



**Seminario
Investigación e Innovación
en Prevención de
Accidentes de Trabajo y
Enfermedades Profesionales**



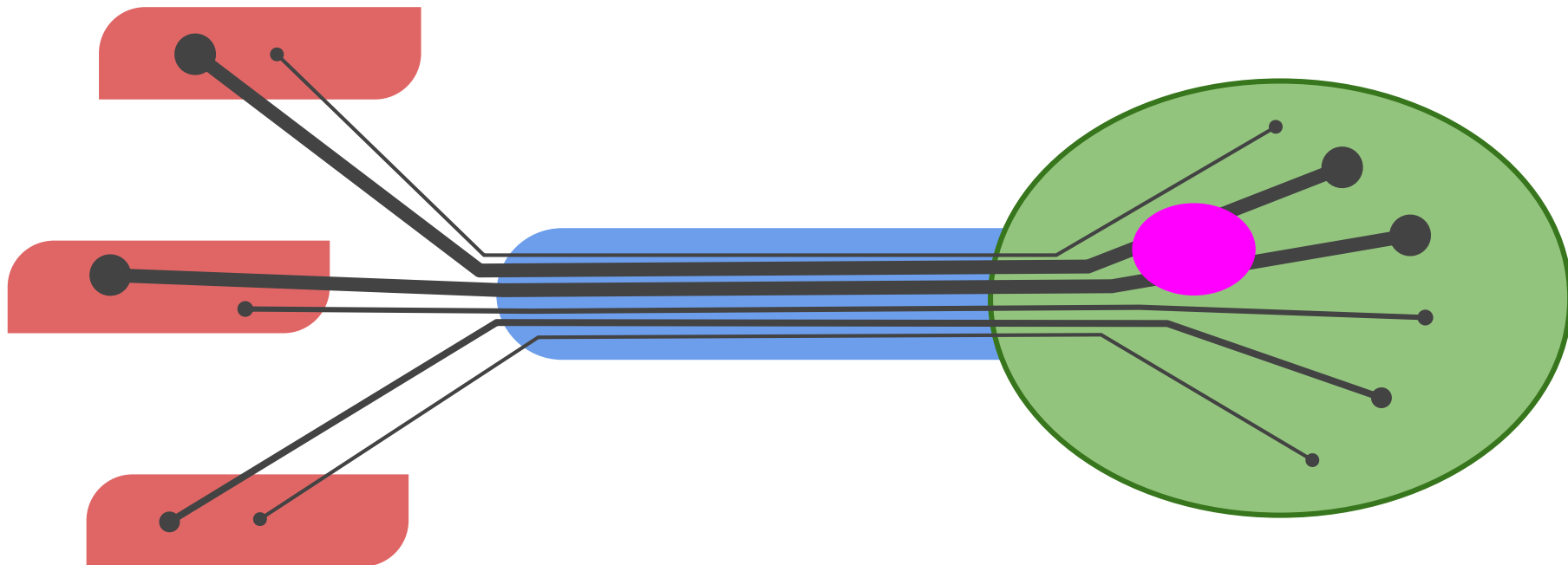
EMGone

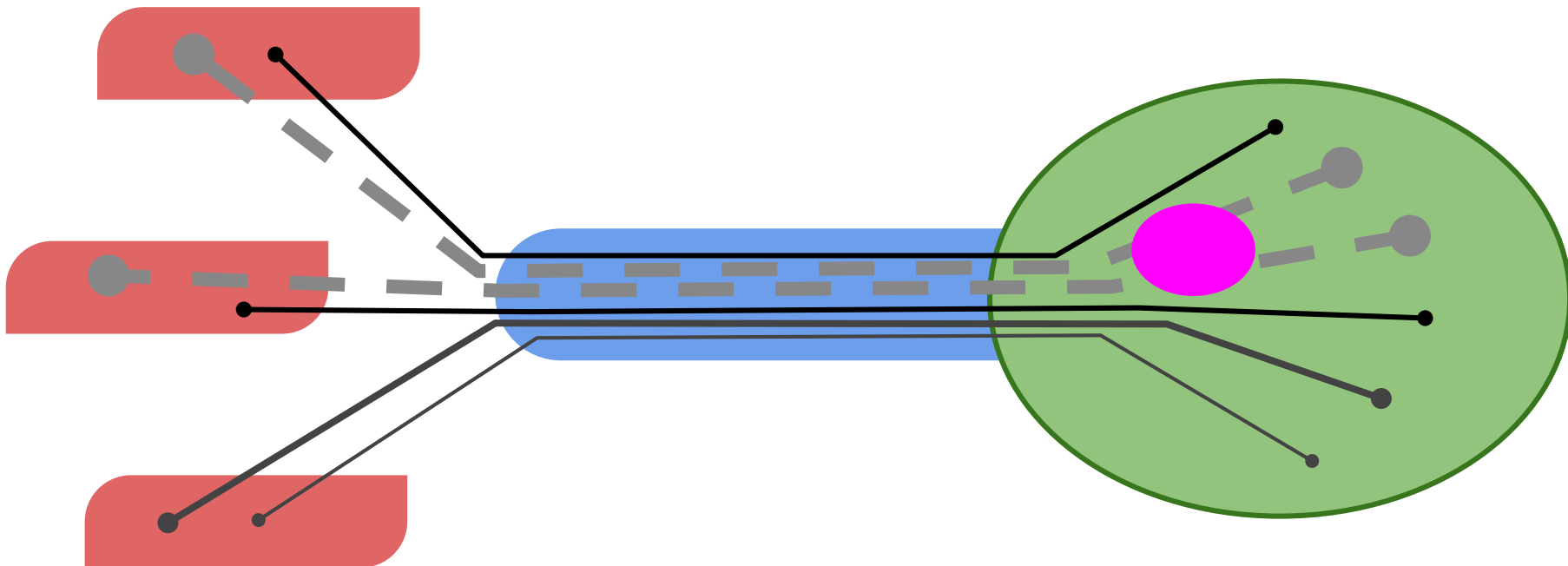
*Feedback electromiográfico lúdico y portátil para
rehabilitación*

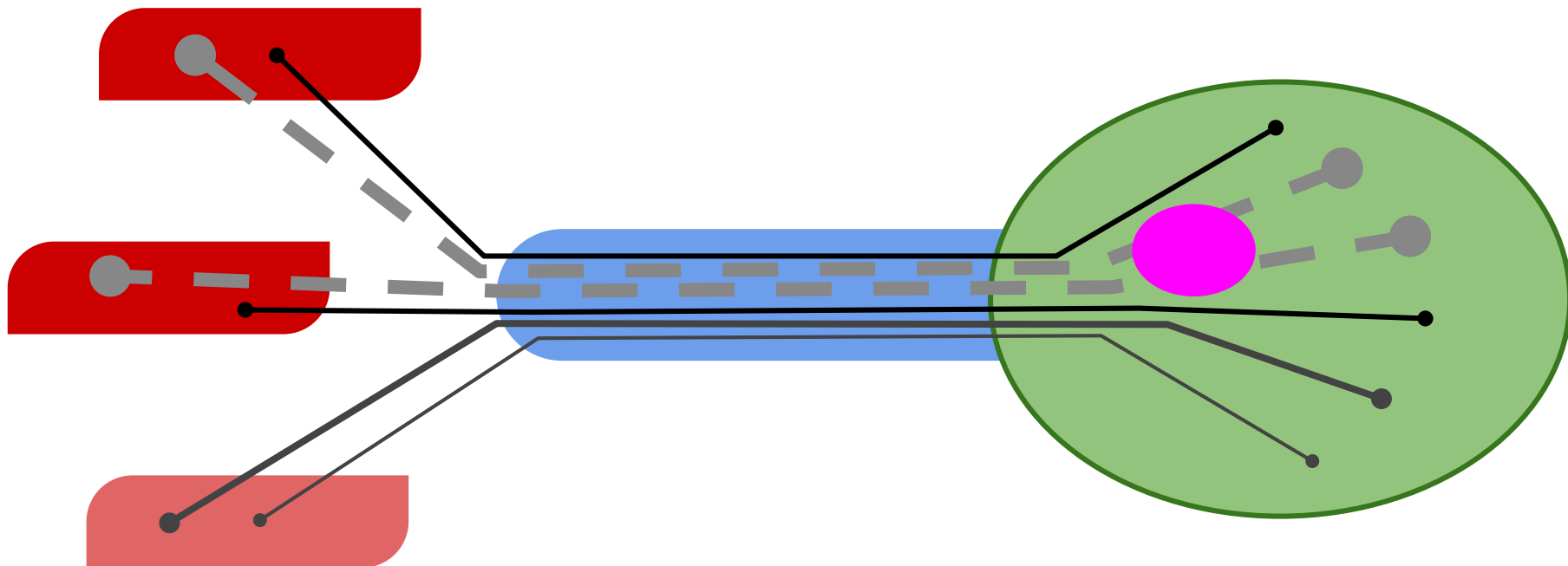
Hachi Manzur Valdivia

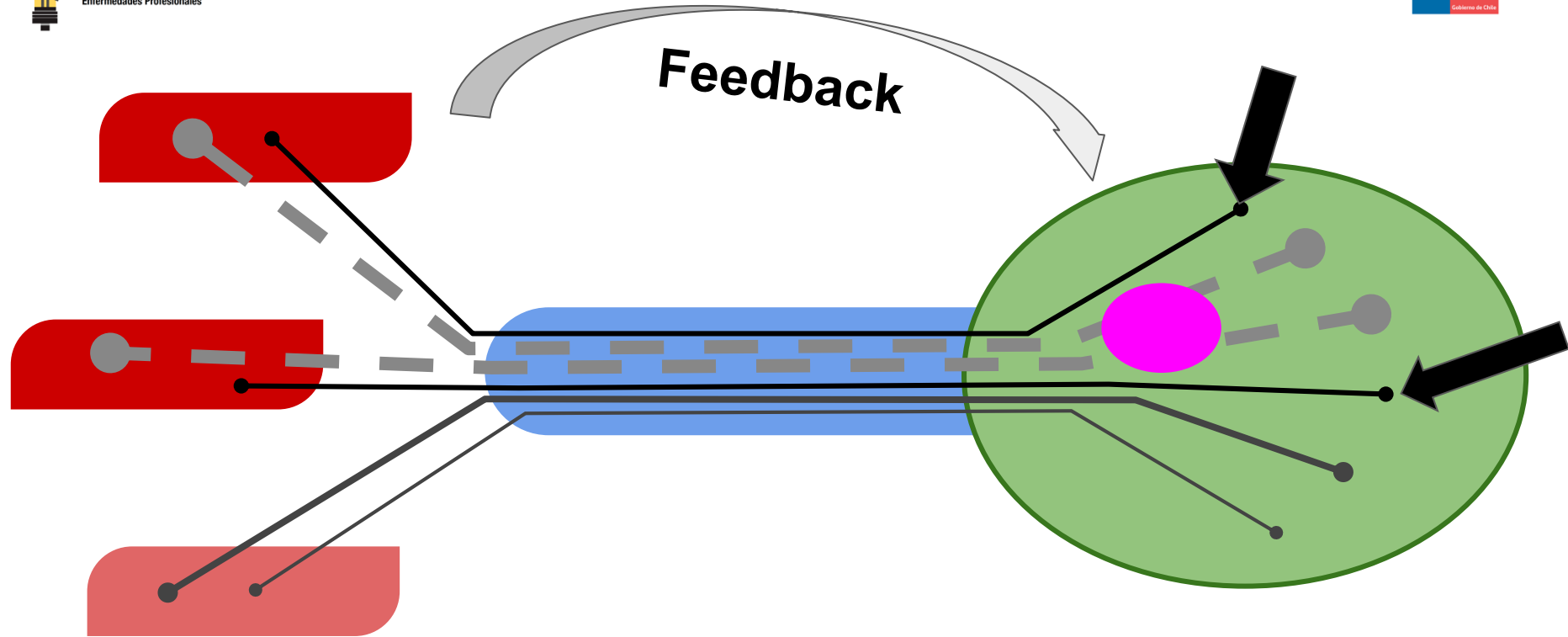
Instituto de Neurociencia Biomédica

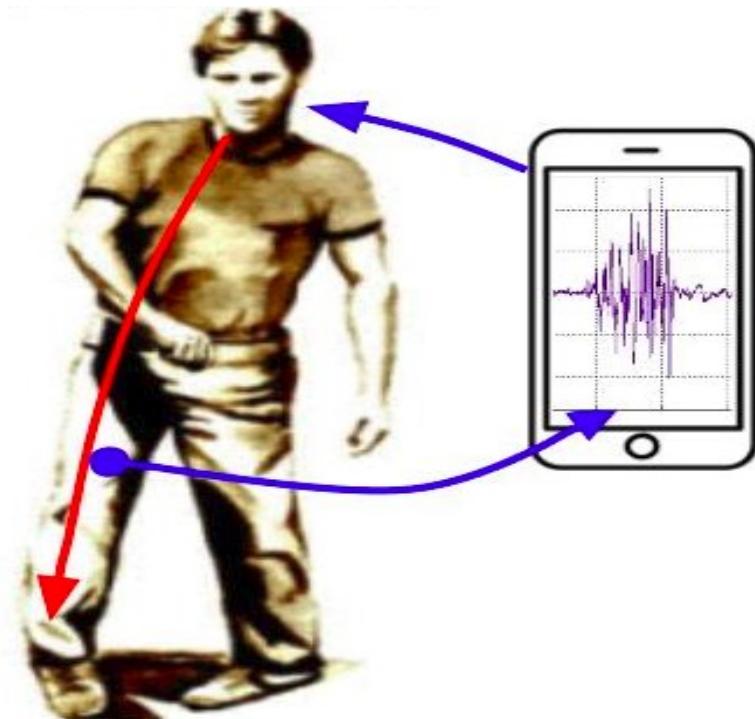












Propiocepción artificial



¿Evidencia ?



Electromyographic Biofeedback in the Treatment of the Hemiplegic Hand

A Placebo-Controlled Study

Baseline values and changes in the active range of motion of wrist extension

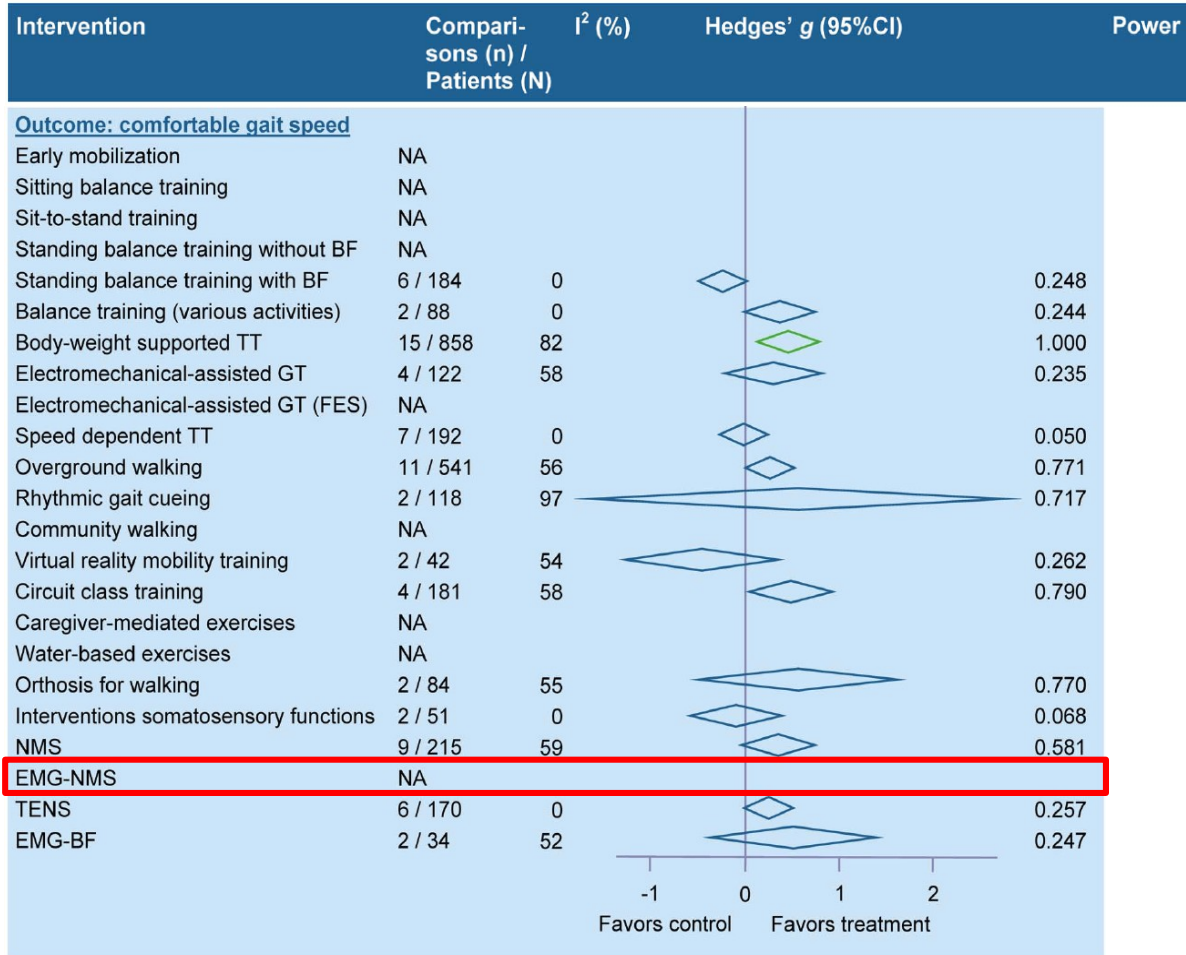
	Baseline	Change from Baseline ^a	P Value
Group 1, n = 14	3.93 ± 5.25	-4.29 (0 to -10)	<0.001
Group 2, n = 13	5.78 ± 6.07	-1.54 (0 to -5)	<0.05
P value	>0.05	<0.05	

^a Values are the mean changes from baseline and 95% confidence intervals for the mean.

Baseline values and changes in the surface electromyographic potentials during isometric contraction of wrist extensors (in millivolts)

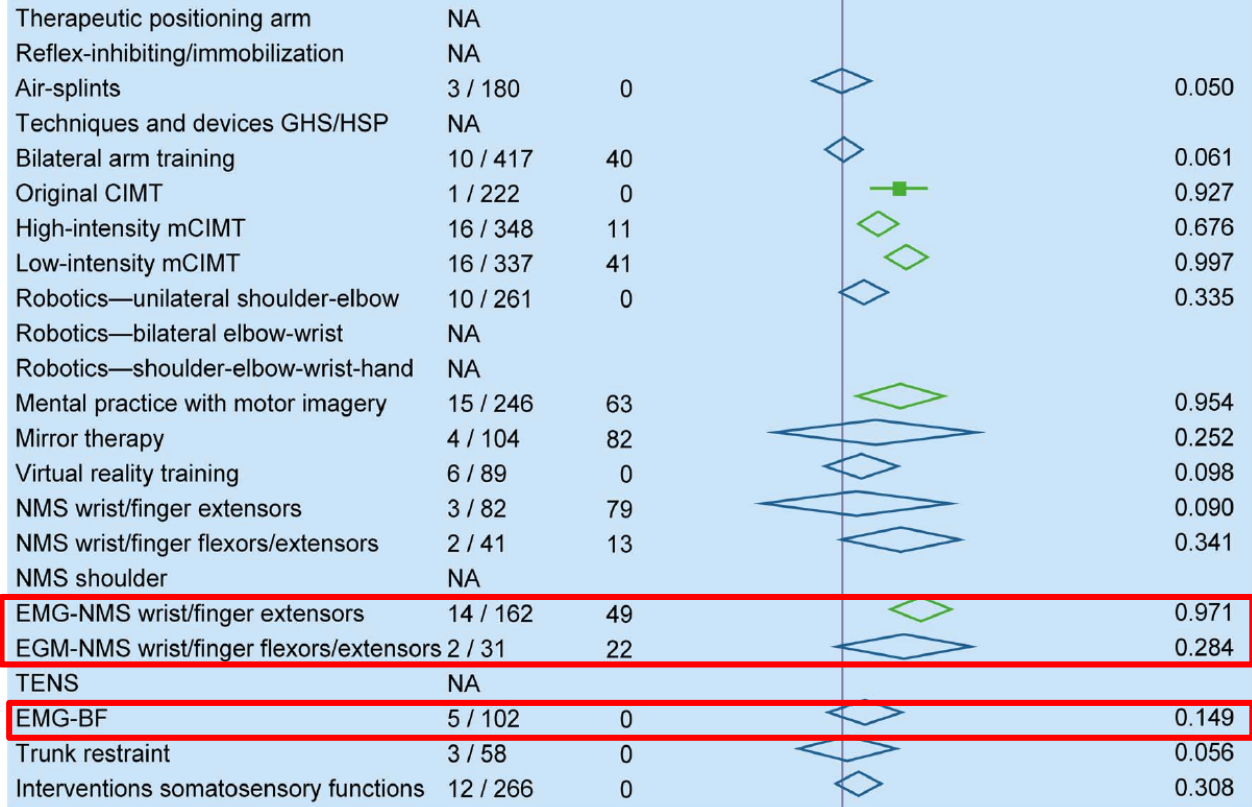
	Before Treatment	Change from Baseline ^a	P Value
Group 1, n = 14	12.58 ± 4.52	-16 (-5 to -43.40)	<0.001
Group 2, n = 13	11.13 ± 2.79	-0.79 (0 to -2.20)	<0.01
P value	>0.05	<0.001	

^a Values are the mean changes from baseline and 95% confidence intervals for the mean.

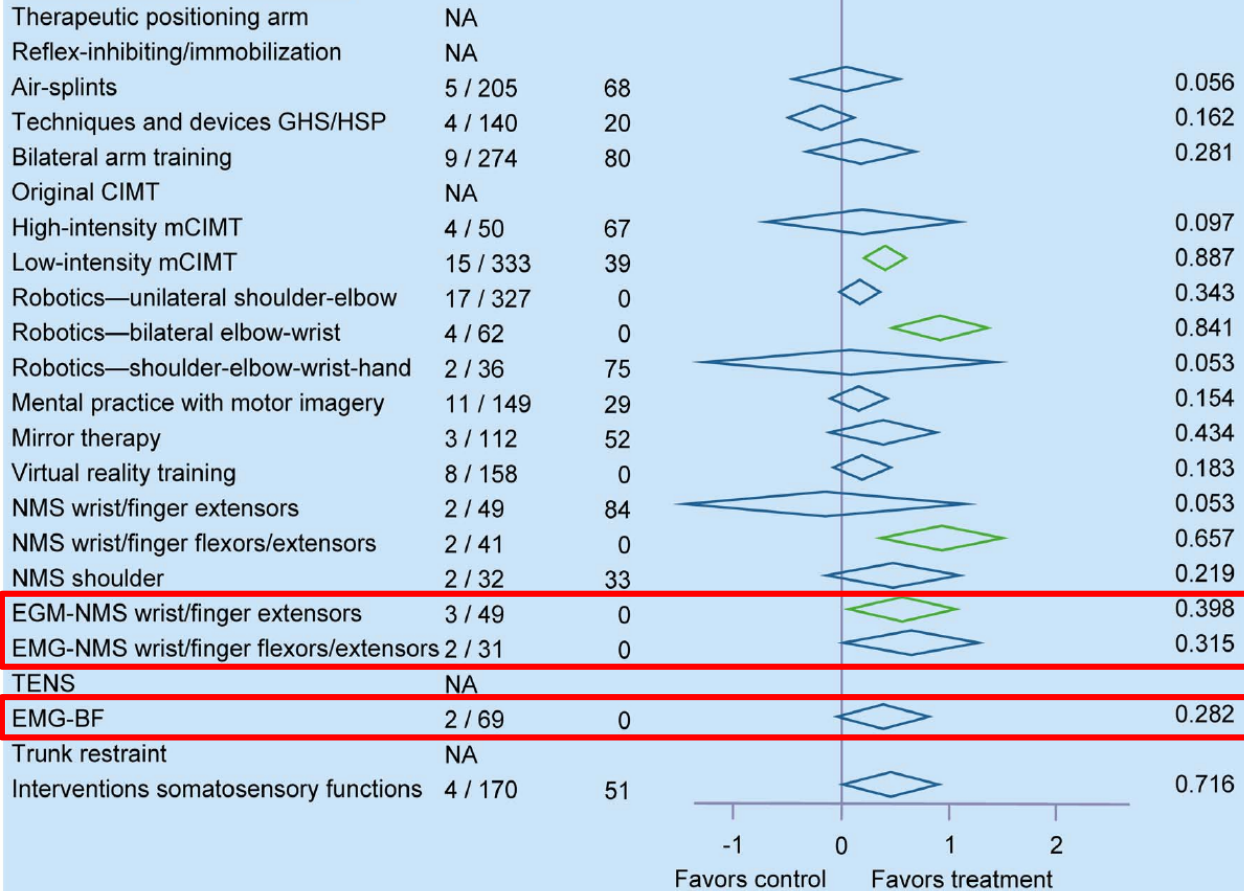


Intervention	Comparisons (n) / Patients (N)	I ² (%)	Hedges' g (95%CI)	Power
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Outcome: arm-hand activities



Outcome: motor function arm



The Use of Biofeedback in the Treatment of Chronic Dysphagia in Stroke Patients

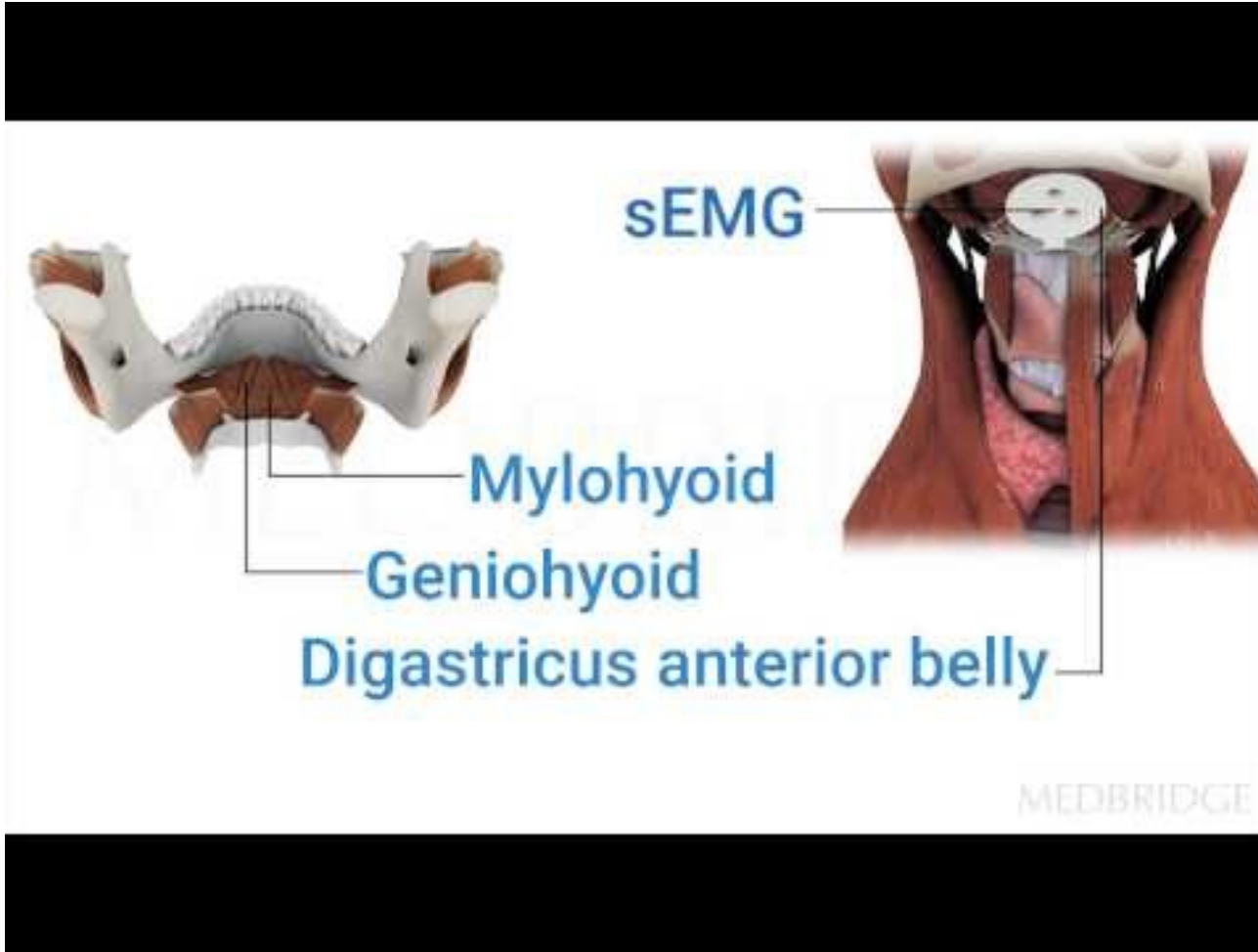
H.C.A. Bogaardt W. Grolman W.J. Fokkens

Department of Otorhinolaryngology, Academic Medical Center, University of Amsterdam, Amsterdam, The Netherlands

Table 2. Functional Oral Intake Scale

Level	Description
-------	-------------

- | | |
|---|--|
| 1 | Nothing by mouth |
| 2 | Tube-dependent with minimal attempts of food or liquid |
| 3 | Tube-dependent with consistent oral intake of food or liquid |
| 4 | Total oral diet of a single consistency |
| 5 | Total oral diet with multiple consistencies but requiring special preparation or compensations |
| 6 | Total oral diet without special preparation but with specific food limitations |
| 7 | Total oral diet without restrictions |



sEMG

Mylohyoid

Geniohyoid

Digastricus anterior belly

MEDBRIDGE

The Use of Biofeedback in the Treatment of Chronic Dysphagia in Stroke Patients

H.C.A. Bogaardt W. Grolman W.J. Fokkens

Department of Otorhinolaryngology, Academic Medical Center, University of Amsterdam, Amsterdam, The Netherlands

Table 3. Treatment data and outcomes

Patient	Sessions	Total days of treatment	Pretreatment FOIS	Posttreatment FOIS	Pretreatment PEG	Posttreatment PEG
1	4	46	6	7	no	no
2	6	63	1	6	yes	no
3	7	56	1	6	yes	no
4	3	77	6	7	no	no
5	7	63	1	7	yes	no
6	6	77	2	6	yes	no
7	4	49	2	6	yes	no
8	6	56	1	3 ^a	yes	yes
9	4	29	6	9 ^b	no	no
10	15	168	1	2 ^c	yes	yes
11	9	153	1	6	yes	no
Mean	6.4	76.1	2.6	5.6		
SD	3.3	44.0	2.3	1.6		
Median	6	63	1	6 ^d		



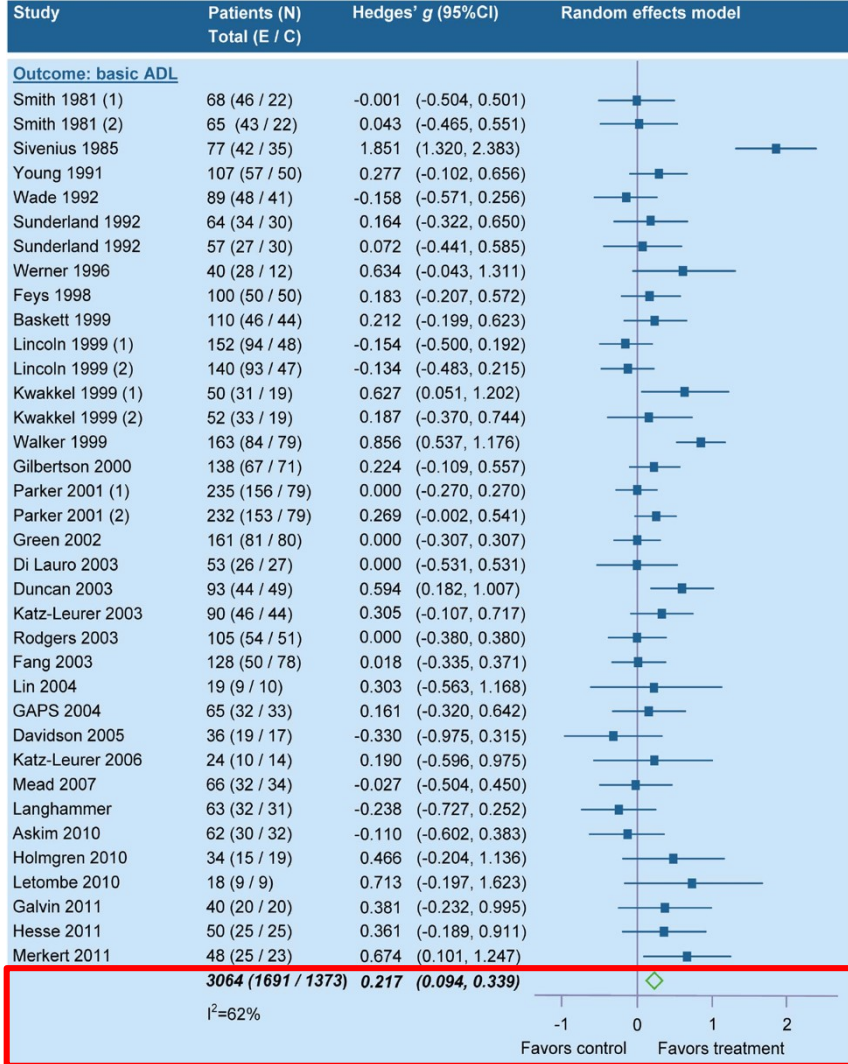
EMG biofeedback for the recovery of motor function after stroke (Review)

Woodford HJ, Price CIM

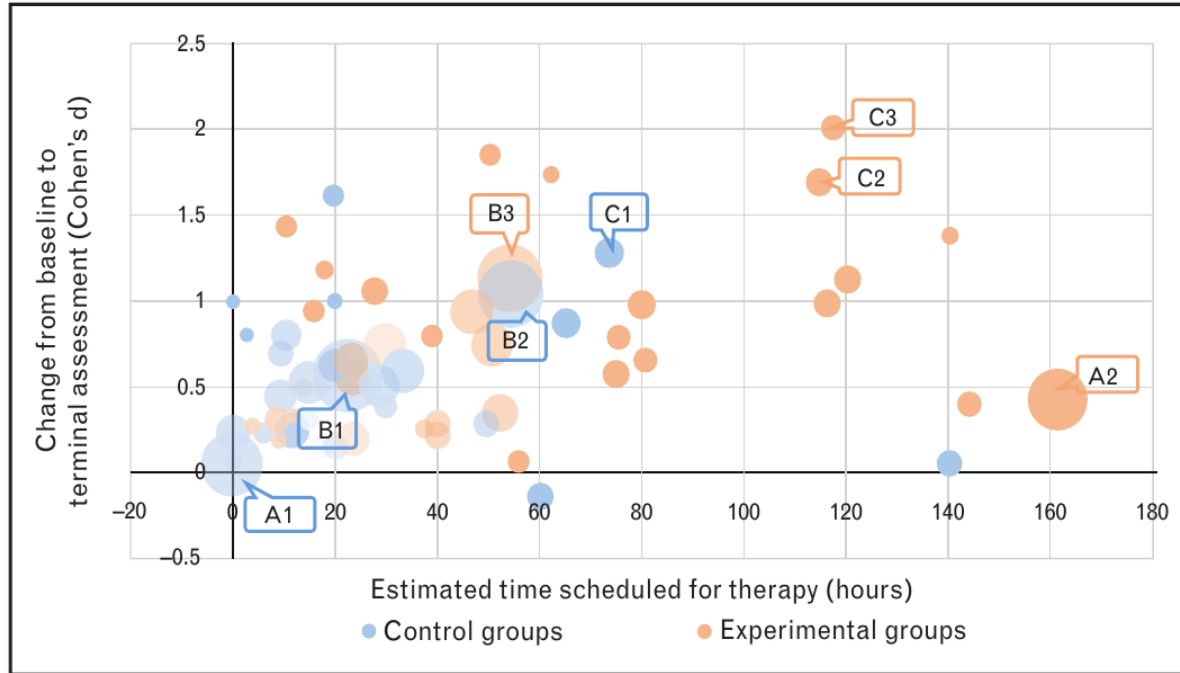
Authors' conclusions

Despite evidence from a small number of individual studies to suggest that EMG-BFB plus standard physiotherapy produces improvements in motor power, functional recovery and gait quality when compared to standard physiotherapy alone, combination of all the identified studies did not find a treatment benefit. Overall the results are limited because the trials were small, generally poorly designed and utilised varying outcome measures.

- Exercise program plus EMG-BFB or exercise plus placebo EMG-BFB 20-minute sessions 5 times a week for 4 weeks.
- Physiotherapy alone vs physiotherapy plus EMG-BFB 45-minute sessions 3 times a week for 5 weeks
- Physiotherapy alone vs physiotherapy plus EMG-BFB 30 to 40-minute treatment sessions 3 times a week for 4 weeks
- **Physiotherapy plus EMG-BFB vs physiotherapy alone**
- Exercise program plus EMG-BFB or exercise plus placebo EMG-BFB 15-minute sessions twice a week for 6 weeks
- Physiotherapy alone vs physiotherapy plus EMG-BFB 30-minute sessions 3 times a week for 6 weeks
- **Physiotherapy alone vs physiotherapy plus EMG-BFB**
- 20 sessions of EMG-BFB plus physiotherapy or physiotherapy alone
- **EMG plus physical therapy vs physical therapy alone**
- **Physiotherapy alone vs physiotherapy plus EMG-BFB**
- **EMG plus physical therapy vs physical therapy alone**



Dose and timing in neurorehabilitation: prescribing motor therapy after stroke



Suficiente !!!





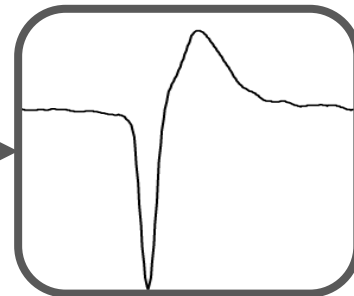
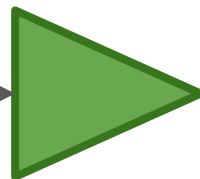
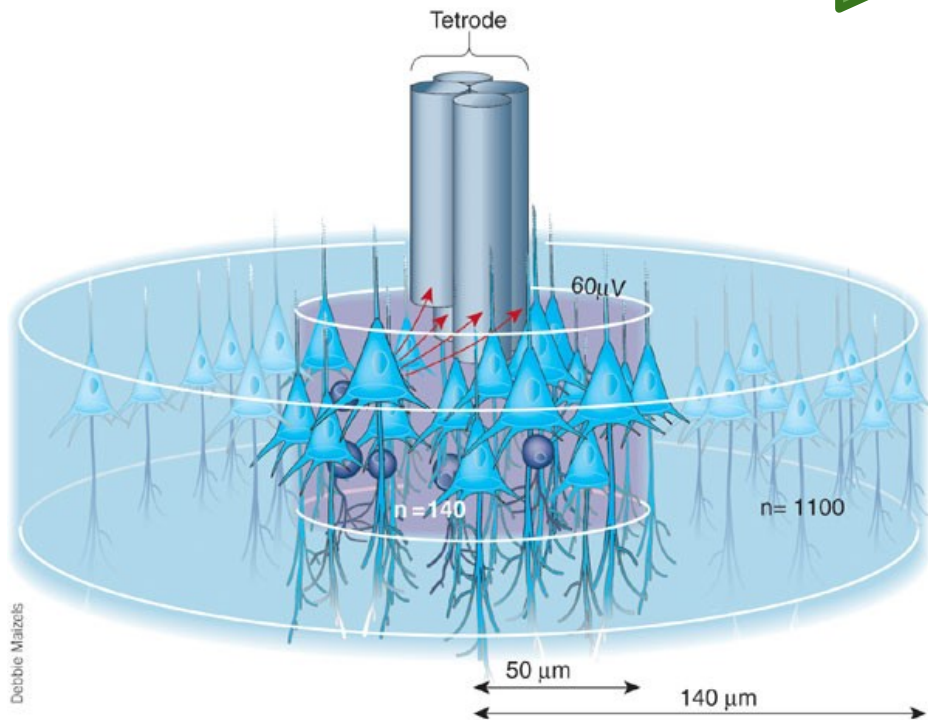
ALTA DOSIS

REHABILITACIÓN

Lúdico

Electromiógrafo

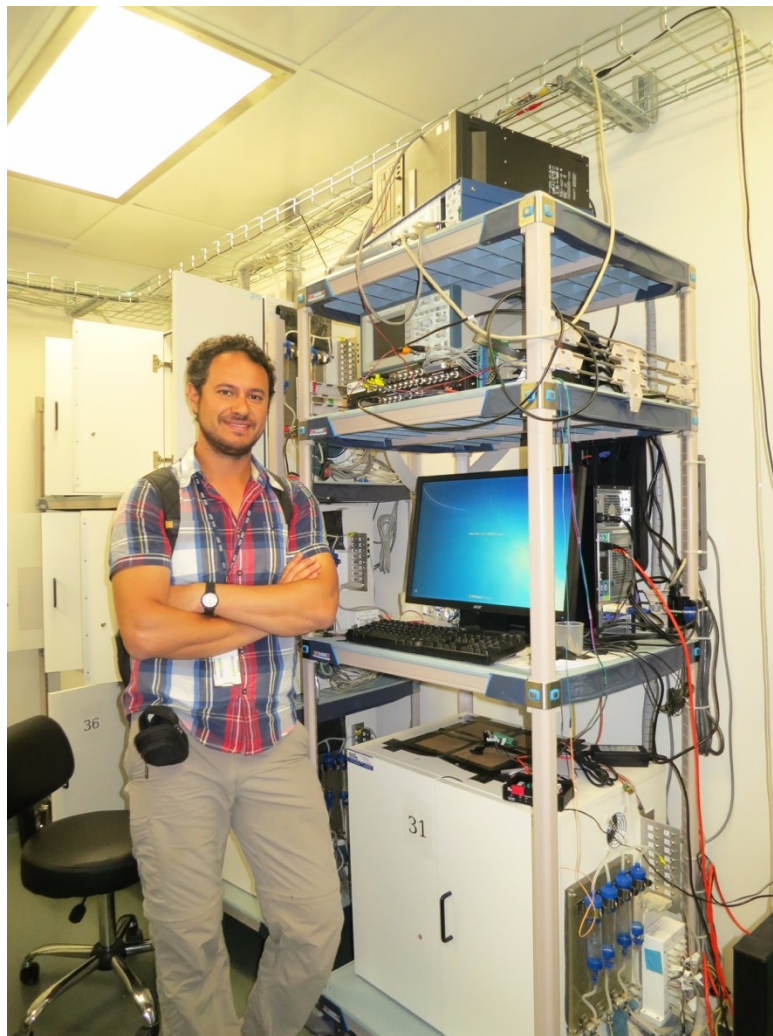
BAJO COSTO

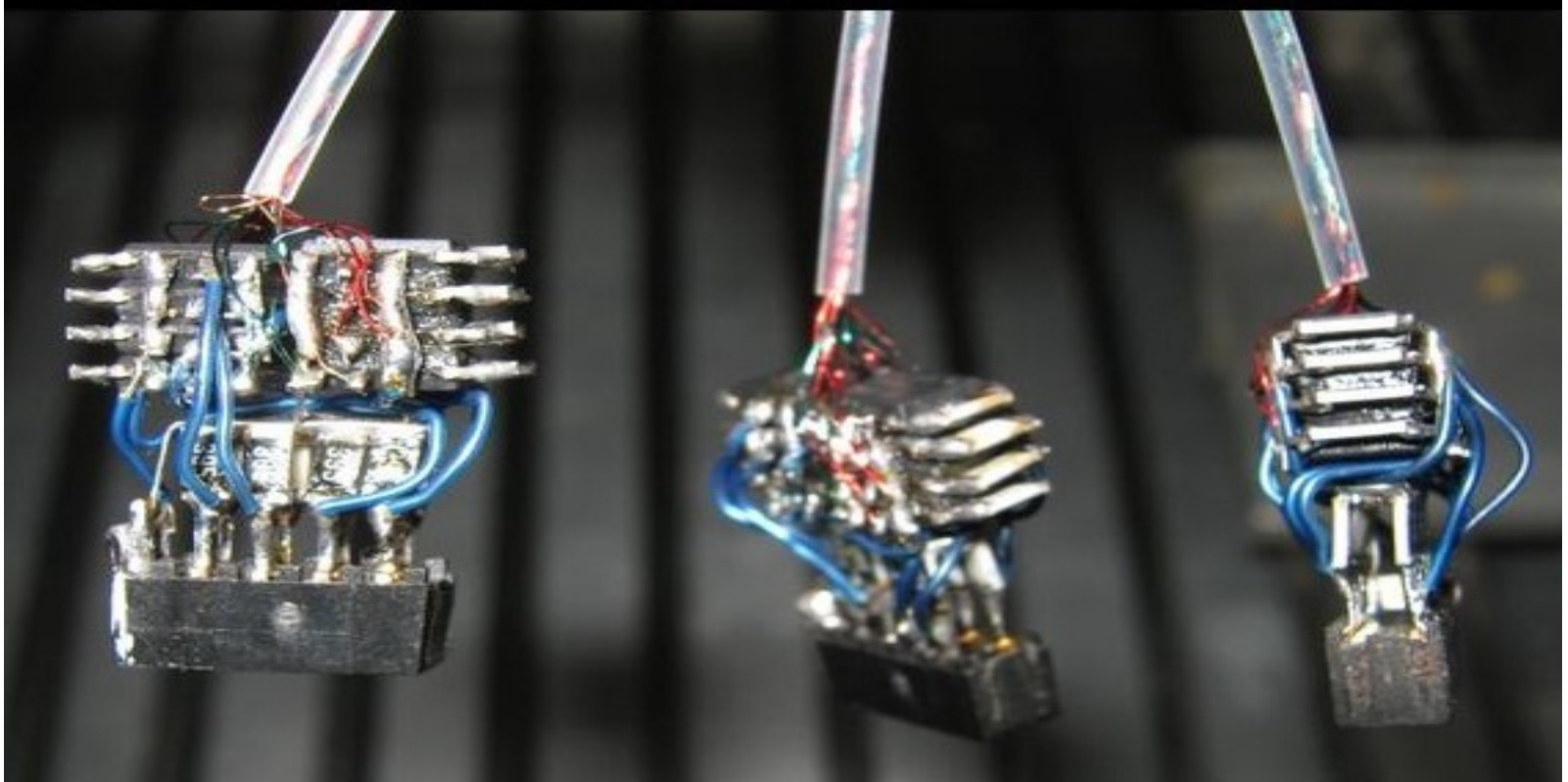


Debbie Maizels



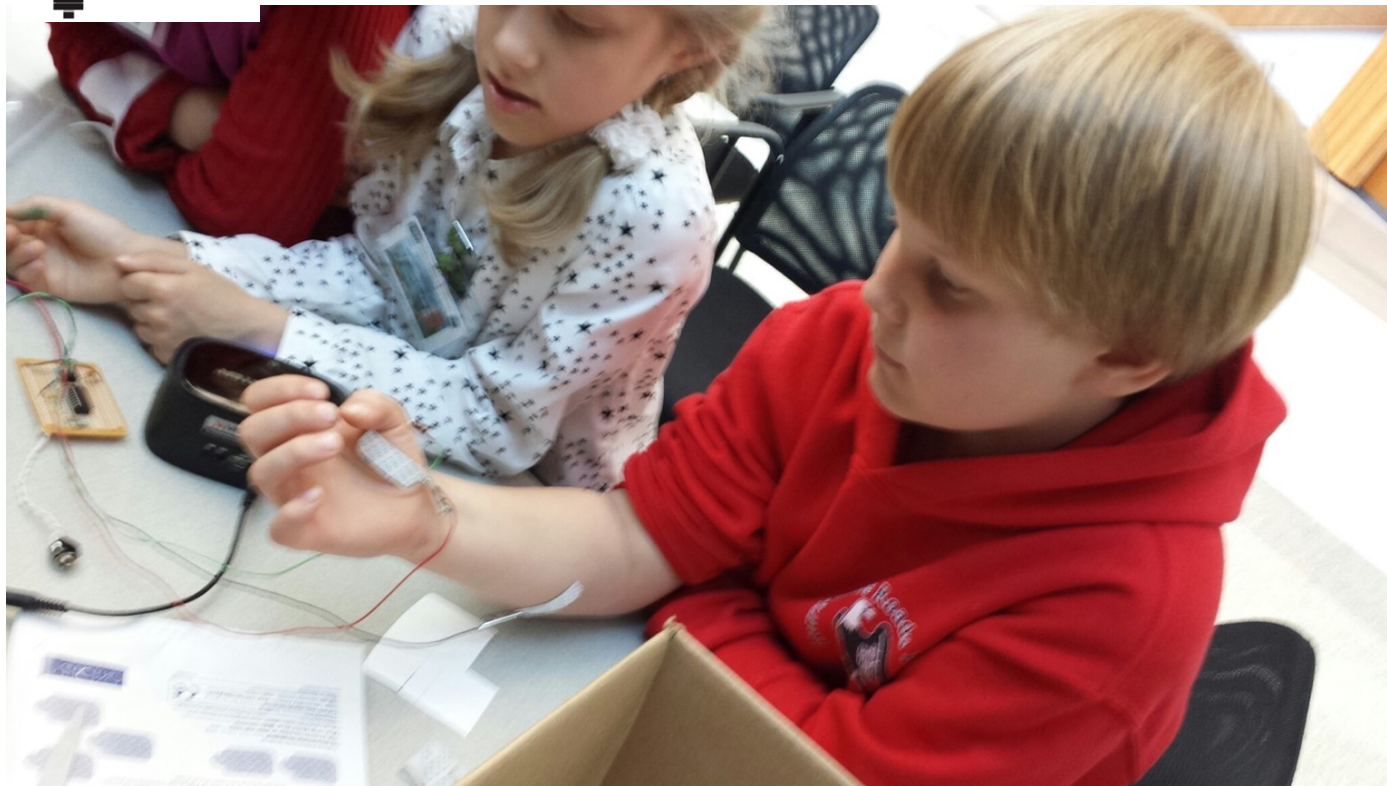
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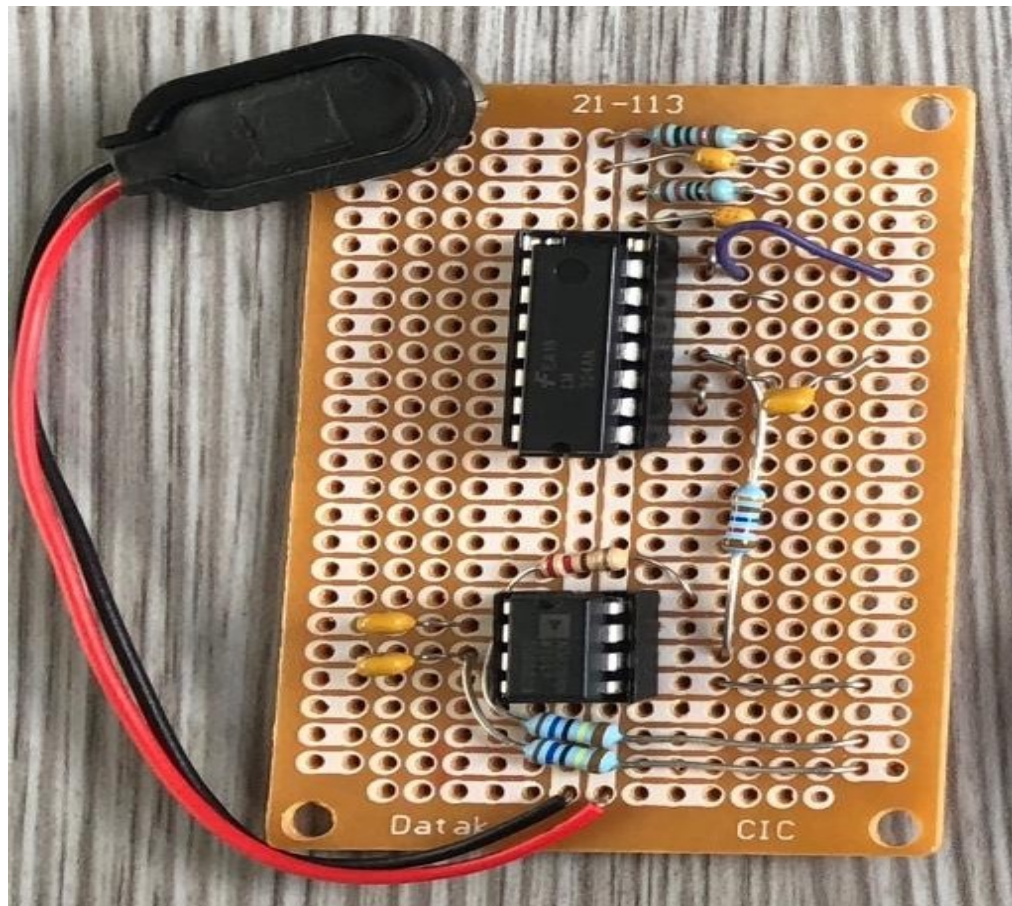






Myofeedbackapparaat







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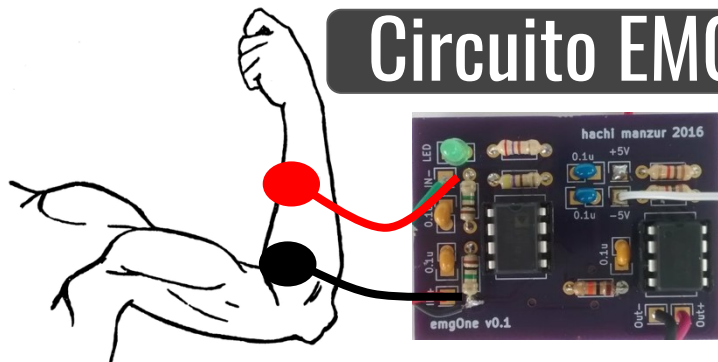
EMG One





Arquitectura del sistema

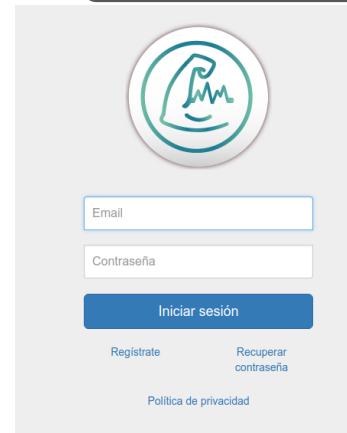
Circuito EMG



Smartphone App

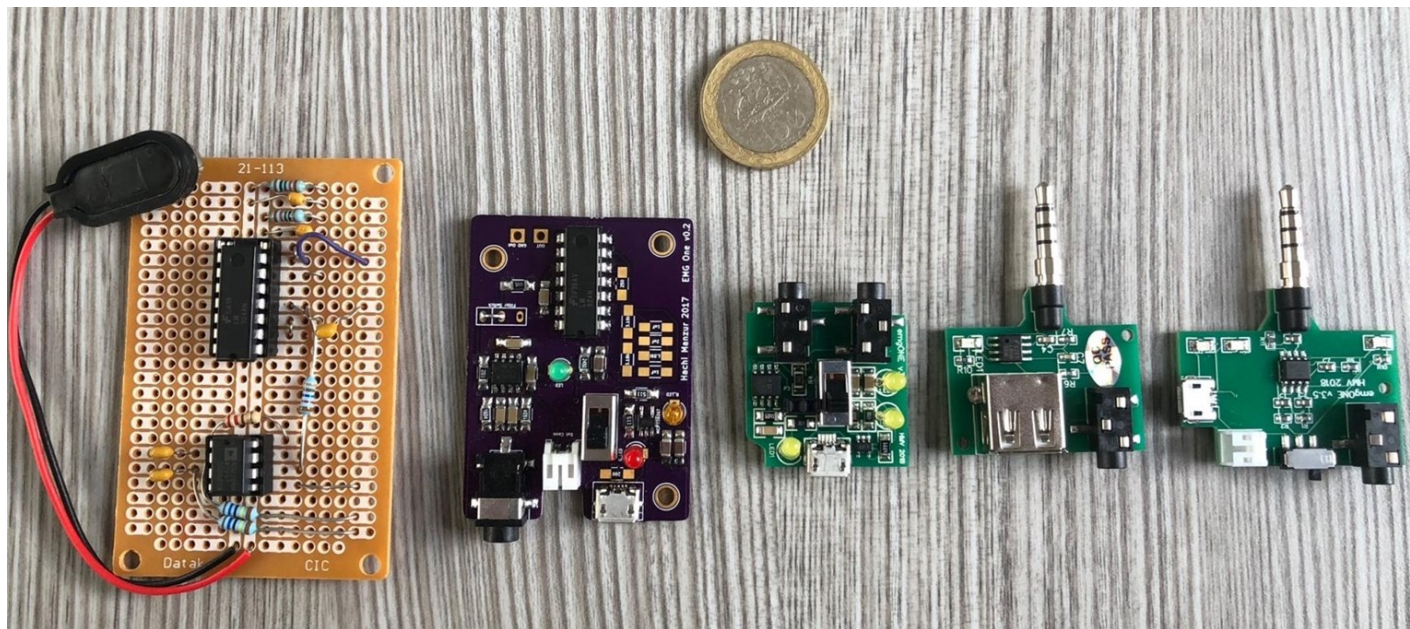


Servidor



www.emgone.cl







Beneficios

Disminución de costos

- Equipos baratos
- Traslado de pacientes
- Horas de uso de instalaciones de atención

Rehabilitación en casa

Seguimiento telemétrico

Efecto amplificador / multiplicador del rol del terapeuta

En ningún caso reemplaza al terapeuta

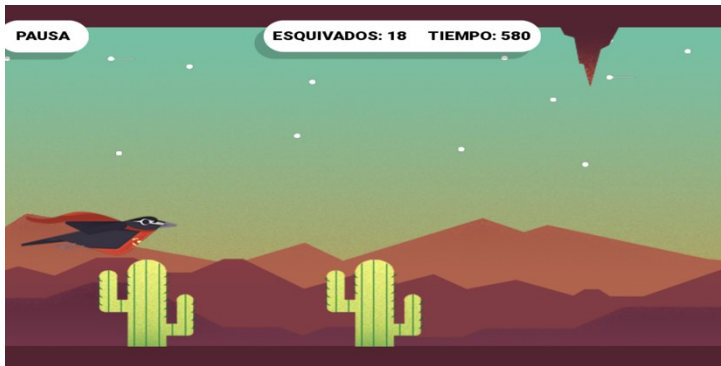
Multifuncional y de pequeño tamaño: todo tipo de instalaciones, desde gimnasios de rehabilitación a instalaciones hospitalarias de aislamiento

Beneficios

Pequeño, cómodo y de bajo costo en comparación a EMG tradicionales



Fácil de usar. Interfaz amigable e intuitiva

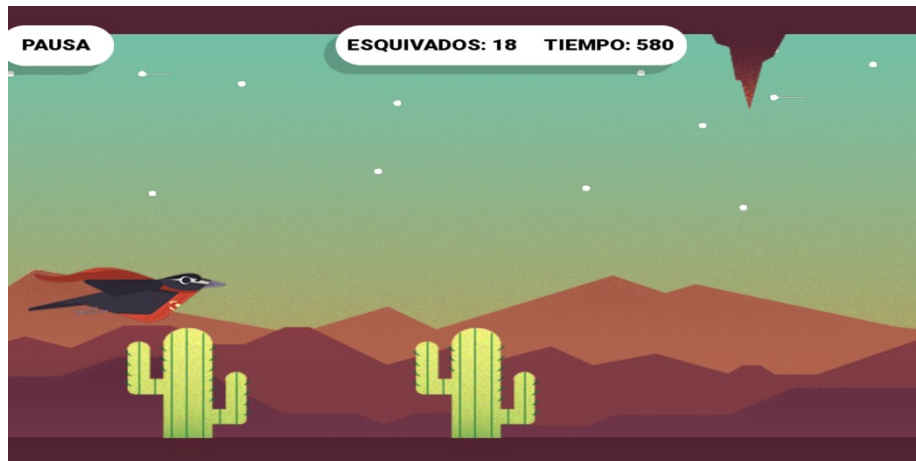


Beneficios

Maximización del número de pacientes atendidos

**Registro de distintos tipos de músculos
Distintas funciones para cada terapeuta**

**Registro a distancia de avances del paciente por
telemetría de registros**

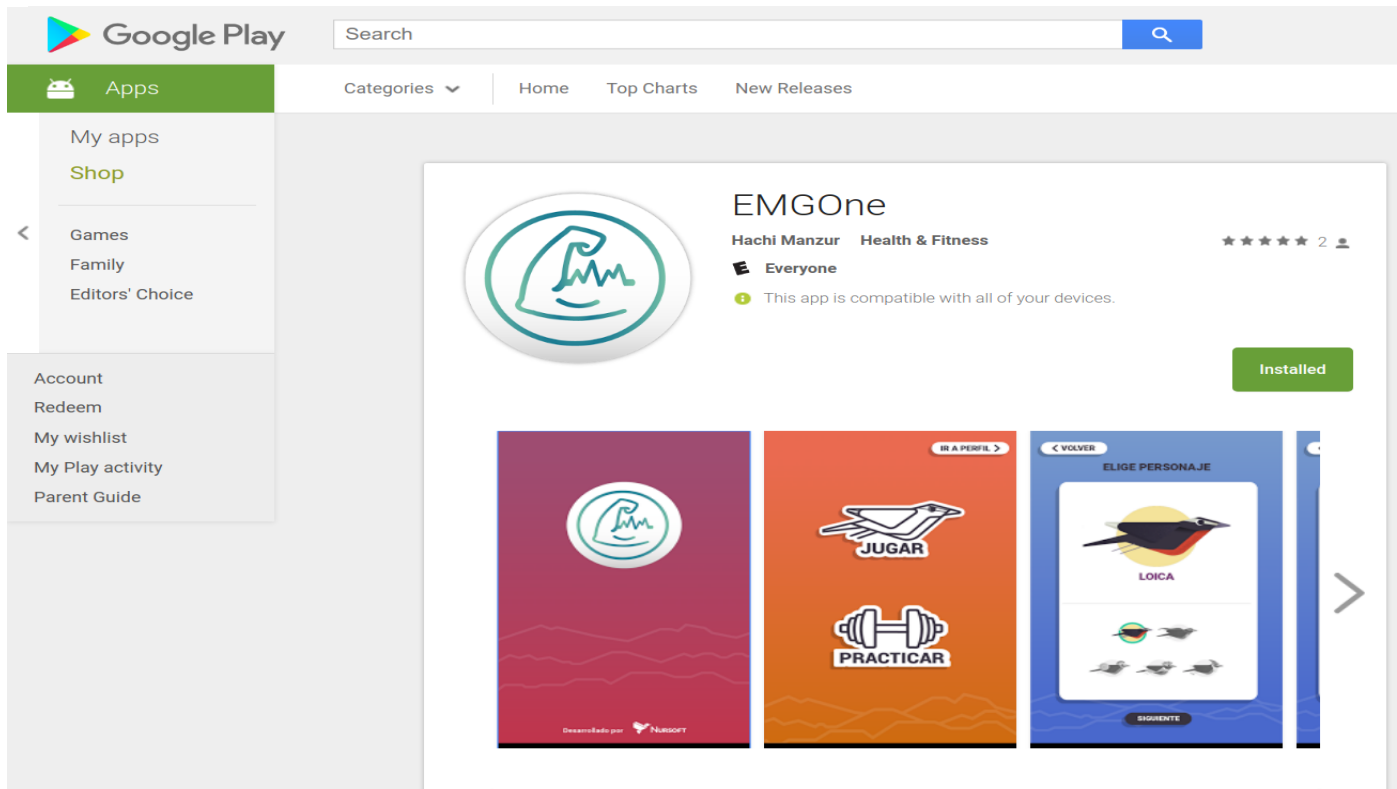


Fuerza / Resistencia

Coordinación / Control

Velocidad

Relajar / Contraer



The screenshot displays the Google Play Store interface for the EMGOne app. At the top, the Google Play logo and a search bar are visible. Below the search bar, navigation options include 'Apps', 'Categories', 'Home', 'Top Charts', and 'New Releases'. A left-hand menu lists 'My apps', 'Shop', 'Games', 'Family', 'Editors' Choice', 'Account', 'Redeem', 'My wishlist', 'My Play activity', and 'Parent Guide'. The main content area features the EMGOne app card, which includes the app icon, the name 'EMGOne', the developer 'Hachi Manzur', the category 'Health & Fitness', a 2-star rating, and an 'Everyone' age rating. A green 'Installed' button is present. Below the app card, three promotional banners are shown: the first with the app icon, the second with a bird icon and the text 'JUGAR' and 'PRACTICAR', and the third with a bird icon and the text 'ELIGE PERSONAJE' and 'LOICA'. The bottom of the screen shows logos for 'MUTUAL de seguros', 'ACHS', 'ist', and 'Superintendencia de Seguridad Social'.



Emgone - Mozilla Firefox

Emgone

www.emgone.cl/users/sessions/sign_in

100%

Email

Contraseña

Iniciar sesión

[Regístrate](#) [Recuperar contraseña](#)

[Política de privacidad](#)

WIP: Desarrollo por Nursoft!

EMG One - Mozilla Firefox

EMG One

www.emgone.cl

Historial de ejercicios

Hachi Manzur

Nivel 32

Historial de ejercicios

Estadísticas de ejercicios

Exportar

Editar cuenta

Usuarios

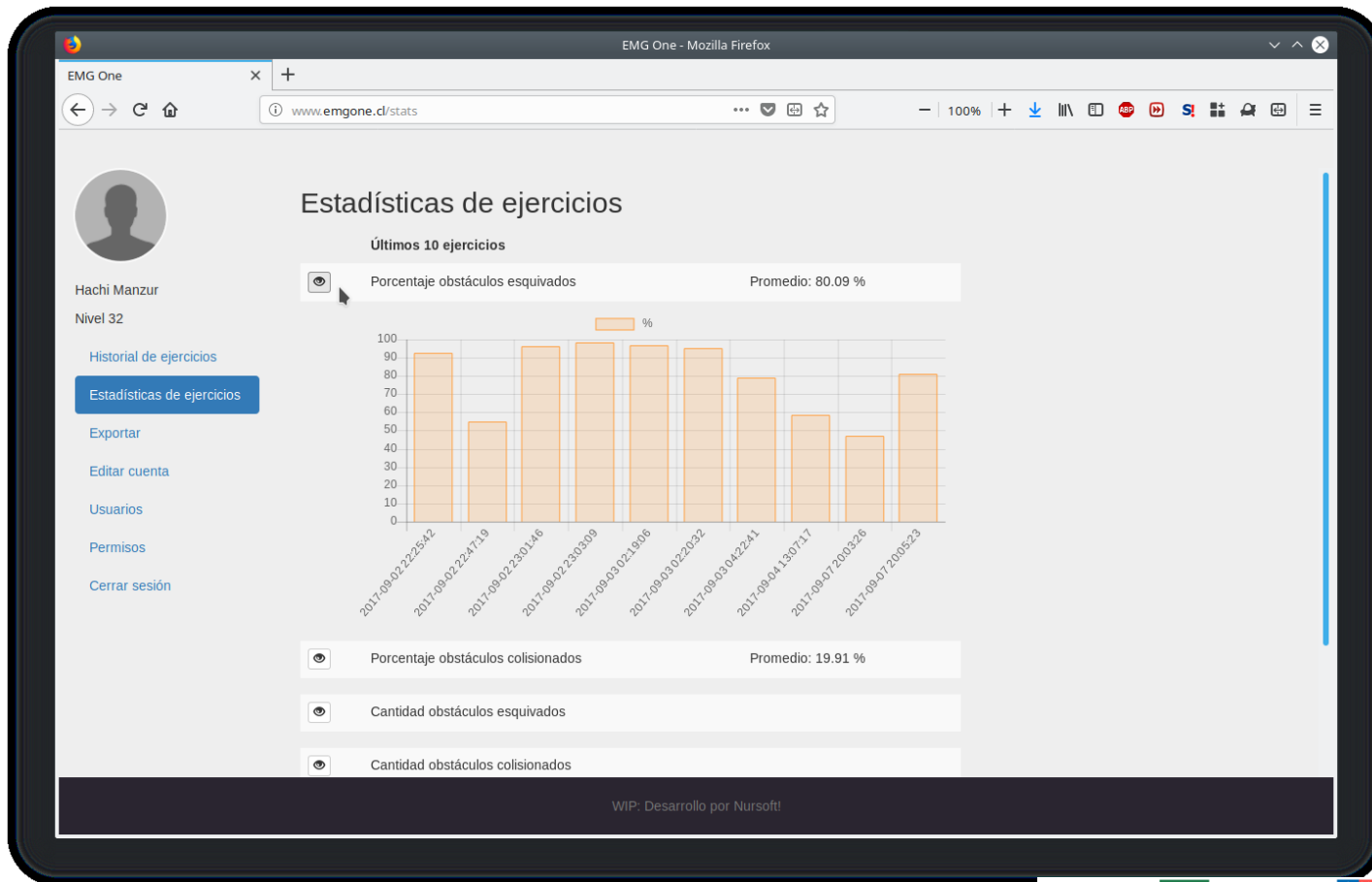
Permisos

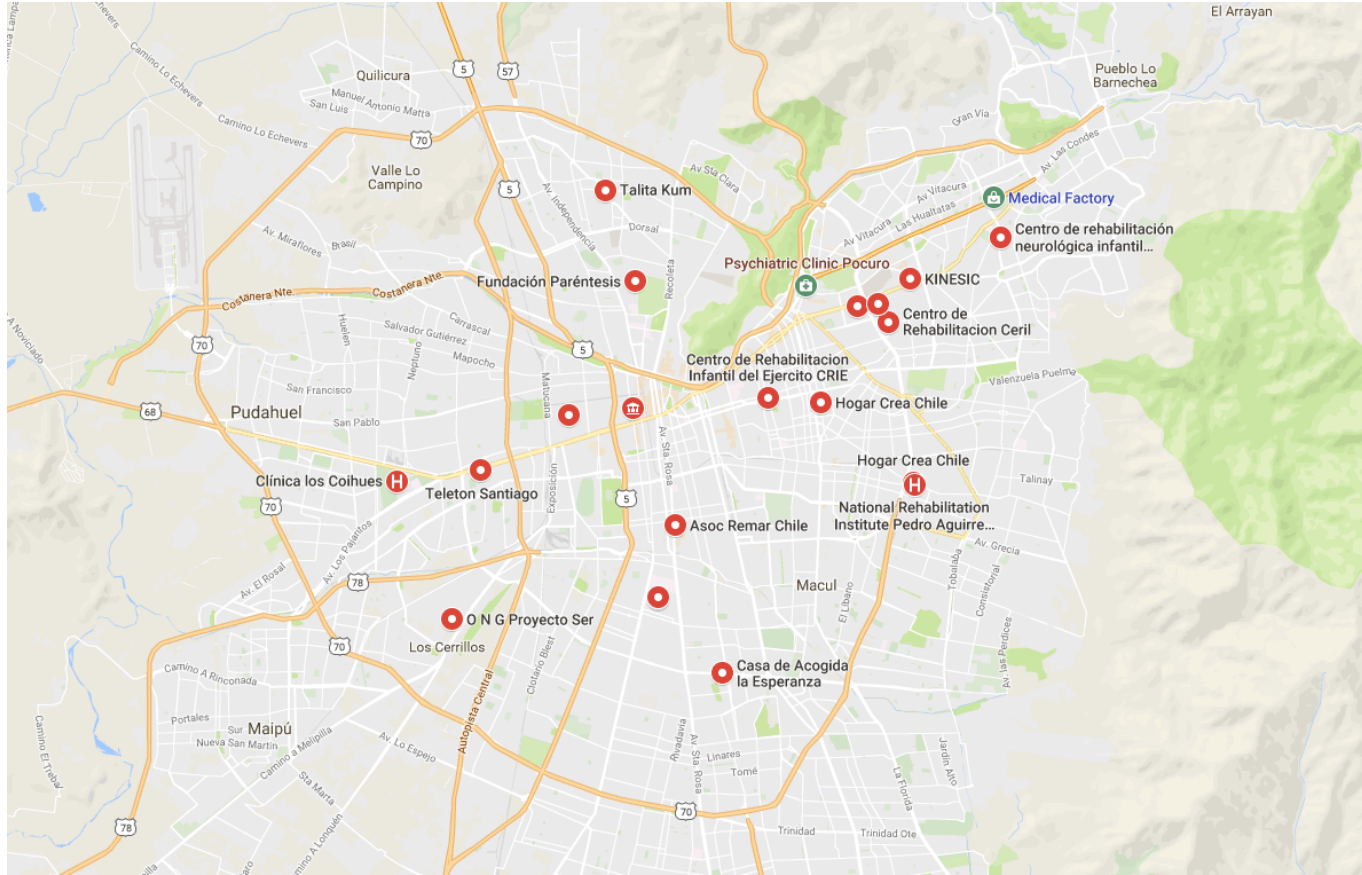
Cerrar sesión

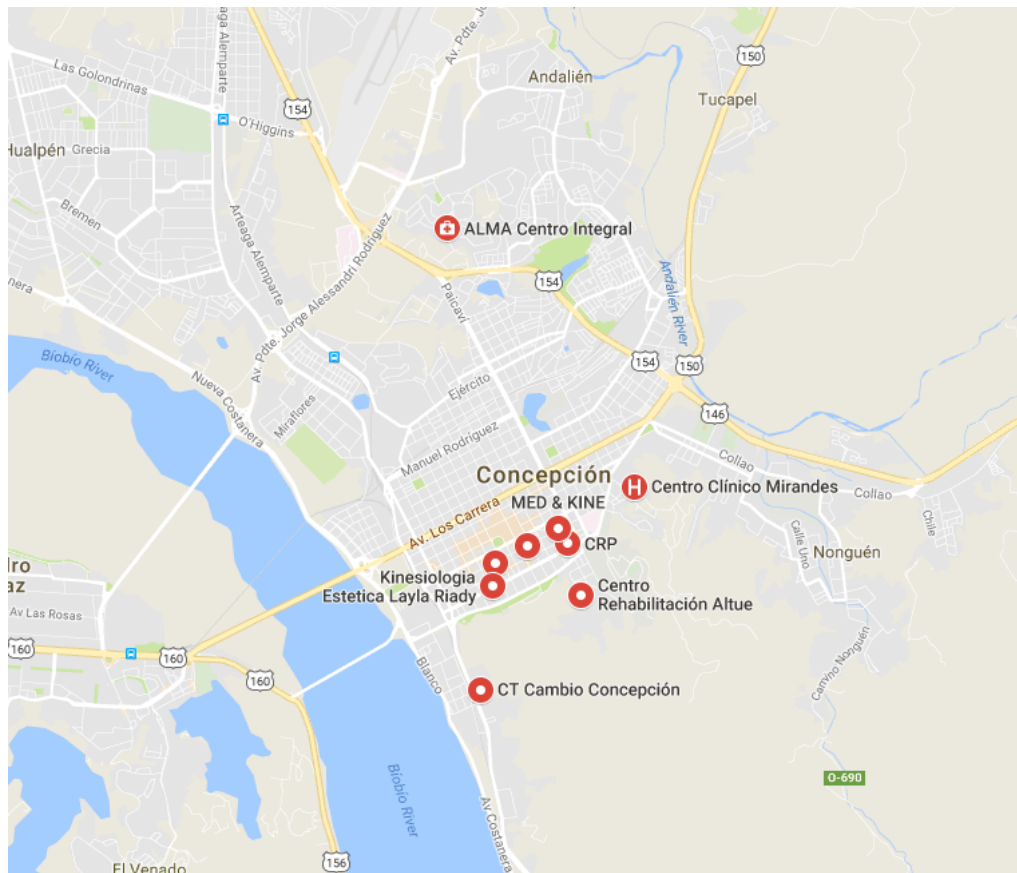
Fecha	Tipo	Modo de Juego	Lugar del Cuerpo	Velocidad	Tiempo de juego	Gravedad	Tamaño	Periodicidad	Duración/Descanso	Esquivados	Colisionados
2017-09-07 20:05:23	Práctica	(sin informacion)		0.5	15	0.0x	0	0 [s]	(n.d.)	13	3
2017-09-07 20:03:26	Práctica	(sin informacion)		0.5	15	0.0x	0	0 [s]	(n.d.)	8	9
2017-09-04 13:07:17	Práctica	(sin informacion)	Brazo izquierdo	0.75	600	0.0x	0	0 [s]	(n.d.)	199	141
2017-09-03 04:22:41	Práctica	(sin informacion)	Brazo izquierdo	1.0	600	0.0x	0	0 [s]	(n.d.)	786	209
2017-09-03 02:20:32	Práctica	(sin informacion)	Brazo izquierdo	1.0	60	0.0x	0	0 [s]	(n.d.)	64	3

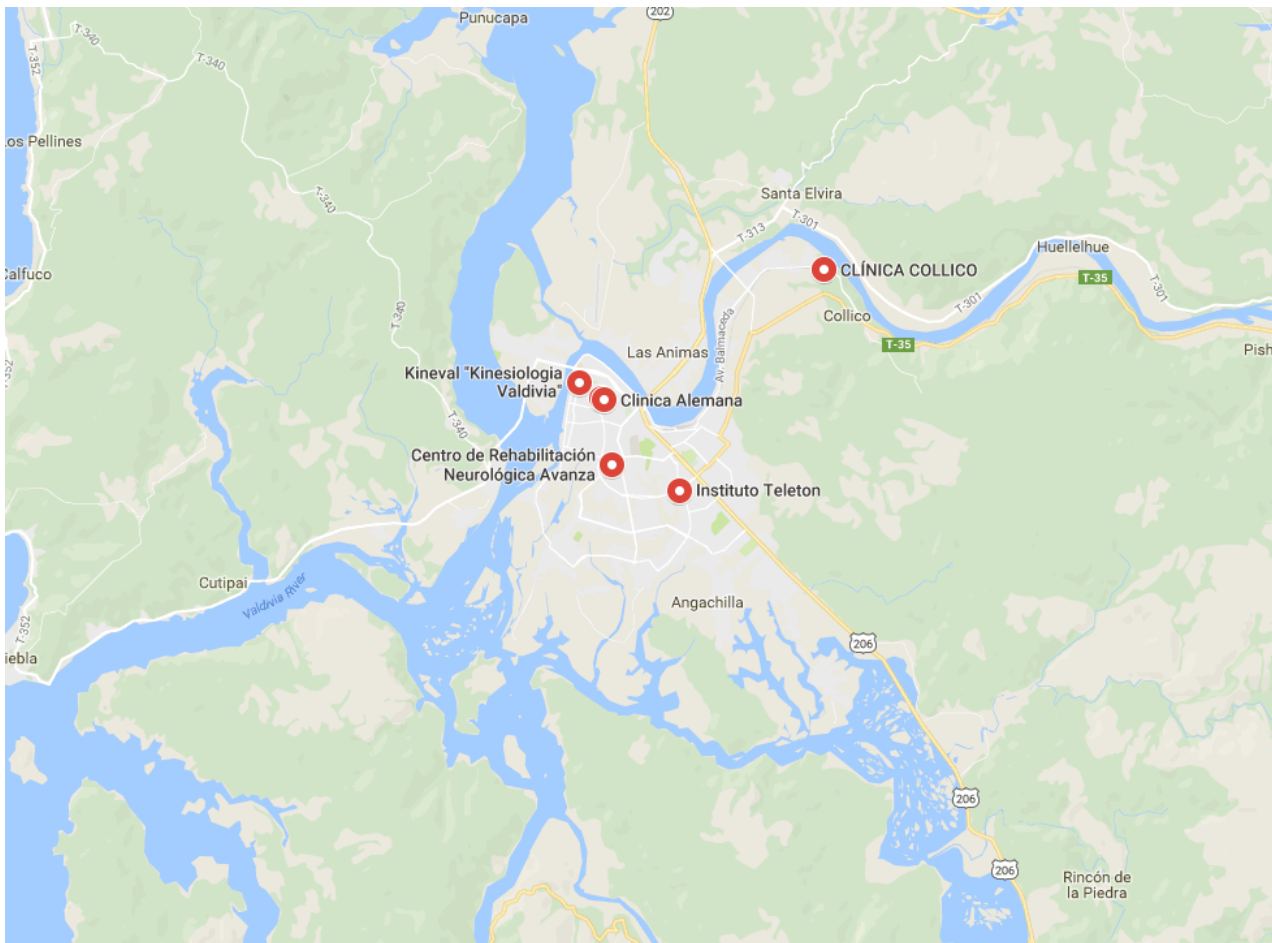
« 1 2 3 »

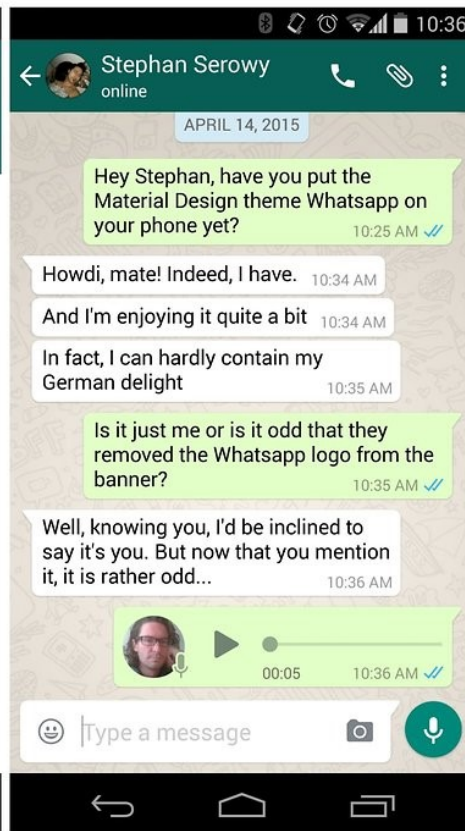
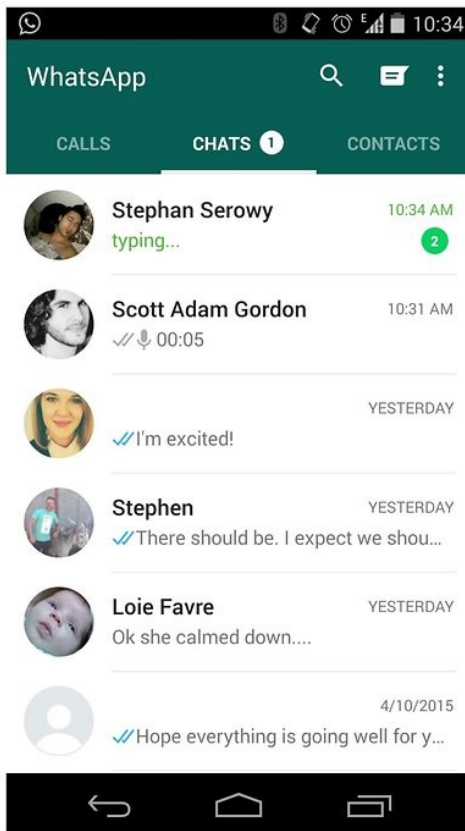
WIP: Desarrollo por Nursoft!













News Feed

Lauren Smith
Just now

What even is this ref?!

Like Comment Share

Shannon Ellis likes Churchill

Churchill
Sponsored Edited

Introducing the Churchill or Not Churchill game. Oh Yes! Play now for a chance to win daily Churchill prizes and enter our prize draw for £500 National Trust Cottage Holiday vouchers! www.bit.ly/ChurchillOrNotChurchillGame

Churchill or not Churchill?

Status Photo Check In

Notifications

Jelly Splash: Helen Banks sent you a request.
50 minutes ago

Grace Booth likes your status: "I genuinely feel sorry for all.."
50 minutes ago

Lesley Kinsey, Meg Williamson and Danielle Ann Worrall like your photo.
4 hours ago

Paula Stott made your photo/her profile picture.
Yesterday at 19:01

Paula Stott made your photo/her profile picture.
Yesterday at 19:01

Paula Stott commented on your photo: "No too busy cleaning up after you let lol"
Yesterday at 18:27

Moxine Hornby, Britany Jade Tyrer and Danielle Ann Worrall like your status: "Dominos for tea!"
Yesterday at 18:12

Paula Stott commented on your status.





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Demo

Agradecimientos

- Sebastián Reyes
- Carolina Astudillo
- Sebastián Gallegos





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