

ANNUAL ACTIVITY

REPORT

Centro de Investigación en Bioingeniería A.C.

2018



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CIBAC
Alta Tecnología en Salud

INTRODUCTION



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Alta Tecnología en Salud

CIBAC thanks all the people that have collaborated in this initiative that has allowed us to transform the results of our scientific research¹ into the treatment and improvement of patients.

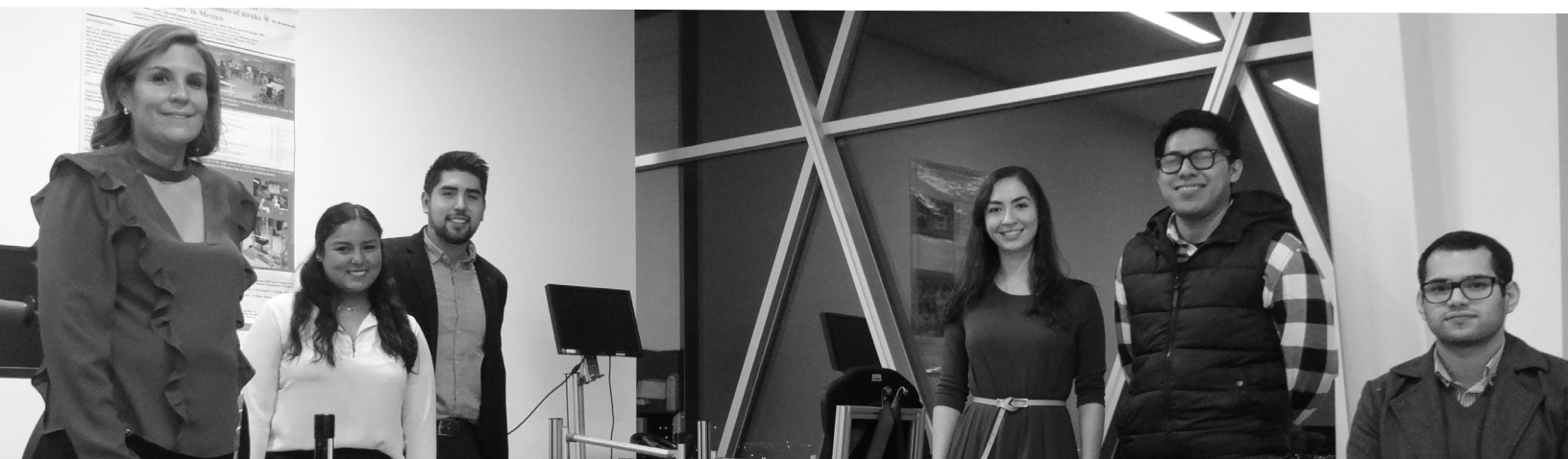
In this report we present the results obtained from the beginning of operations in June of 2018 until December of the same year.

We want to emphasize that this has only been possible thanks to the help of many people that put their trust in us.

We would like to thank the Tecnológico de Monterrey and the Consejo de Educación Superior del Norte A.C, above all the president of the council, Mr. Alberto Terrazas for all his trust and support.

We want to thank in a very special way our Advisory Council constituted by Mr. Alberto Terrazas, Mr. Ismael Rodríguez and Mr. Luis González for giving us their time, experience and knowledge.

We want to recognize the memory of Don Federico Terrazas and thank him for his vision and great support in our mission of doing research and developing technology to improve the health and lives of people. We believe that research and technological improvement bring prosperity and development to our country.



¹Bustamante Valles, K., Montes, S., Madrigal, M. de J., Burciaga, A., Martínez, M. E., & Johnson, M. J. (2016). Technology-assisted stroke rehabilitation in Mexico: a pilot randomized trial comparing traditional therapy to circuit training in a Robot/technology-assisted therapy gym. *Journal of NeuroEngineering and Rehabilitation*, 13(1), 83. <http://doi.org/10.1186/s12984-016-0190-1>

STAFF



Dra. Karla Bustamante
Director



Dra. Madrigal
MD



Pamela Valles
Secretary



Crhistian Leyva
Physical Therapist



Ricardo Galindo
Rehabilitation Robotics
Coordinator



Laura Armendáriz
Specialized Consulting



Mario Amorós
Movement Analysis Lab
Coordinator



Jesús Gutiérrez
Social Service

DIRECTIVE COUNCIL

- Dr. Karla Bustamante
- Daniel Comadurán
- Isaac Acosta
- Pamela Valles
- José Ángel Chávez

ADVISORY COUNCIL

- Alberto Terrazas
- Ismael Rodríguez
- Luis González



SPECIAL THANKS

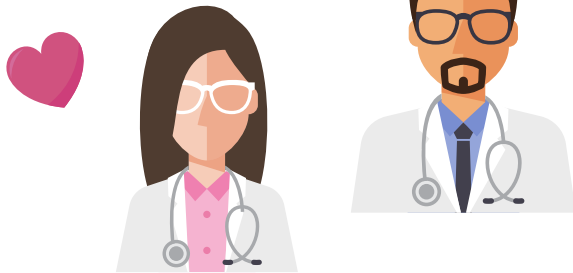


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SPECIAL THANKS

CIBAC thanks all the doctors that have placed their trust in us.

- Dr. Azael Flores
- Dr. Selene De La Rosa
- Dr. Rosa Reyes
- Dr. Arely Fernández
- Dr. García Roiz
- Dr. Adriana Hernández
- Dr. Magdalena Clemente



CIBAC thanks all the people who participated in our **Donadora** campaign. To all our donors, such as:

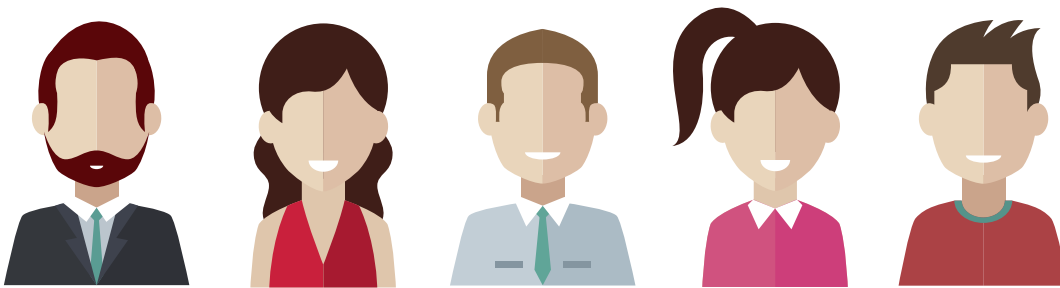
- Mr. Enrique Terrazas
- Mr. Ismael Rodríguez
- Asociación Xiomara
- Marcus Baur
- Cathy Basler
- Susan Riendel
- José Luis Vargas Luna
- Juan Carlos Noble
- Dr. Flor Bustamante
- José Ángel Chávez
- José Juan Quintana



We greatly appreciate all the time and dedication of **Erika Ramírez** who supported us in building a business plan to be able to operate in a sustainable way. We would like to thank **Karla Hernández** and **Elías Solís** for believing in us and helping us build our strategic planning. We thank **Guadalupe Gómez** for helping us with accounting services.

We thank the people who have supported us with their knowledge and who help us bring the newest treatments to Mexico, we thank **Dr. Gerald Harris, Dr. Michelle Johnson, Dr. José Luis Vargas, and Dr. Rochelle Mendonca.**

And all the people that have contributed to this great project

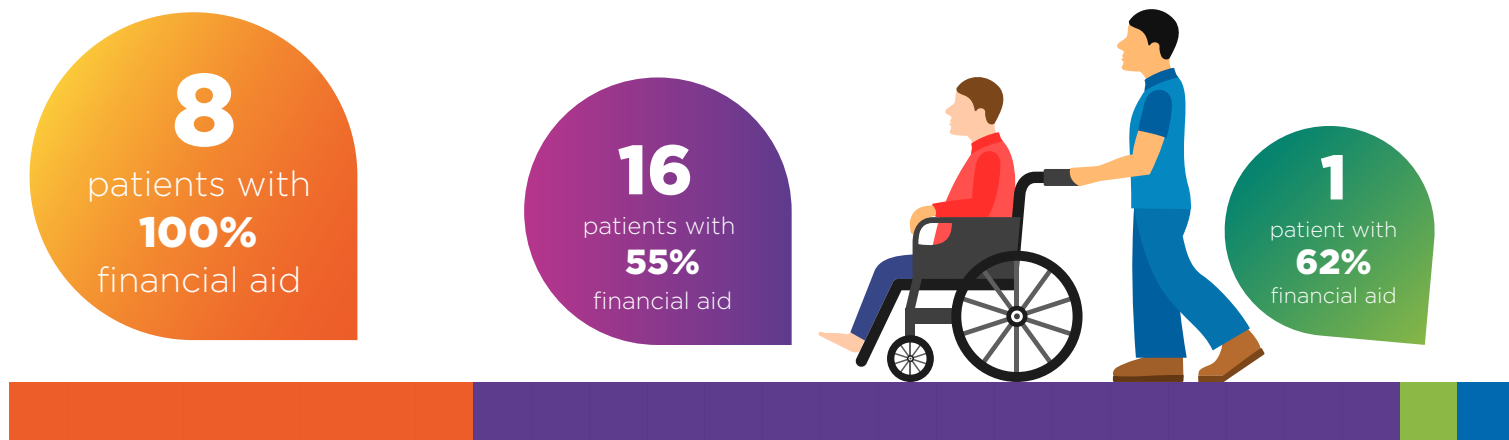


RESULTS



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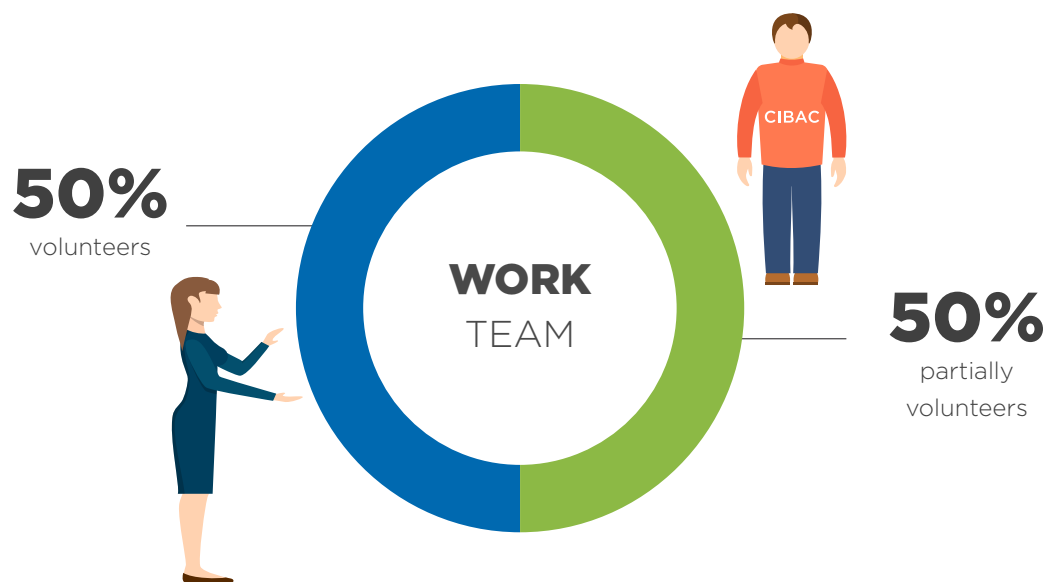
We have treated **26** patients, mainly from neurological event sequelae; of which:



Percentage of financial aid that has been granted per patient in 2018



We have a work team of **8** people of which:



EVENTS

We have had participation in events like:



Jornada Médica of **Hospital Ángeles**.



The monthly meeting of the **Sociedad Mexicana de Estudios Oncológicos**.



The Week of Inclusion, organized by the **Red de Discapacidad del Estado de Chihuahua**.

SERVICES TO PATIENTS

The patients have received the following services:



Robotic
Rehabilitation



Motion
Analysis



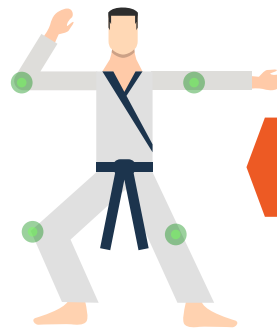
Assistance
Devices

SUPPORTING SERVICES

Support services have been given to universities and companies that include:



Ergonomics
Projects



Motion
Analysis

Jiu-jitsu

COLLABORATIONS

Participation in research projects with the students of the Tecnológico de Monterrey School of Medicine under the direction of **Dra. María Elena Martínez**.



Tecnológico
de Monterrey

Implementation of research protocols in the biomechanical area of sport with the **Universidad Autónoma de Chihuahua**.

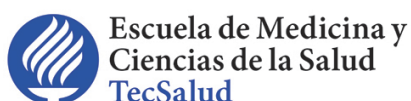


VISITS

We received the visit of the following institutions:



COLEGIO DE BACHILLERES
DEL ESTADO DE CHIHUAHUA



FINANCE

MAY - DECEMBER



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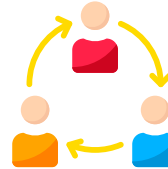
TOTAL REVENUE:



Donations
\$203,081.57



Dues
\$87,085.00



Associates
\$30,000.00



Interests
\$593.71

TOTAL EXPENSES:



Robotic
Rehabilitation
\$102,339.00



Motion
Analysis
\$31,960.64



Support and
3D Printing Devices
\$3,000



CSO
Professionalization
\$18,060.16



Administrative
Expenses
\$10,904.38

PATIENT EXPERIENCES



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Example of patient results

Patient: Mario Rodríguez



•Regarding his walking cycle, the patient showed a marked improvement, improving his walking speed, step length and time of passage. The cadence improved from **62% to 77%**.

•The ranges of movements improved significantly, especially those of the shoulder, wrist, hip, ankle and foot. For example, **shoulder abduction of 80 to 131 degrees, planting foot flexion from 10 to 40 degrees.**

•**Fugl-Meyer assessment:** there was significant improvement (25 points), especially in the **ranges of mobility and joint pain**. A slight improvement in motor function was observed and the sensitivity remained the same.

•In the analysis of movement they show that the **kinematic angles improved** in some specific anatomical points; like the pelvis, knee and foot.

As for the **EMG**, it was observed that, with respect to the phases of walking, **the muscles present a more normalized activation**, presenting correct activation with respect to the normal cycle.

Jesús Montaña:

My process of therapies in the Centro de Investigación en Bioingeniería A.C has been very beneficial for my recovery, thanks to the equipment they have to give therapies, which for me is new and effective, I have managed to see great results in a short time, results that in other places where I have received therapy could never be achieved, the center has highly trained staff who are concerned about the well-being and recovery of each and every patient who comes to them, giving each of the patients the necessary attention to take your process.

In addition, thanks to the great atmosphere of harmony that exists in the place among all those who attend there, both, the work team and the patients make the time in which the patients receive the therapy to be more pleasant, with which the therapies are nicer."



Rafael Baeza:



Know the
testimony of
Rafael Baeza



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Centro de Investigación en Bioingeniería A.C.,
4709 Avenida Colegio Militar, Chihuahua, Chih., 31150,
México 614 439 5000 Ext 3197 | info@cibac.mx

www.cibac.mx