

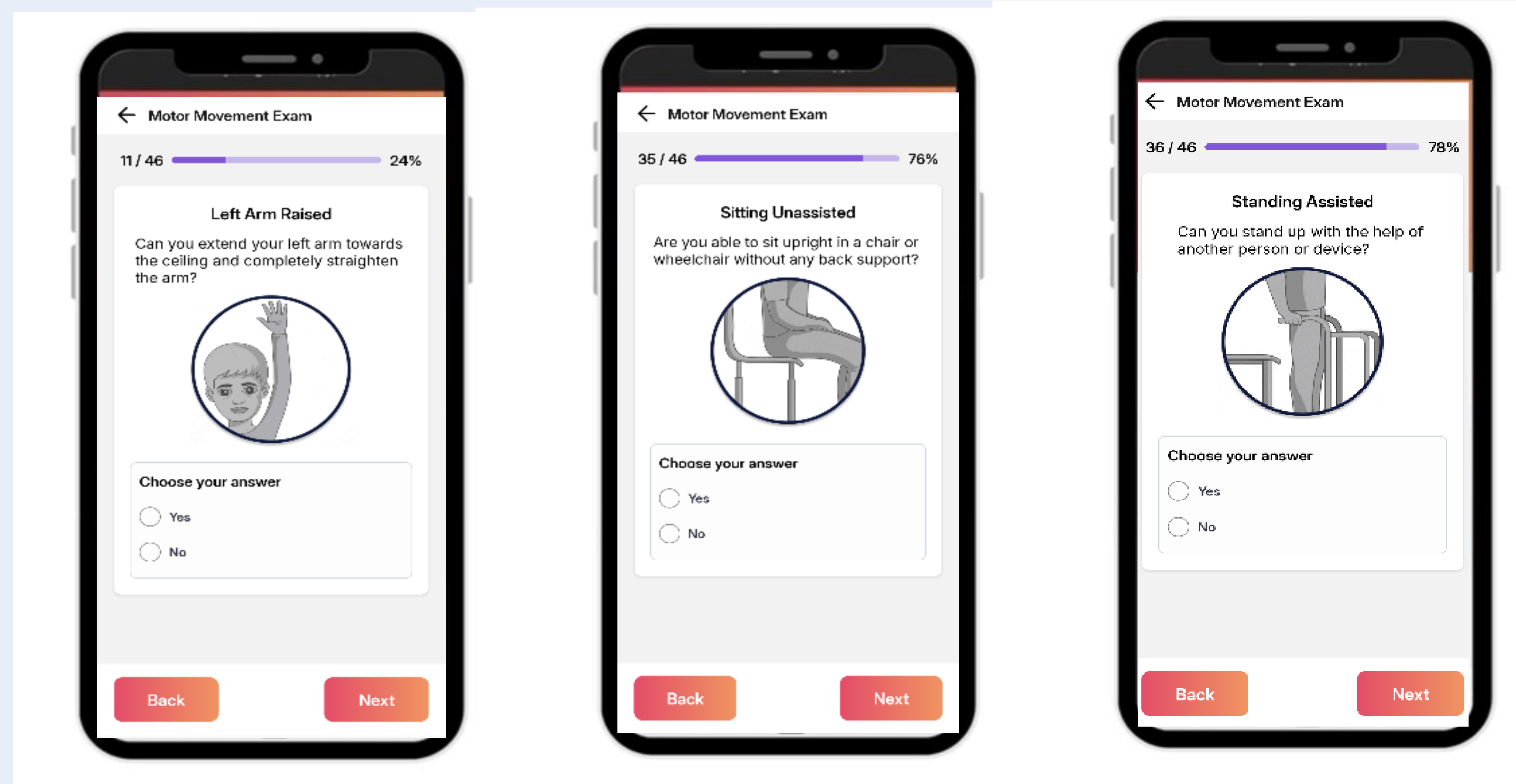
A Novel, Self-Administered, App-Based Assessment of Motor Movement in ALS

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Background

- Progressive motor weakness is the clinical hallmark of ALS, yet objective outcome measures that formally assess overall motor movement are often lacking in clinical trials and in clinical practice.
- A simple, remotely administered motor assessment tool could improve monitoring for people living with ALS (pALS).



Hypothesis

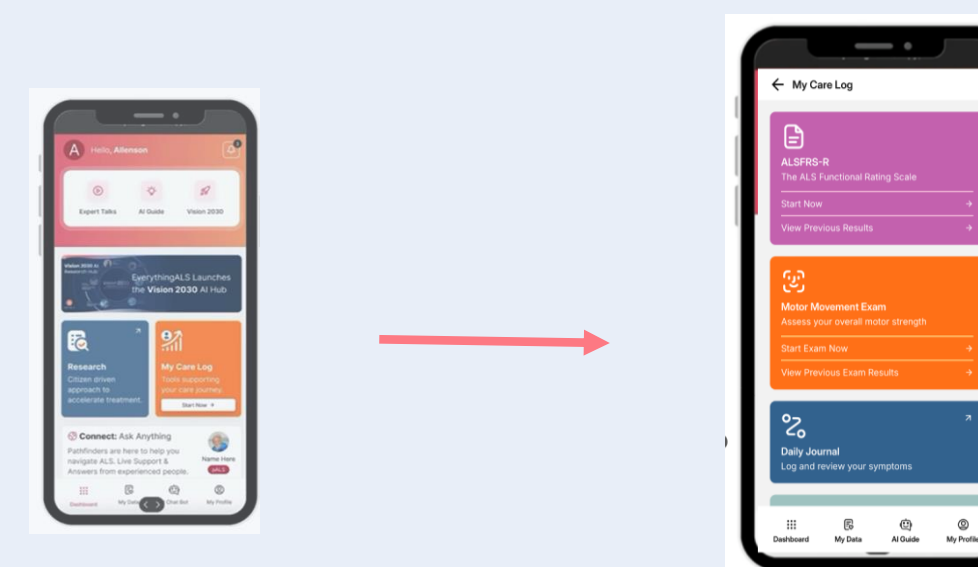
- Motor movement can be feasibly tracked at home by pALS using a personalized self-guided, AI-supported app that assesses motor movement in bulbar, upper extremity, trunk, and lower extremity regions.
- Adaptive AI algorithms will detect motor loss over time and present only the relevant motor exam to patients.
- Predictive AI algorithms will map progression to assess future personalized care needs.

Methods

- The ALS MOTOR APP, based on the ALS Motor Observational Telemedicine Objective Rash-built assessment (ALS MOTOR), displays both a written description and an animated visual display of performance for each motor task.
- Participants select “yes” or “no” for ability to perform each task before moving to the next. A total of 46 motor tasks are assessed.
- Results are presented in real-time and stored in a central data repository for clinician or researcher review.

Results to Date

- The beta version has been tested and refined with clinician and pALS feedback.
- The app is now available on Google Play and the Apple Store.



- We are gathering motor assessment data and feedback from pALS for further improvements.

Discussion

- The ALS MOTOR APP is an innovative tool to remotely track motor movement in pALS, with potential to offer improved data granularity and quantity in an accessible format for both clinicians and participants.
- It captures extensive and diverse data, enhancing AI algorithms currently being developed at EverythingALS through longitudinal insights.
- This approach demonstrates "AI for good" by generating data that capture lived experiences beyond standard clinical measures.
- Next, we will assess the tool's construct validity compared to standardized ALS outcome measures and objective muscle strength tests and evaluate its test-retest reliability compared to the clinician-administered telemedicine exam scale.
- Future directions include developing an adaptive testing format and evaluating APP responses as predictors of clinically relevant milestones or events.