

TECNALIA is setting up a laboratory with pioneering technology to develop new neuro-rehabilitation systems

- *The research and technological development centre has a movement analysis laboratory equipped with innovative systems that make it the first of its kind in Spain and the third in the world.*
- *The laboratory is located in the Gipuzkoa Science and Technology Park and it will carry out research into improving the capacities of patients with pathologies such as hemiplegia, spina bifida and neuromuscular dysfunctions, working on testing medical devices and personalising rehabilitation treatments.*
- *TECNALIA presented the facilities at the “Wearables in healthcare” event, which was organised this morning at its headquarters in the Technology Park and in which more than 70 companies working on developing neuro-rehabilitation devices took part.*

San Sebastian, 12 November 2019. The TECNALIA research and technological development centre has set up the first state-of-the-art movement analysis laboratory, able to carry out an exhaustive analysis of human movement, particularly the movement of people with neuromuscular diseases. Results will be applied to optimising treatments and medical devices. Located at the TECNALIA facilities in the Gipuzkoa Science and Technology Park, the objective of the laboratory is to develop medical tools that can improve the quality of life of patients with motor damage, such as hemiplegia (after a stroke), spina bifida and neuromuscular dysfunctions, through the development of new technologies. It will also carry out trials on prototypes made by companies in the sector and on personalised rehabilitation treatments that can be carried out by clinicians themselves.

This presentation was made this morning by TECNALIA's Health Director, Jesús Valero, together with the Deputy Minister of Technology, Innovation and Competitiveness of the Basque Government, Estíbaliz Hernáez, at the “Wearables in healthcare” event. This gathering was organised by the centre at the Gipuzkoa Science and Technology Park and brought together more than 70 companies that are experts in the field of rehabilitation.

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During the visit to the laboratory, Valero explained that “the development of medical devices represents an opportunity for companies interested in increasing their competitiveness and diversifying or making their traditional activity compatible with a field that represents a commitment to the future, that of improving the quality of life of people in the field of neuro-rehabilitation. The creation of an innovative health industry, aligned with the demands of people and the market, represents a lever for the competitiveness of our industry by allowing access to a sophisticated sector with high added value. At TECNALIA we support companies to develop new technologies and generate assets to achieve this”.

After the presentation, they explained the reality of a multiple sclerosis patient of ADEMBI (Multiple Sclerosis Association of Bizkaia), a non-profit organisation aimed at improving the quality of life of people suffering from this disease. The patient used the exoskeleton that is helping her recovery to demonstrate the capabilities of the laboratory, which analyses and models the movement of the human body to facilitate the appropriate treatment for the patient and the development of new devices.

Measuring movement to improve the quality of life

The laboratory focuses on measuring the human body and applying this to the field of health. Thanks to this, both clinicians and companies will be able to develop and apply new solutions that maximise its functionality, taking into account the biomechanics of the human body and the ergonomics of the devices to be developed and validated, particularly in the field of rehabilitation. Among other things, it will serve to develop and test exoskeletal technologies and will also be used to prevent musculoskeletal disorders.

The facility is specially equipped to simultaneously measure the posture of different parts of the body (upper or lower extremities, head, thorax, etc.) as well as external forces, muscle activation and even brain activity. The laboratory offers a safe, patient-sensitive environment thanks mainly to two pioneering pieces of equipment, making it a unique laboratory in Spain and one of only three in the world. On the one hand, there is the RYSEN system, which provides a safe environment (partial weight support and fall prevention), allows patients to move freely and enables the therapist to easily hold the patient. It can be personalised on a case by case basis. On the other, there is the SIMI system, which captures the movement of people without the need to use any type of marker, giving users a greater range of movement.

This has several advantages: for therapists, it is easier to move the patient and allows them to analyse the patient's progress in detail and, therefore, personalise their treatment; for the patients themselves, it is a safe environment and they can receive treatment that is more adapted to their

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needs; and lastly, for industry, it makes it possible to develop new technologies based on measuring real patients and to assess the effectiveness of the devices they have developed.

Benchmark technologies in the Basque Country

At the “Wearables in healthcare and prevention of musculo-skeletal disorders” event, leading companies and clinicians in the sector such as Fondazione Santa Lucia, IMQ, Mutualia, ADEMBI, Biodonostia, Nissan, Iturri, Fesia, Gogoia, STT Systems, Biomech Solutions, La Mutua Universal and TECNALIA itself discussed the development of devices for the health and prevention sector and the opportunity it represents for them.

They also presented pioneering technologies, such as Iturri's modular system for reducing the risk of musculoskeletal disorders; Mutualia's exoskeleton for reducing arm fatigue and preventing lumbar injuries; Gogoia's exoskeleton for knee rehabilitation; Biomech Solutions' 3D motion capture system for use in the workplace in order to improve ergonomics; Fesia's walking rehabilitation equipment based on functional electrical stimulation; STT Systems' inertial sensors to obtain precise information on physical activity; and TECNALIA's portable solution that reduces the risk of falls and a transdermal smart patch to control the release of active substances.

About TECNALIA

TECNALIA is a benchmark Research and Technological Development Centre for Europe; with 1,400 experts from 30 different nationalities, focusing on transforming technology into GDP to improve People's quality of life, by creating business opportunities for Companies. It is also a member of the Basque Research and Technology Alliance (BRTA).

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