

How to Set *NUSHU RESEARCH* Exercises

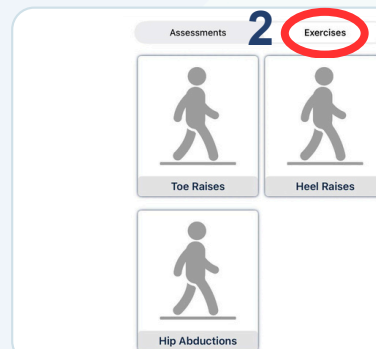
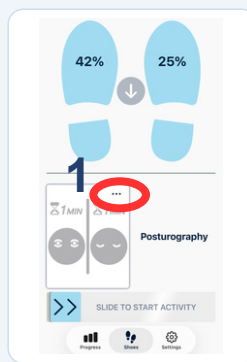
BEFORE YOU START



- Make sure you are connected to shoes
- Make sure your shoes are updated to the latest firmware

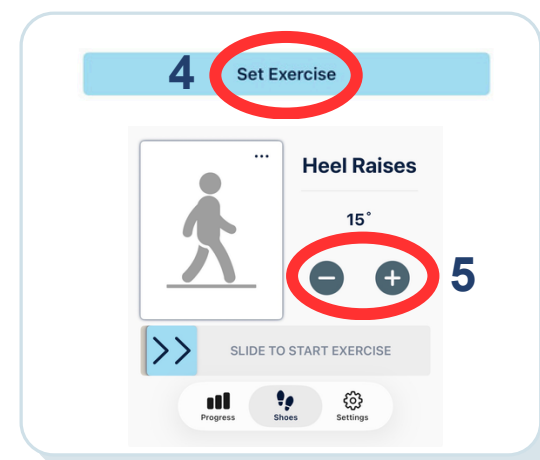
STEP 1: Select

- 1 On the home screen, select the **Activity** icon.
- 2 Select the **Exercises** tab at the top.
- 3 Select the exercise you want to **Configure**.



STEP 2: Configure

- 4 Select 'Set Exercise'
- 5 Adjust Range of Motion with + or -
Target changes in 5° increments.



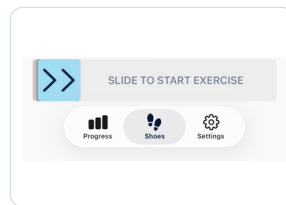
STEP 3: Start & observe

- 6 Slide to start
 - The count increases whenever the target angle is reached.
 - Clinician sees the vibration visual
 - Patient feels vibration and receives visual feedback.

TARGET ANGLE

The angle at which the shoes begin to vibrate.

Vibration
Visual



IMPORTANT

To change the angle after starting:

Select **STOP EXERCISE**, adjust the target angle, and then restart the exercise.

1. Using Feedback to Drive Motor Learning and Performance

Clinicians can adjust the type and amount of feedback based on the patient's goals, cognitive status, stage of learning, and treatment needs. Visual and performance feedback show both the clinician and patient when the vibration target is reached and help track success, so the exercise can be progressed or modified to maintain an appropriate level of challenge.

Feedback Type

1 Sensory EXAMPLE Vibration when target is achieved MOTOR LEARNING PRINCIPLE Reinforcement and knowledge of performance	2 Multimodal EXAMPLE Vibration + visual animation MOTOR LEARNING PRINCIPLE Movement awareness, error detection, engagement	3 Performance EXAMPLE Counter increases when target is achieved MOTOR LEARNING PRINCIPLE Goal-directed practice, motivation, self-monitoring	4 Summary EXAMPLE Left vs right comparison after a set MOTOR LEARNING PRINCIPLE Knowledge of results, reflection, retention
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2. Linking Objective Metrics to Functional Outcomes

EXERCISE	ASSESSMENT METRIC	WHAT TO TRAIN	FUNCTIONAL RELEVANCE
Heel Raises	Amplitude, endurance	Power, propulsion, fatigue resistance	Hills, stairs, gait speed, walking propulsion
Toe Raises	Heel strike angle, variability, endurance	Dorsiflexion amplitude, consistency, endurance	Foot clearance, gait quality, walking endurance
Hip Abduction	Height, accuracy, endurance	Limb clearance, stability, control	Tub transfers, balance, obstacle negotiation

CLINICAL QUESTION What metric is limiting function? How can feedback be used to improve it?	CLINICAL DECISION Maintain, progress, or modify the level of challenge.
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3. Progression principles

STAGE	PROGRESSION STRATEGIES
1. Movement Acquisition	Easier target thresholds, frequent feedback, visual + tactile cues, stable BOS (Base of Support), eyes open
2. Skill Development	Higher target thresholds, increased repetitions, tactile feedback, improved accuracy and consistency
3. Functional Integration	Change BOS, static to dynamic tasks, head turns, scanning, surface changes
4. Automaticity & Performance	Dual-task challenges, decision making, real-world distractions, reduced feedback frequency
5. Retention & Transfer	Self-assessment, summary feedback, functional activities, real-world application

Variables to progress within any exercise

1 STABILITY

- Change BOS: bilateral, one leg on step, staggered to stride stance, single leg
- Static to dynamic

2 SENSORY INTEGRATION

- Vision: eyes open to eyes closed
- Change environment: busy clinic, busy hallway, video simulation, etc.
- Vestibular (head turns, scanning)
- Surface changes

3 AUTOMATICITY

Adding cognitive and dual task challenges

- Attention
- Decision making
- Sequencing
- Real world distractions

4 PERFORMANCE

Increase Speed, Power, and Load

- Fast vs. slow movements
- Greater force production
- Higher load thresholds
- Improved endurance
- Accuracy of movement
- Amplitude

CLINICAL FOCUS

Progress challenge while preserving movement quality and connection to walking performance.

Example Toe Raises



Goal: Improve heel strike, foot clearance, and walking endurance

STAGE 1

Acquire the Movement

Seated, easier target threshold, visual + tactile feedback. Patient sees the animation, feels the vibration, and watches the rep counter increase when the target is achieved.

STAGE 2

Build Consistency

Alternate right and left foot. Reduce visual feedback and rely more on tactile feedback. Focus on achieving the target consistently.

STAGE 3

Build Endurance & Performance

Increase repetitions, duration, or cadence while maintaining movement quality.

STAGE 4

Functional Integration

Add visual scanning, cognitive challenges, or dual-task activities while maintaining performance.

STAGE 5

Transfer to Walking

Reassess heel strike angle, variability, and walking performance.

NUSHU Research Exercise Heel & Toe Raises

Start Position



Sitting or standing with feet flat on floor
If standing: stand tall and hold onto support as needed

EXERCISE SERIES 1

Use the fields below to personalize each exercise for the patient.

EXERCISE 01

Heel Raises

START POSITION

Sitting or standing with feet flat on the floor.

- If standing: stand tall and hold onto support as needed.

MOVEMENT

Lift your heels off the ground until you feel the vibration. When you feel the vibration, notice how that position feels and try to find it again on the next rep.



Heel Raises

TARGET ANGLE

SETS

REPS

FREQUENCY

per day / week

CLINICIAN NOTES

EXERCISE 02

Toe Raises

START POSITION

Sitting or standing with feet flat on the floor.

- If seated: slide your feet slightly forward so they are not directly under your knees. This makes it easier to lift your toes.
- If standing: stand tall and hold onto support as needed.

MOVEMENT

Lift your toes up while keeping your heels on the ground. When the vibration starts, you've reached your target. Try to get back to that same position each time.



Toe Raises

TARGET ANGLE

SETS

REPS

FREQUENCY

per day / week

CLINICIAN NOTES

NUSHU Exercise

Hip Abduction

Start Position



Standing with feet flat on floor
If standing: stand tall and hold onto support as needed



Hip Abduction

START POSITION

Standing tall with feet flat on the floor and hold onto support as needed

MOVEMENT

Slowly move your leg out to the side until you feel the vibration, then bring it back to the start. When the vibration starts, you've reached your goal. Notice how far you moved, and try to reach that same position each time.

TARGET ANGLE

SETS

REPS

FREQUENCY

per day / week

Foot positioning Keep the foot neutral or slightly outward; avoid turning inward.



NEUTRAL

Foot straight ahead



Start



Movement

Use this foot position while moving the leg out to the side.



ALSO OKAY

Foot slightly turned outward



Start



Movement

Use this foot position while moving the leg out to the side.



AVOID

Foot turned inward



Start



Movement

Avoid allowing the foot to rotate inward during the movement.

CLINICIAN NOTES
