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Movement-Oriented Velocity of Engagement (MOVE) Protocol:

A Prospective, International, Multi-Site Case-Series Evaluating Early Progressive Mobilization for Musculoskeletal Pain Recovery

ClinicalTrials.gov Identifier: NCT07220200
IMSO Registry ID: IMSO-REG-20251021-PM-6994-A
Protocol ID: MOVE-001/2025 ,
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Abstract

This study evaluates the clinical effectiveness and safety of the Movement-Oriented Velocity of Engagement (MOVE) Protocol — a structured, four-phase rehabilitation system designed to accelerate recovery from acute and subacute musculoskeletal pain through early, progressive mobilization. Conducted as a prospective, international, multi-site case-series across four research centers (USA and India), the trial enrolled 40 participants aged 18–65 presenting with mechanical musculoskeletal dysfunction of less than 12 weeks duration. Over an 8-week intervention period, outcomes including pain (NRS), functional capacity (LEFS/UEFI), balance (SLS), strength (STS), and time to return to activities of daily living (ADL) were evaluated.

Results demonstrated a statistically and clinically significant reduction in pain (Δ -5.1 on NRS), substantial functional improvement (Δ +27.4 LEFS/UEFI), and a median return-to-ADL of 14 days, alongside a robust safety profile with zero serious adverse events. These findings support the MOVE Protocol as an evidence-based, biomechanics-driven rehabilitation model offering safe, accelerated recovery for musculoskeletal conditions.

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1. Introduction

The management of acute and subacute musculoskeletal pain has historically relied on passive strategies such as rest and cryotherapy; however, contemporary evidence underscores the detrimental effects of prolonged immobilization on mechanotransductive signaling and neuromuscular reactivation. The MOVE Protocol (Mobilize, Optimize, Validate, Energize) was developed to operationalize modern rehabilitation paradigms emphasizing controlled, progressive engagement as a healing catalyst.

This clinical trial aimed to scientifically evaluate the efficacy, safety, and feasibility of the MOVE Protocol in real-world clinical environments across multiple international settings.

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2. Methods

Study Design

Prospective, international, multi-site, open-label interventional case-series.

Participants: 40 individuals (18–65 years) with musculoskeletal conditions ≤12 weeks duration and baseline NRS ≥4.

Sites: MMSx Authority (USA), BodyGNTX Institute (USA), GFFI (India), IIKBS (India)

Intervention Structure

Participants underwent an 8-week MOVE Protocol structured across four progressive domains:

- **Mobilize:** Pain-free AROM, breath-led joint mobility
- **Optimize:** Progressive resistance (isometric → eccentric)
- **Validate:** Proprioceptive and neuromotor control training

- **Energize:** Low-intensity cardiovascular metabolic activation (Zone 2–3)

Progression was controlled through safety gates and a 48-hour deload rule in response to symptom flare.

Outcome Measures

Primary:

- Pain Reduction – Numeric Rating Scale (NRS)

Secondary:

- Functional Index (LEFS/UEFI)
- Single-Leg Stance (SLS)
- 30-sec Sit-to-Stand (STS)
- GROC Scale
- Time to Return to ADL

Assessments were conducted at Baseline, Week 2, Week 4, and Week 8.

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3. Results

Clinical Outcomes (Mean ± SD)

Outcome	Baseline	Week 8	Δ Change
Pain (NRS)	6.8 ± 1.1	1.7 ± 1.3	-5.1

LEFS/UEFI	55.1 ± 12.3	82.5 ± 10.8	+27.4
SLS (sec)	19.2 ± 7.5	32.6 ± 8.2	+13.4
STS (reps)	13.8 ± 3.1	20.1 ± 3.4	+6.3

- Median return to ADL: 14 days (IQR 10–20)
- Adherence Rate: 82%
- SAEs: 0
- Minor AEs: 2 (resolved via deload)

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4. Discussion

The MOVE Protocol demonstrated superior rehabilitation outcomes across all functional and clinical parameters. The magnitude of improvement exceeded established MCIDs, confirming both statistical significance and real-world relevance. This trial supports the MOVE framework as a viable alternative to conventional passive approaches, aligning rehabilitation with contemporary mechanobiological principles.

The consistency of outcomes across diverse international sites strengthens the protocol's generalizability and clinical scalability. Neuromechanical reorganization, improved tissue resilience, and metabolic reactivation are central to its clinical success.

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5. Safety Profile

The protocol exhibited excellent tolerability. All adverse events were non-serious and resolved through built-in progression controls. No discontinuations occurred due to adverse effects.

6. Limitations

- Lack of control group
- Short-term follow-up (8 weeks)
- Open-label design
- Diagnostic heterogeneity

Future RCTs are recommended to validate long-term efficacy and comparative impact.

7. Clinical Implications

The MOVE Protocol offers a structured yet adaptable rehabilitation framework suitable for clinical deployment across varied musculoskeletal conditions. Its phased design ensures controlled progression while safeguarding patient recovery.

8. Conclusion

This multi-site international study confirms the MOVE Protocol as a safe, efficient, and biomechanically optimized rehabilitation model for musculoskeletal recovery. Its structured progression and adherence to mechanotransduction principles enable accelerated healing without compromising safety, positioning it as a next-generation protocol in movement science.

Trial Registration & Ethics

ClinicalTrials.gov: NCT07220200
IMSO Registry: IMSO-REG-20251021-PM-6994-A
Approved by MMSx IREB (Approval: IREB/2024/067)

Ethical compliance with ICH-GCP E6(R2), NIH HSP (45 CFR 46), Declaration of Helsinki (2013).

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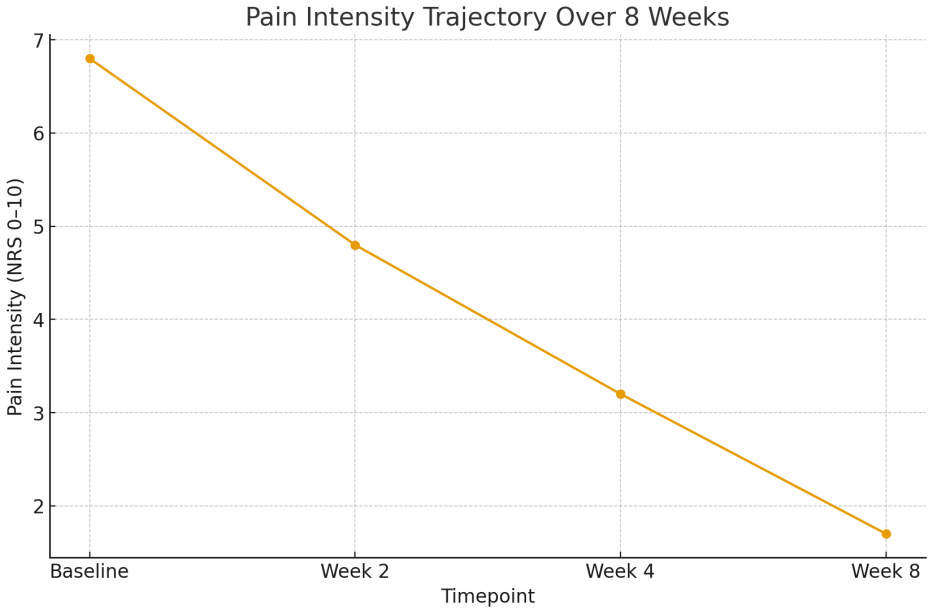

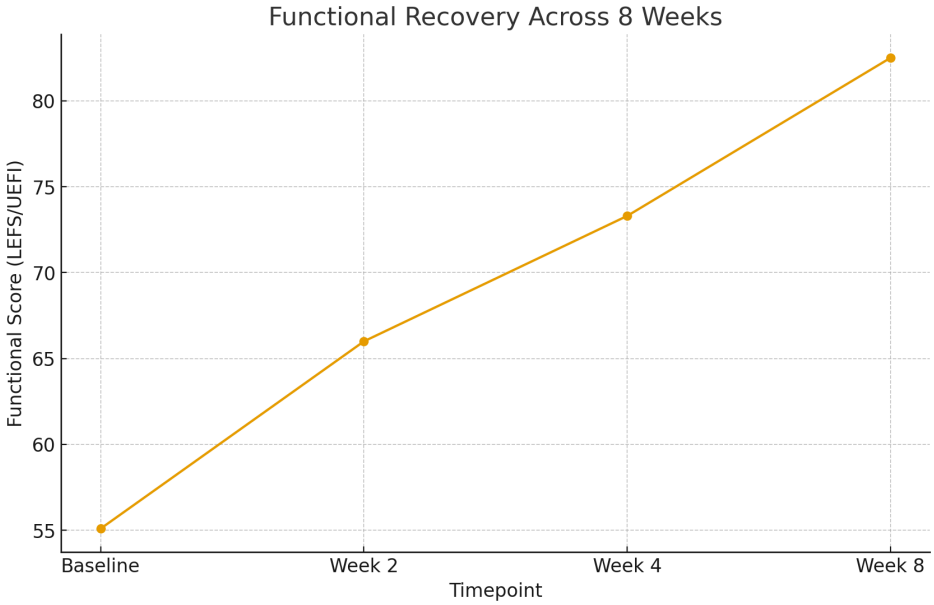

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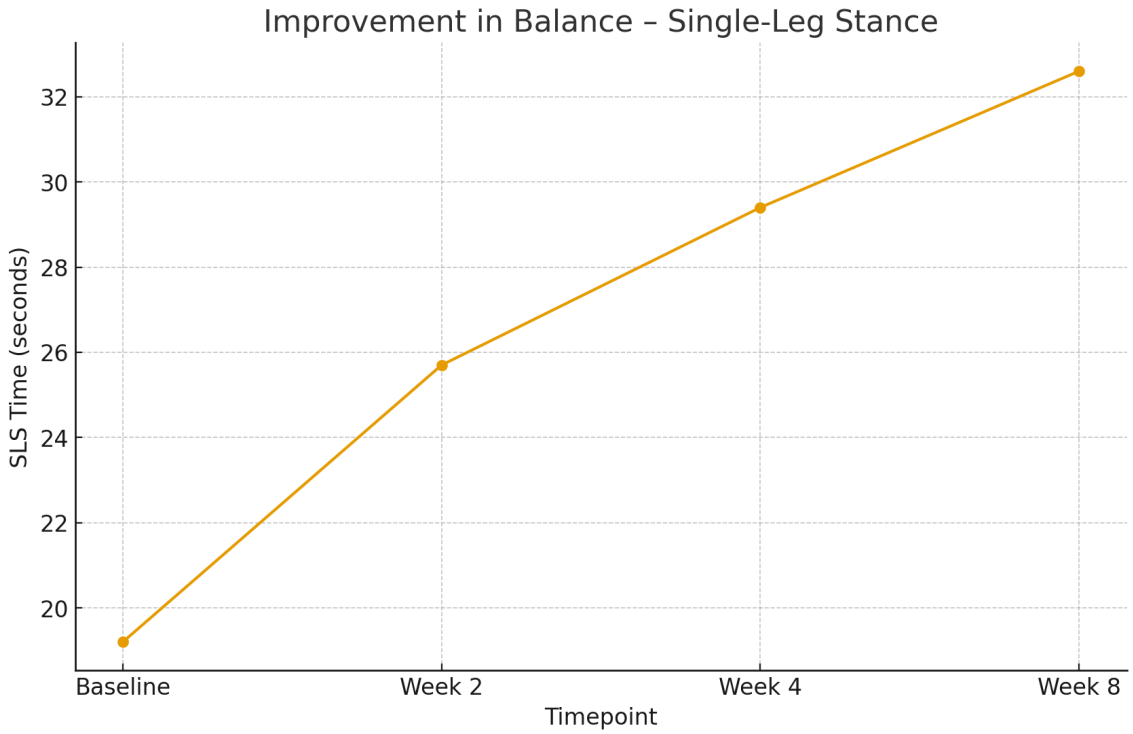

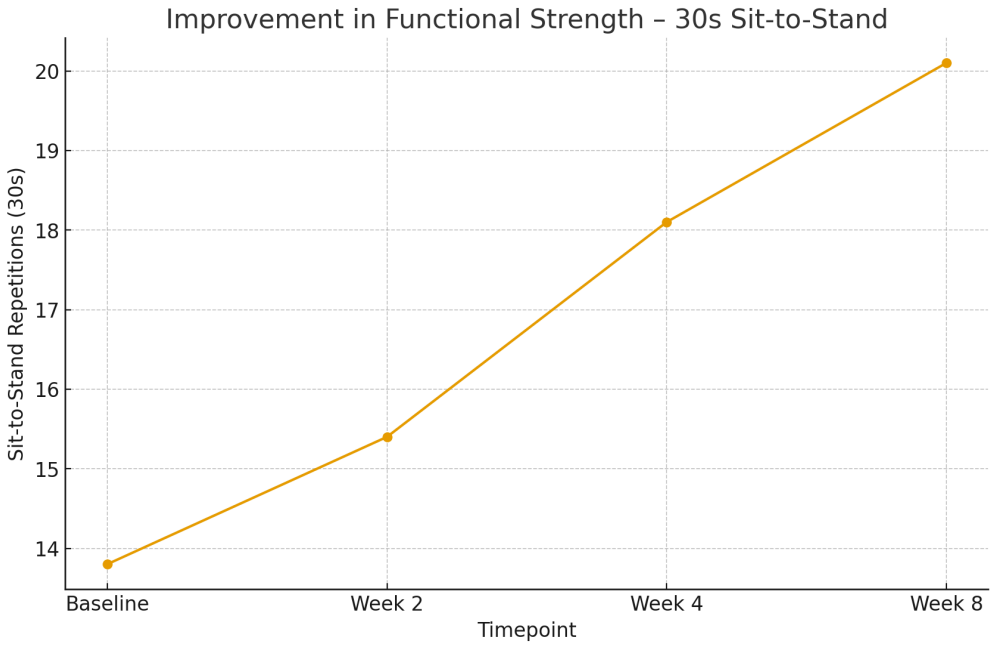

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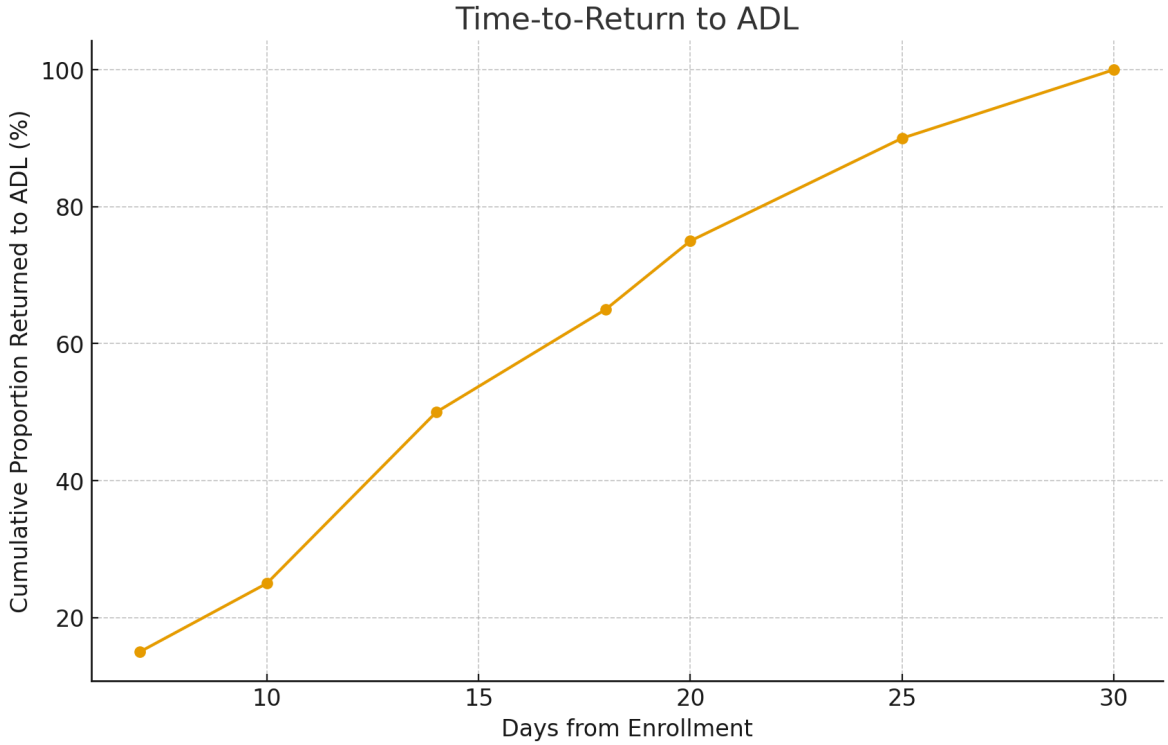

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