COGLEAP

COGNITIVE LEAP

Stanford MEDICINE

Stanford Neurodiversity Summit 2026

BUILDING STRENGTHS THROUGH INNOVATION

MENTAL HEALTH CATEGORY

Hope Focus System

A Pilot Study Using Movement and Connection to Support Neurodivergent Children

Goh, C. (in preparation). Preliminary Outcomes of a Profile-Directed Psychomotor Programme for Neurodivergent Children: A Retrospective Pilot Study. Frontiers in Rehabilitation Science.

THE COGLEAP APPROACH (HOPE FOCUS SYSTEM)

PROFILE
Assess 14 functional domains (FAS)

→

PERSONALIZE
AI-informed movement prescription + rhythmic neurotechnology

→

ADAPT
Real-time feedback. Progressive optimization

INTRO Background

- Children with neurodevelopmental conditions are often treated through symptom-focused approaches.
- The Hope Focus System (HFS) uses the Fundamental Abilities Survey (FAS) to map each child's functional profile
- HFS combines targeted movements, binaural music stimulation and a human coach to guide personalized training

Scan for Study Handout!

METHODS

Participants

34 Children
(17 Autistic,17 Non-Autistic Neurodivergent)

Intervention

Hope Focus System (HFS)
8–12 weeks
1–2 sessions per week
Median 40-41 Hours Both Groups

Measure

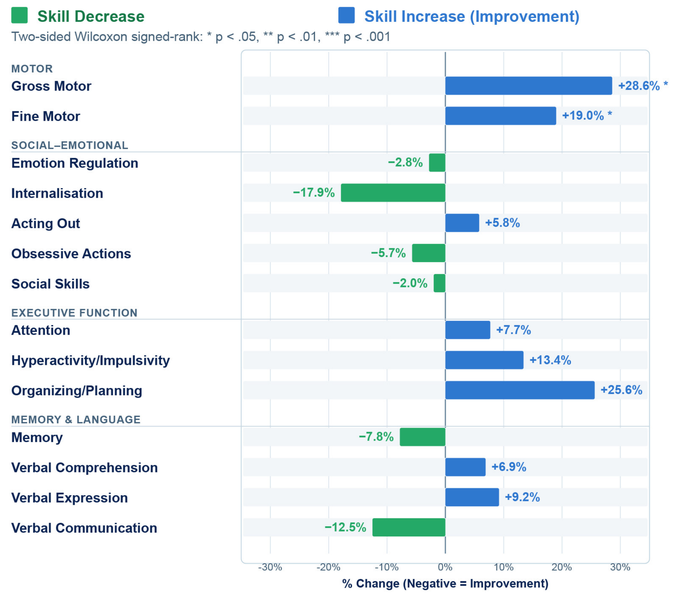
Fundamental Abilities Survey (FAS)
Parent-reported outcomes

Analysis

Pre–post change scores
Wilcoxon signed-rank tests
Benjamini–Hochberg
FDR correction (q<.05)

AUTISTIC GROUP (n =17)

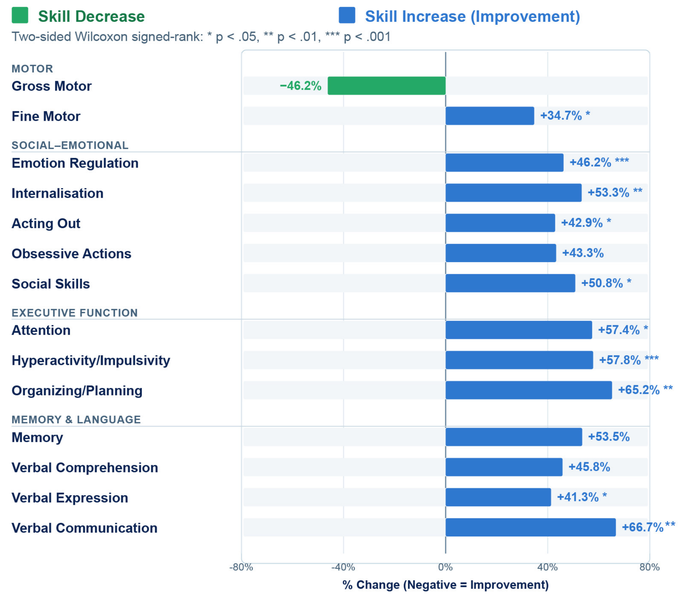
Pre-Post % Change in FAS Domain Scores (Two Sided Wilcoxon)



★★★ Significant improvements
· Gross Motor (p = .0039, r = .645) · Fine Motor (p = .0078, r = .589)

NON-AUTISTIC NEURODIVERGENT GROUP (n=17)

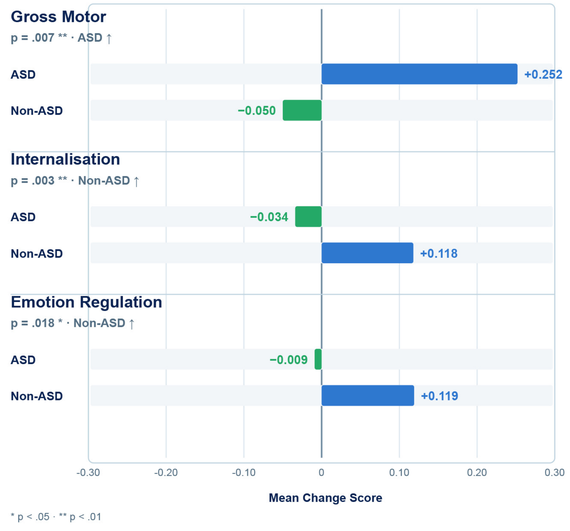
Pre-Post % Change in FAS Domain Scores (Two Sided Wilcoxon)



★★★ 10 of 14 domains improved
Largest gains: Organizing/Planning, Verbal Communication, Hyperactivity/Impulsivity, Attention.

BETWEEN GROUP DIFFERENCES

Domains with Significant Group x Intervention Interaction (Mann Whitney U)



Breathing · Stretching / Flex · Dexterity · Hand-Eye Coordination · Balance · Core Strength · Body Coordination · Aerobic Endurance · Crossing Midline

DISCUSSION / CONCLUSION

KEY FINDINGS

· Autistic group: significant gains in gross and fine motor skills.
· Non-autistic group: 10 of 14 domains improved

PATTERN OF CHANGE

· Autistic: motor domains.
· Non-autistic: attentional and executive function domains.

IMPLICATIONS

· Supports a profile-directed, diagnosis-blind approach.
· Suggests neurotype-differentiated mechanisms and outcomes.

LIMITATIONS & NEXT STEPS

· Retrospective design, future requires control group.
· Parent-reported FAS may have subjective bias; more objective measures in future studies
· RCT needed for efficacy, mechanism and validation

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Personalized Movement, Differentiated Outcomes

This study presents preliminary real world data from a retrospective pilot study, and is intended to inform future controlled trials with validated outcomes.

FAS = Fundamental Abilities Survey.