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Supplementary

Wearable Ultrasound-Imaging-Based Visual Feedback (UVF) Training for Ankle Rehabilitation of Chronic Stroke Survivors: A Proof-of-Concept Randomized Crossover Study

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Table S1. CONSORT checklist of information to include when reporting randomised crossover trials.

Section/topic	Item No	Description	Page No*
Title†	1a	Identification as a randomised crossover trial in the title	1
Abstract†	1b	Specify a crossover design and report all information outlined in table 2	1 to 2
		Introduction:	
Background‡	2a	Scientific background and explanation of rationale	2 to 3
Objectives‡	2b	Specific objectives or hypotheses	3
		Methods:	
Trial design†	3a	Rationale for a crossover design. Description of the design features including allocation ratio, especially the number and duration of periods, duration of washout period, and consideration of carry over effect	3; 6
Change from protocol‡	3b	Important changes to methods after trial commencement (such as eligibility criteria), with reasons	NA
Participants‡	4a	Eligibility criteria for participants	4
Settings and location‡	4b	Settings and locations where the data were collected	4
Interventions†	5	The interventions with sufficient details to allow replication, including how and when they were actually administered	5
Outcomes‡	6a	Completely defined prespecified primary and secondary outcome measures, including how and when they were assessed	7 to 8
Changes to outcomes‡	6b	Any changes to trial outcomes after the trial commenced, with reasons	NA

Sample size†	7a	How sample size was determined, accounting for within participant variability	4
Interim analyses and stopping guidelines‡	7b	When applicable, explanation of any interim analyses and stopping guidelines	NA
		Randomization:	
Sequence generation‡	8a	Method used to generate the random allocation sequence	3
Sequence generation‡	8b	Type of randomisation; details of any restriction (such as blocking and block size)	NA
Allocation concealment mechanism‡	9	Mechanism used to implement the random allocation sequence§ (such as sequentially numbered containers), describing any steps taken to conceal the sequence until interventions were assigned	3
Implementation†	10	Who generated the random allocation sequence,§ who enrolled participants, and who assigned participants to the sequence of interventions	3
Blinding‡	11a	If done, who was blinded after assignment to interventions (for example, participants, care providers, those assessing outcomes) and how	NA
Similarity of interventions‡	11b	If relevant, description of the similarity of interventions	NA
Statistical methods†	12a	Statistical methods used to compare groups for primary and secondary outcomes which are appropriate for crossover design (that is, based on within participant comparison)	9
Additional analyses‡	12b	Methods for additional analyses, such as subgroup analyses and adjusted analyses	NA
		Results	
Participant flow (a diagram is strongly recommended) †	13a	The numbers of participants who were randomly assigned, received intended treatment, and were analysed for the primary outcome, separately for each sequence and period	9 to 10 (Figure 3)
Losses and exclusions†	13b	No of participants excluded at each stage, with reasons, separately for each sequence and period	9 to 10 (Figure 3)
Recruitment‡	14a	Dates defining the periods of recruitment and follow-up	NA
Trial end‡	14b	Why the trial ended or was stopped	NA
Baseline data†	15	A table showing baseline demographic and clinical characteristics by sequence and period	9 to 10 (Table 1)
Numbers analysed†	16	Number of participants (denominator) included in each analysis and whether the analysis was by original assigned groups	9 to 10
Outcomes and estimation†	17a	For each primary and secondary outcome, results including estimated effect size and its precision (such as 95% confidence interval) should be based on within participant comparisons.¶ In addition, results for each intervention in each period are recommended	11 to 14 (Table 2 to 5)
Binary outcomes‡	17b	For binary outcomes, presentation of both absolute and relative effect sizes is recommended	NA
Ancillary analyses‡	18	Results of any other analyses performed, including subgroup analyses and adjusted analyses, distinguishing prespecified from exploratory	NA
Harms†	19	Describe all important harms or untended effects in a way that accounts for the design (for specific guidance, see CONSORT for harms32)	NA

Discussion:			
Limitations†	20	Trial limitations, addressing sources of potential bias, imprecision, and if relevant, multiplicity of analyses. Consider potential carry over effects	18 to 19
Generalisability‡	21	Generalisability (external validity, applicability) of the trial findings	17 to 18
Interpretation‡	22	Interpretation consistent with results, balancing benefits and harms, and considering other relevant evidence	14 to 17
		Other information:	
Registration‡	23	Registration number and name of trial registry	4; 20
Protocol‡	24	Where the full trial protocol can be accessed, if available	NA
Funding‡	25	Sources of funding and other support (such as supply of drugs), role of funders	19

CONSORT=Consolidated Standards of Reporting Trials.

* Note: page numbers are optional depending on journal requirements.

† Modified original CONSORT item.

‡ Unmodified CONSORT item.

§ Random sequence here refers to a list of random orders, typically generated through a computer program. This should not be confused with the sequence of interventions in a randomised crossover trial, for example receiving intervention A before B for an individual trial participant.

A within participant comparison takes into account the correlation between measurements for each participant because they act as their own control, therefore measurements are not independent.

Table S2: Reliability tests for the wearable SMG system in muscle thickness measurement.

			F test with true value 0			
Reliability test	**Parameter**	**ICC (95% confidence interval)**	Value	df1	df2	*P*-value
Test-retest	Resting TA thickness	0.993 (0.949 - 0.998)	557.246	119	119	<0.001
	Peak TA thickness	0.995 (0.910 - 0.999)	724.458	5	5	<0.001
Inter-rater	Resting TA thickness	0.997 (0.983 - 0.999)	1431.780	119	119	<0.001
	Peak TA thickness	0.998 (0.959 - >0.999)	1577.559	5	5	<0.001

Note: Single measures, two-way mixed effects model, absolute agreement.

df, degree of freedom; SMG, sonomyography; TA, tibialis anterior.

Table S3. Reliability test for visual feedback target identification.

			F test with true value 0			
Reliability test	**Parameter**	**ICC (95% confidence interval)**	Value	df1	df2	*P*-value
Intra-subject	Peak TA thickness	0.995 (0.990 - 0.997)	372.139	32	32	<0.001

Note: Single measures, two-way mixed effects model, absolute agreement.

df, degree of freedom; TA, tibialis anterior.

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