

SUBJECT INFORMATION

Study Name:

FES Modeling

Researchers:

(EMG) (set levels) (ran stim trials)
Jessica, Sistania, Luke, Lena, Trisha, Steven

Date:

[REDACTED] 2017

Subject Code:

FES-Gator - Stroke 01

X Age (years):

73

X Date of Stroke:
(month/year)

[REDACTED] 95 m. post-stroke

X Affected Side:

☒ Right
☐ Left

X Sex:

☐ Female
☒ Male

X Ethnicity:

☐ Hispanic or Latino
☒ Not Hispanic or Latino
☐ Not Reported

X Race:

☐ American Indian/Alaska Native
☒ Asian
☐ Native Hawaiian or Other Pacific Islander
☐ Black or African American
☐ White
☐ More Than One Race
☐ Not Reported

Consent:

☒ Aging and Impairment (83425)
☐ Human Interaction (82414)

Payment Amount:

\$50

Payment Source:

Emory Discretionary

EMG Gains

Transmitter 6			
Frequency: 180			
Battery Voltage: 9.64			
Channel	Muscle	Cord	Gain
✓ 1	TA-R	L	↓
✓ 2	LGAS-R		↑
✓ 3	VLAT-R	L	
✓ 4	RFEM-R		↑
✓ 5	BFLH-R	S	
✓ 6	ADMG-R		↑
✓ 7	GMAX-R	S	↑
✓ 8	TFL-R		↑
	Ground		

Transmitter 1			
Frequency: 190			
Battery Voltage: 9.64			
Channel	Muscle	Cord	Gain
✓ 1	TA-L	L	
✓ 2	LGAS-L		
✓ 3	VLAT-L	L	
✓ 4	RFEM-L		↑
✓ 5	BFLH-L	S	↑
✓ 6	ADMG-L		↑
✓ 7	GMAX-L	S	↑
✓ 8	TFL-L		↑
	Ground		

Transmitter 3 3			
Frequency: 202			
Battery Voltage: 9.64			
Channel	Muscle	Cord	Gain
✓ 1	GMED-R	S	
✓ 2	SEMT-R		↑
✓ 3	VMED-R	L	
✓ 4	MGAS-R		
✓ 5	PERO-R	L	
✓ 6	SOL-R		
7			
8			
	Ground		

Transmitter 5 5			
Frequency: 212			
Battery Voltage: 9.64			
Channel	Muscle	Cord	Gain
✓ 1	GMED-L	S	↑
✓ 2	SEMT-L		↑
✓ 3	VMED-L	L	
✓ 4	MGAS-L		
✓ 5	PERO-L	L	
✓ 6	SOL-L		
7			
8			
	Ground		

EMG Calibration Trial(s): _____

FES Calibration Trials

1. Identify stimulation levels.

Muscle	Stim. Level	Voltage	Pulse Duration
DF	Sensory	35 35	600 ms → (6 ms)
	Low Motor	40	
	Strong Motor	58	↓
PF	Sensory	30	60 ms
	Low Motor	43	
	Strong Motor	55	↓

2. Calibration trials while sitting on stool near forceplate

Trial Name	Type	Notes
FESCalibration01	TA, Level 1 (35 V)	TA, sitting on stool with leg hanging
FESCalibration02	TA, Level 2 (37 V)	
FESCalibration03	TA, Level 3 (40 V)	
FESCalibration04	TA, Level 4 (49 V)	
FESCalibration05	TA, Level 5 (58 V)	
FESCalibration06	TA, active motion (no stim)	
FESCalibration07	GAS, Level 1 (30 V)	GAS, sitting on stool with leg barely on forceplate → stim too strong when sitting so did standing instead
FESCalibration08	GAS, Level 2 (36 V)	
FESCalibration09	GAS, Level 3 (43 V)	
FESCalibration10	GAS, Level 4 (V)	
FESCalibration11	GAS, Level 5 (V)	
FESCalibration12	GAS, active motion (no stim)	
FESCalibration13	GAS, Level 1 30	GAS, standing straight ignore the X, we DID do these trials
FESCalibration14	GAS, Level 2 36	
FESCalibration15	GAS, Level 3 43	
FESCalibration16	GAS, Level 4 50	
FESCalibration17	GAS, Level 5	

FES

* did calibration after all stimulation bouts, but before the 2 post (non-stim trials)

SETUP

1. Change clothing and shoes
2. Place stimulation pads and find stimulation levels
3. Place EMG sensors
4. Check EMG placement through live-view
5. Wrap legs in coban
6. Attach Markers

→ for right ankle (hemi-side)
did 2 trials. First is voluntary movement, 2nd was passive movement by experimenter (JA) to get larger range of movement

CALIBRATION TRIALS

Trial Name	Type	Notes
Static01	Static Trial	full marker set, anatomical position
FootTracing01	Right Foot	trace around foot 2-3 times
FootTracing02	Left Foot	trace around foot 2-3 times
REMOVE STATIC MARKERS		
JointCal01	Right Ankle	clockwise ankle rotation, 3-4x → Joint Calor 2 Jessica's assist
JointCal02	Left Ankle	clockwise ankle rotation, 3-4x
JointCal03	Right Knee	right arm across chest , left on handles. keep right foot off ground and bend back to ~90 degrees a total of 3-4x without returning leg to ground
JointCal04	Left Knee	left arm across chest , right on handles. keep left foot off ground and bend back to ~90 degrees a total of 3-4x without returning leg to ground
JointCal05	Right Hip	right arm across chest , left on handles. keep right foot off ground. kick forward, kick backward, return to middle, kick to side. repeat a total of 3-4x without returning leg to ground
JointCal06	Left Hip	left arm across chest , right on handles. keep left foot off ground. kick forward, kick backward, return to middle, kick to side. repeat a total of 3-4x without returning leg to ground

for all trials here, hold on to handle w/ both hands in order to maintain balance

BREAK

WARMUP AND EMG CALIBRATION

1. 3-5 min. of comfortable walking for acclimation
2. Identify SS and Fast walking speed

SS Speed: 0.30 m/s

Fast Speed: 0.60 m/s

Trial Name	Type	Notes
EMG Calibrations	Fast walking	
Squat01	2-legged sq.	4-5x squat as close to 90 degree knee flexion as capable

BREAK

WALKING TRIALS

*all trials are 60s long

Trial Name	Type	Notes
Trial01 ✓	SS	
Trial02 ✓	SS	
Trial03 ✓	SS	
Trial04 ✓	Fast	
Trial05 ✓	Fast	
Trial06 ✓	Fast	

BREAK

Trial Name	Type	Notes
FES01 ✓	high stimulation	stim on both PF and DF TA: V = <u>35</u> , <u>40</u> , <u>58</u> ; Pulse Dur = <u>600</u> ms GAS: V = <u>30</u> , <u>43</u> , <u>55</u> ; Pulse Dur = <u>60</u> ms
FES02 ✓	no stim	
FES03 ✓	low stimulation	
FES04 ✓	no stim	
FES05 ✓	medium stimulation	
FES06 ✓	no stim	

FES07
FES08

38 for GAS
no stim

BREAK

→ middle stim (43) for GAS still had a large motor effect, so added another slightly lower level

Trial Name	Type	Notes
FES07 9 ✓	high stim (58)	TA stimulation only → some crossover in middle
FES08 10 ✓	no stim	
FES09 11 ✓	medium stim (40)	
FES10 12 ✓	no stim	
FES11 13 ✓	low stim (35)	
FES12 14 ✓	no stim	

BREAK

Trial Name	Type	Notes
FES07 15 ✓	high stim low - 30	GAS stimulation only → only 30s trial to prevent cramping → missed first couple of steps after 5 turning stimulation off
FES08 16 ✓	no stim	
FES09 17 ✓	medium stim - 38	
FES10 18 ✓	no stim	
FES11 19 ✓	low stim high - 43	
FES12 20 ✓	no stim	

→ did FES calibration trials during this break

Trial Name	Type	Notes
Post01 ✓	SS	
Post02 ✓	Fast	

ADDITIONAL TRIALS? nope

[illegible]