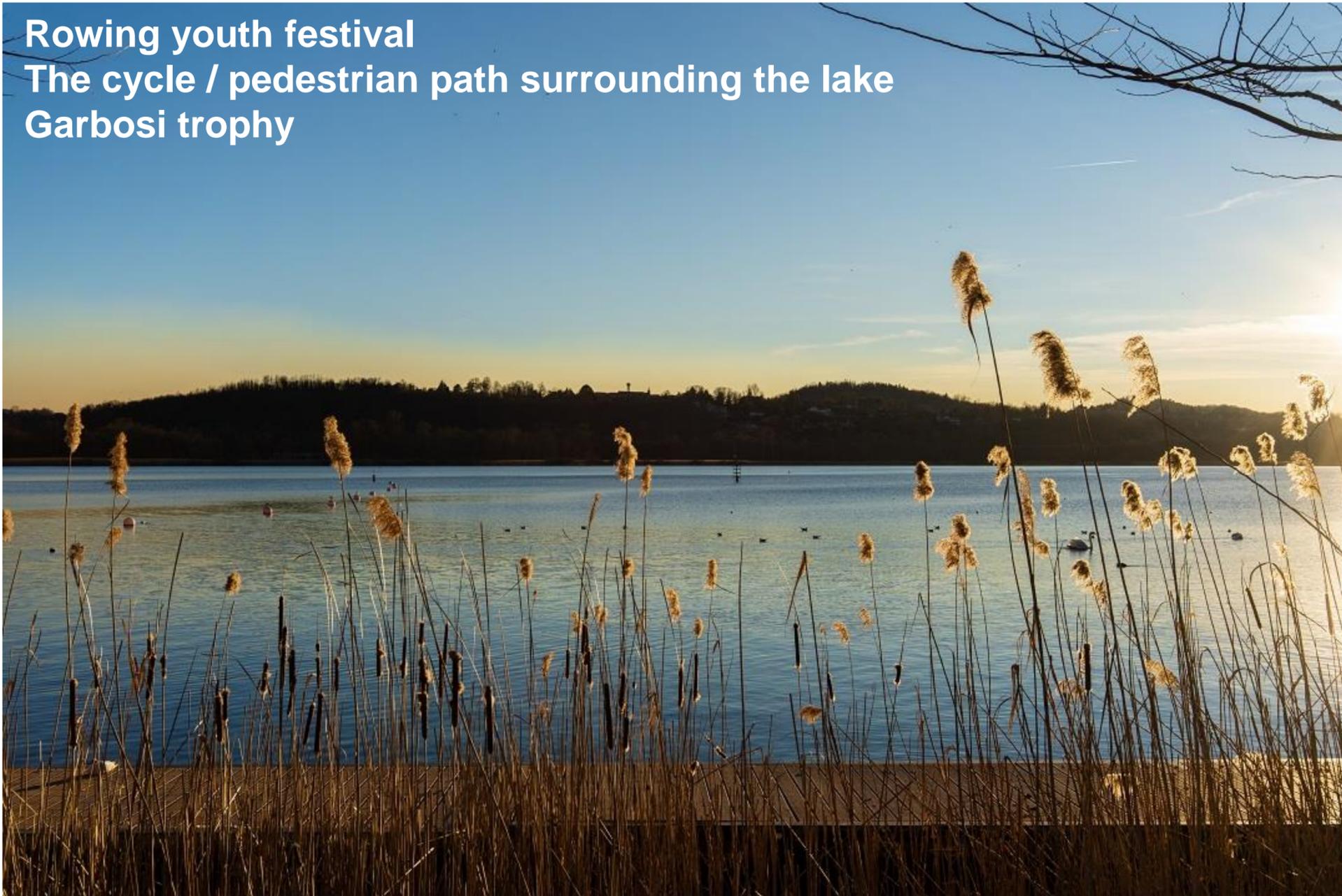
Enhancing the value of the natural environment helps encourage young people to appreciate and protect the environment.

Varese - natural environment and sporting tradition

Rowing youth festival

The cycle / pedestrian path surrounding the lake

Garbosi trophy



Varese

Varese is a city of 80,000 inhabitants located in Lombardy, 60 km from Milan and 30 km from Switzerland. It has a natural environment characterized by lakes and mountains.

Rowing youth festival

Featuring seven lakes within its territory, the city has a long-term sporting tradition in rowing and has many working clubs. In 2018, the 29th edition of the Youth Festival was organized featuring 1567 athletes representing 125 clubs.

Bike and pedestrian path

A path paved with asphalt and colored concrete, suitable for everyone, even families with children, as it is mostly flat. It allows you to walk around the lake for 27.66 km. Visitors can not only admire the beauty of the landscape, but also stop along the way to visit places of interest such as the Voltorre Cloister.

Garbosi trophy

Born in 1980, the Garbosi Trophy is the most important Italian basketball event for under 11, under 12 and under 13 male and female athletes. The 2019 edition involved 800 athletes, 150 coaches, 50 referees and 40 on-court officials. The peculiarity is that the athletes coming from teams located out of town are hosted by the families of the Varese boys and girls, combining the sporting experience with a unique human experience. In past editions athletes from: Russia, Poland, Albania, Croatia, Slovenia, Czechoslovakia, France, Lithuania, Switzerland, Holland, Malta, Spain, Bosnia, Israel, San Marino and Germany.

Sports facilities technology

Stadiums and sports facilities are more than just buildings: they are magical places, where thousands of people united by the same passion can experience unique and unrepeatable emotions.

Sport 'is the toy department of human life', as stated by the American journalist Howard Cosell.

Some sports facilities are becoming real tourist attractions, attracting millions of visitors, and at the same time becoming technological platforms to study new, increasingly sustainable solutions.

These features can concern both large-scale facilities as well as more simple and accessible solutions. Technology can allow developing original and engaging sports facilities.

The factors determining the highest success are technological accessibility (ease of use), accessibility of investment and maintenance, environmental sustainability and *fun experience dimension*, effective communication to promote the space and its initiatives.

Mercedes Stadium Atlanta



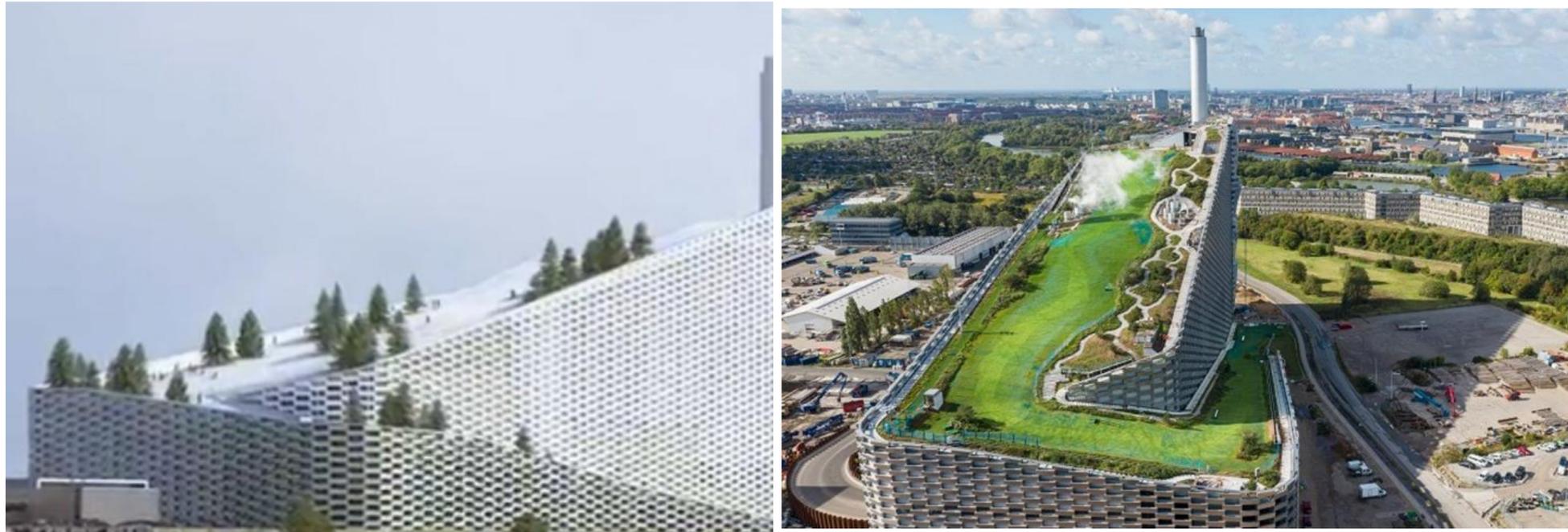
Innovative architecture, technology and eco-sustainability are the features making the Mercedes Benz Stadium one of the most advanced sports facilities in the world. Equipped with a spectacular **retractable roof: 8 petal-shaped panels**, each weighing 500 tons, which can be opened and closed like the lens of a camera. While this is the stadium's number one attraction, second are the **large windows** joined by a complex of triangular shapes, offering an impressive panoramic view of the city from inside. It is also **the most environmentally sustainable stadium in the world**, being certified **Leed Platinum**. Powered by **solar energy**, it is equipped with **LED lights**, natural ventilation and water recovery systems using rainwater, with energy **savings of over 40%** compared to a traditional stadium.

Cape Town Stadium



In addition to the striking undulating roof, the special feature of this stadium is its spectacular layout. The sports structure is completely covered with semi-transparent fiberglass, revealing the inside. Depending on the weather conditions, this material makes the stadium change color: white, during the sunny daytime, gray on cloudy days and reddish at sunset. At night, it becomes transparent and illuminated by 360 lamps, creating an incredible effect.

Sports facility technology: Coppenhill



The world's most unusual waste-to-energy plant - Estimated to attract **300,000 visitors a year**, the new Copenhagen waste-to-energy plant is **85 meters high, 200 meters long and 60 meters wide**. The Amager Bakke plant, now renamed Coppenhill, **disposes of about 400 thousand tons of waste** produced each year by more than 500 thousand inhabitants and at least 46 thousand companies, **thus providing electricity to 60 thousand houses and district heating to 160 thousand houses**. Once Bjarke Ingels won the international competition in 2011, construction of the plant began in 2013. **The waste-to-energy plant, which is the second largest in Denmark, has been operating since 2017** and is equipped with one of the most advanced flue gas cleaning systems worldwide, including a special catalyst to remove nitrogen monoxide. It cost **over €600 million**. This gives the Danes, who are citizens of a country where the highest altitude is 171 meters, the possibility of avoiding having to "emigrate" to Sweden or going to the Alps to enjoy a slalom. Built by Neveplast Bergamo

Green Gym / Text

Choosing energy resources with a low environmental impact is one of the key principles in the sustainability debate. The least impactful of all these is the energy produced by our muscles, which, most of the time, is unexploited and wasted.

This is not the opinion of England, where in the city of Hull, the "Green Heart" has been inaugurated, that is the first environmentally sustainable and completely free outdoor gym which transforms the calories burned into clean energy.

Whereas in Italy there is a drop in the number of people attending sports centers and the electricity produced 'pedaling' is certainly not covered by the government incentive program, the electricity produced by the gym in Hull is channeled and introduced into the distribution network by a local operator, in agreement with the city council, thus giving citizens a lower electricity bill and a fitter body thanks to the calories burned.

Green Heart has already produced more than 40,000 kW and it can also be used at night as it is equipped with a lighting system that uses the energy of those who work out in the evening. The eco-gym is made up of a wide range of fitness equipment: several types of bikes, cross trainers, devices measuring body mass index, weight and height, medical instructions for its proper use and even a **power display** to show in real time the amount of energy produced by whoever is present and moving at that moment. Also, you can recharge your mobile phone or tablet.

You can also recharge your mobile phone or tablet. Hull is the most famous example, but in the UK there is already a network consisting of more than three hundred clean energy training points spread out within a smart network by the Great Outdoor Gym Company, whose aim is to spread Green Heart across the UK to teach people that a healthy lifestyle and regular exercise can reduce costs and help the environment.

Green Gym / photo



Sports medicine technology

1. Medical apps on smart phone
2. Wearable solution
3. Smart tools for planning workouts (bike with screen, rowing)
4. Research centers for technological materials
5. Research centers for medical prosthesis (3D printing)

Health app

- Online Pilates yoga and workout classes
- Performance measurement (calories consumption, km, trails, etc., speed)
- Workout solutions based on skills and time availability
- Diet and nutrition surveillance
- Measurement of blood glucose for people with diabetes.

Wearable solutions

The new health era is all about blood pressure monitors, thermometers, glucometers and even scales equipped with wireless technology and connected to an app allowing people to instantly file and share their results

Wireless telemedicine devices can be used to share the device's measurements. The doctor will thus always be informed about the evolution of the pathology and able to make an even more detailed diagnosis.

The wireless health devices includes, among the new telemedicine technologies, the so-called *wearables*: clothing items, such as a bandana or a pair of glasses, made of materials or fabrics equipped with sensors housing an array of medical technologies that can detect some vital parameters of our health.

There are different kinds of *wearables* on the market, such as T-shirts controlling the heartbeat, experimental T-shirts measuring blood glucose or patches with sensors to be placed in the chest area for long-term monitoring of the heart.

Virtual reality



A Cambridge, Massachusetts-based start-up and its team of engineers and developers have developed VirZoom, an exercise bike with a virtual reality system for video games and fitness addicts.

VirZoom has buttons on the handlebars to use it like a joystick and create game effects, **sensors** on the pedals measuring your speed and **cameras** tracking your body movements. All you have to do is put on the VR headset, get on the bike and start pedaling **to burn calories without even realizing it**, completely plunged... into another fantastic world, the world of your favorite video game.

Sensors



One of the latest sports-related technologies is the Wilson X Connected Football system, which has integrated a small sensor inside the ball to record the speed of throw, spin and distance covered. This provides the staff with a range of other valuable data to use. Finally, thanks to Wilson X Connected Football's gamification application, the system will be available to regular Android and iOS users who can have fun monitoring their performance and virtually playing with their own avatar using five different schemes.

Climbing wall



DIY climbing wall in the heart of Hollywood: an eclectic extension to a beautiful old villa refurbished according to the style of the homeowner that is the interior designer Brigette Romanek. She focused on a neutral background and colored climbing holds (yellow, orange, red, green, blue) to create a climbing wall with different levels of difficulty for children. It is managed from the smart phone, changing the colors according to the level of difficulty.

Technological materials

Creating new fibers capable of reducing friction and guaranteeing better performance at a thermal level, ensuring perspiration

As for the most extreme sports, emergency clothing has been designed, containing on the inside a fireproof, washable and reusable layer featuring electrodes to monitor vital parameters, and externally a jacket with sensors to detect environmental parameters. For example, in car racing, drivers wear fireproof suits and special underwear to give them time to leave the vehicle without damage in the event of a fire.

Nike has introduced an innovative system, called Joyride. These are revolutionary running shoes incorporating hundreds of spheres made from a special plastic polymer called TPE within the sole.

Vibram has always studied special materials for creating soles increasingly resistant, light and adhering to the ground in order to obtain better performance while protecting health.



Technology and medicine

In 2016, Google and French pharmaceutical giant Sanofi announced a \$500 million investment in a joint venture to develop treatments for people with diabetes. This consists of special contact lenses equipped with sensors to detect blood sugar levels.

For example, the S. Raffaele Institute in Milan has activated a device allowing it to manage the patient when a drug is being administered, prescribed or prepared. It is an 'intelligent trolley' managed by a computer. Each patient wears a bracelet with a two-dimensional code on his wrist, this code is read by the computer and - depending on the information relating to the patient - it sends a request to the trolley to open the drawers containing the specific drugs needed by the patient.

Research on innovative materials in the field of orthopedic prosthesis has led to producing increasingly effective limbs from an aesthetic and functional point of view. Diagnostic imaging and 3D printing technology has also made it possible to customize prosthesis by significantly reducing margins of error.



Exercise 5

Analyze which are the sports facilities available where you live (sports facilities, outdoor routes, natural environments, etc.)

Propose a sporting event allowing you to enhance one of the structures or natural resources of your territory, mentioning:

Name of the initiative:

Description:

Place:

Date:

Relevant audience:

Organizing bodies:

Necessary economic resources:

Staff required to organize the operation:

Keywords

Technology

Sustainability

Sporting events

Social relations

App

Healthiness

Well-being

Innovation

Progress



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