

Telerehabilitation in the Home Versus Therapy In-Clinic for Patients With Stroke

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for the Telerehab Study Investigators

[clinicaltrials.gov NCT02360488](https://clinicaltrials.gov/NCT02360488)



Issues with rehab therapy after stroke

QUANTITY

- financial constraints
- patient can't travel to a rehab therapy provider
- shortage of rehabilitation care in some regions, e.g., rural
- poor patient compliance with assignments
- limited dose at each session (avg 32 arm repetitions/session)

QUALITY

Brain plasticity is greatest when a practiced task is

- challenging
- accompanied by feedback
- motivating
- interesting

124 subjects randomized to intensive arm motor therapy
(a) traditional in-clinic, versus
(b) in-home telerehabilitation

Key Inclusion criteria

1. Age ≥ 18 years
2. Stroke: ischemia or ICH, 4-36 weeks prior
3. Arm motor Fugl-Meyer score = 22-56 (out of 66)
4. Box & Block score at least 3 blocks in 60 seconds

Key Exclusion criteria

1. Major, active, coexistent neurological or psychiatric disease
2. Other diagnosis substantially affecting paretic arm
3. Severe depression (GDS Score >10)
4. Significant cognitive impairment (MoCA <22)
5. Communication deficits interfering with participation
6. Life expectancy <6 months
7. Non-English speaking

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- 36 treatment sessions (18 supervised + 18 unsupervised), 80 min each, over 6 weeks
- Intensity, duration, and frequency of the intervention is matched across groups
- Assessor-blind, randomized, non-inferiority design
- 12 US StrokeNet enrollment sites

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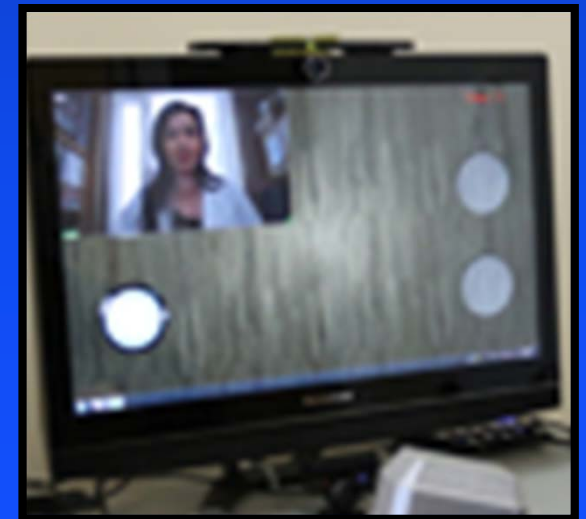
Main Study Aims

- **Aim 1.** Subjects treated via telerehabilitation will show arm motor gains that are not inferior to subjects treated in-clinic.
- **Aim 2.** Targeted education for 6 weeks will increase patient knowledge about stroke prevention and risk factor control.
- **Aim 3.** Subjects in the telerehabilitation arm will show comparable or better
 - activity-inherent motivation (how much therapy is enjoyed)
 - compliance with therapy

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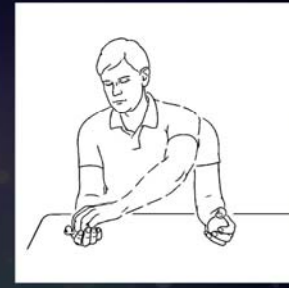
Telerehabilitation: assess, monitor, educate, and treat



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Transfer Object

Grasp and hold object with one hand. Transfer object to other hand. Reverse. Use objects of different shapes, sizes and weight.



Diet	Stroke Facts	Stroke Risk Factors	Effects of Stroke	Exercise
\$1000	\$1000	\$1000	\$1000	\$1000
\$2000	\$2000	\$2000	\$2000	\$2000
\$3000	\$3000	\$3000	\$3000	\$3000
\$4000	\$4000	\$4000	\$4000	\$4000
\$5000	\$5000	\$5000	\$5000	\$5000

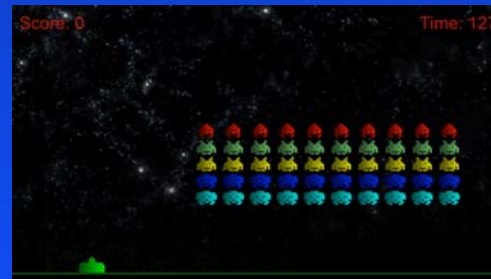
In the past week of arm-related therapy you have been doing as part of this research study, how satisfied are you with the therapy?

I find the tasks/games:

Very displeasurable 1 2 3 4 5 6 7 Very pleasurable

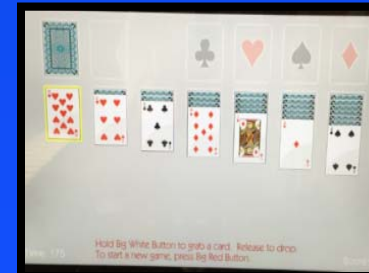
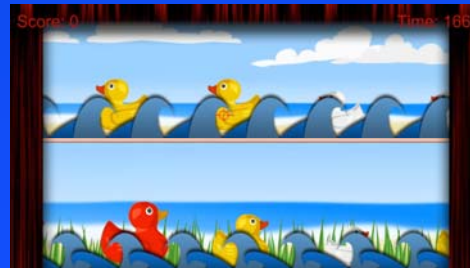
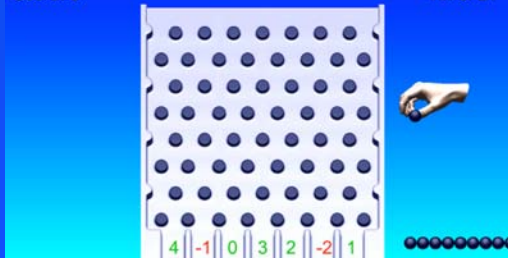
Score: 5

Time: 125



Score: 8

Time: 21



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Parent RCC	Study Site	#	#/ mo
1. LA/Southern California	University of California, Irvine	28	1.1
2. Northwest Stroke Trials Network	Harborview Medical Center	8	0.4
3. Chicago Stroke Trials Consortium	RIC / Shirley Ryan Ability Lab	8	0.4
4. Cleveland Regional	MetroHealth Rehab Instit Ohio	13	0.6
5. Georgia StrokeNet	Emory Rehabilitation Hospital	19	0.8
6. South Carolina Collab Alliance	MUSC Center for Rehabilitation Research in Neurological Conditions	11	0.5
7. Columbia & Cornell	Burke Rehabilitation Hospital	12	0.6
8. New England Regional	Spaulding Rehabilitation Hospital	7	0.3
9. Miami Regional	Brooks Rehabilitation	12	0.9
10. San Diego Regional	University of California, San Diego	5	0.6
11. Columbia & Cornell	Kessler Rehabilitation Center-	1	0.1
12. NY City Collaborative Regional	Mount Sinai Medical Center	0	0

Final patient was randomized January 2018

Data will be sealed ~April 2018

Results ~May 2018

If telerehab = non-inferior and useful, might study in future:

- drug trials
- expanded modalities (leg, speech, cognitive, vocational, etc)
- long-term Management of Multiple Chronic Conditions
- improved transitions of care
- big data for stroke survivors, outcomes
- stroke smart home

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