

EPTRI General Assembly and Scientific Meeting Warsaw, 28-29 July, 2026

*Gait analysis in Duchenne Muscular Dystrophy: a selective tool
for gene therapy functional evaluation*

Pablo Ruiz,

“Gait DMD”: Classical assessment tools – clinical trials

North Star Ambulatory Assessment (NSAA) →

“Validated Rating Scale”

Time to rise from floor (seconds)



Walk



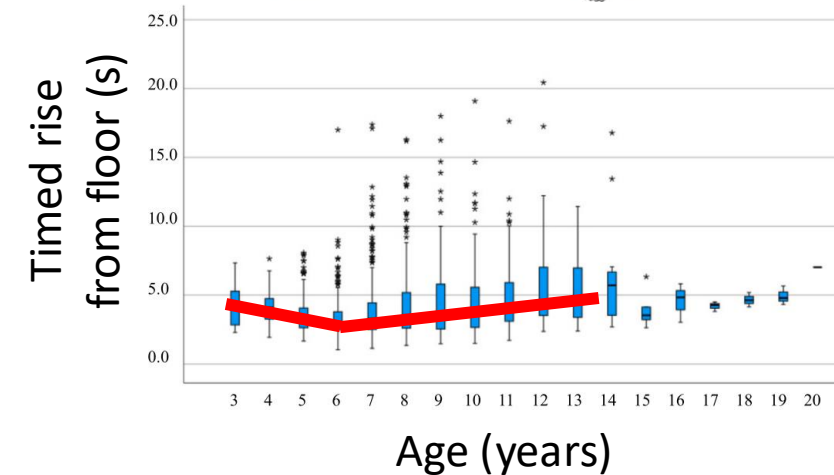
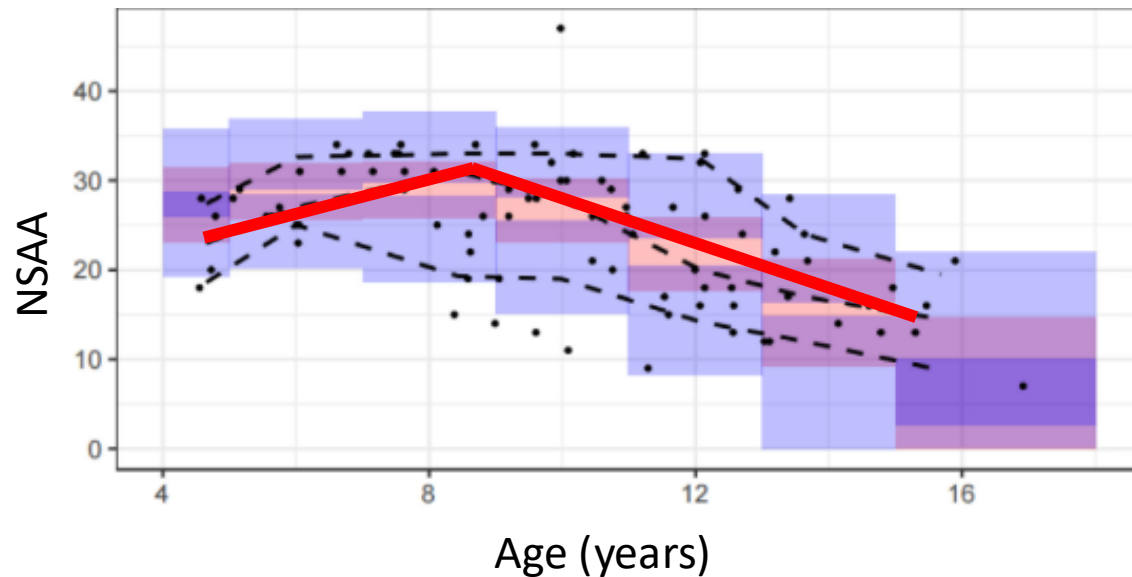
Rise from floor



Climb step



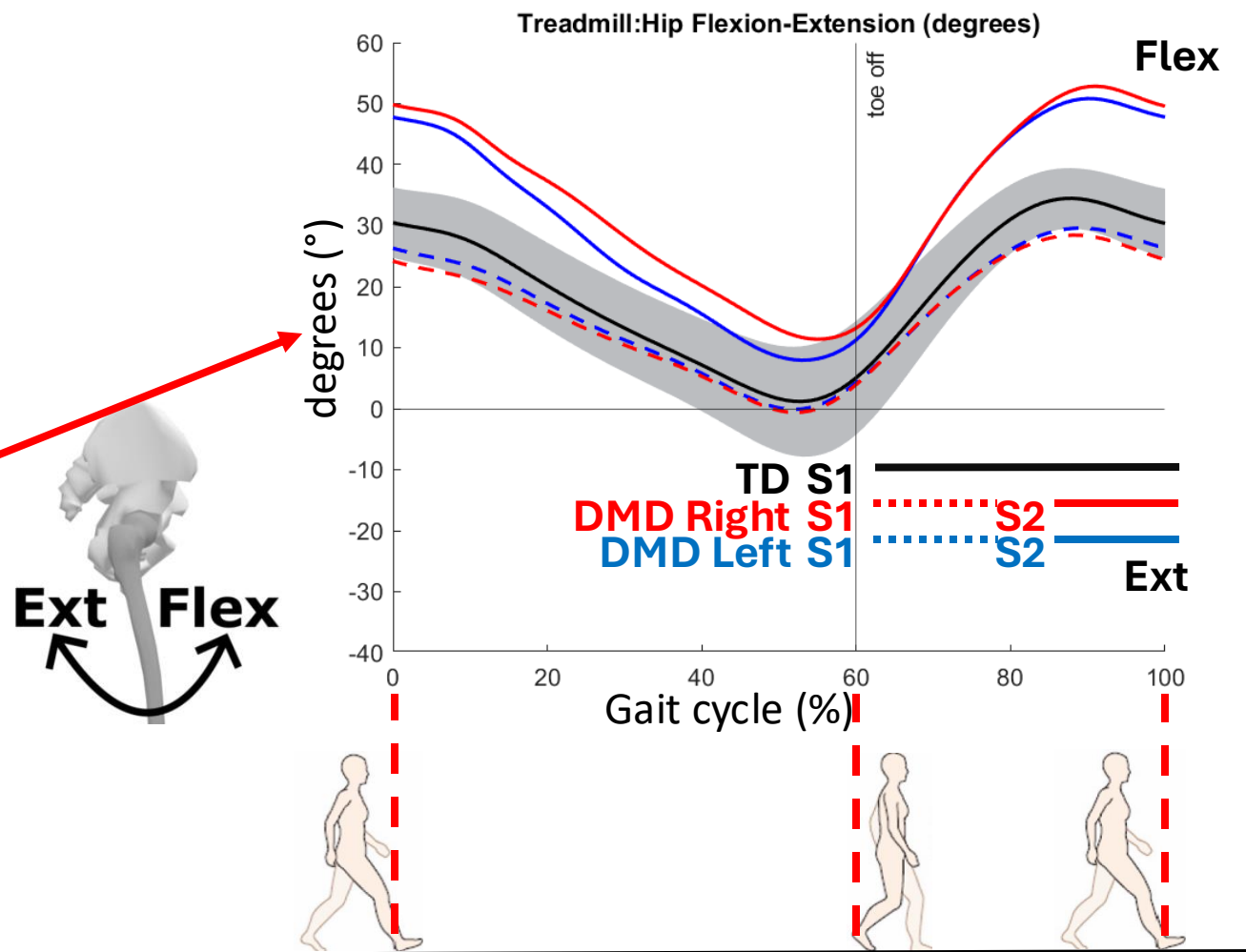
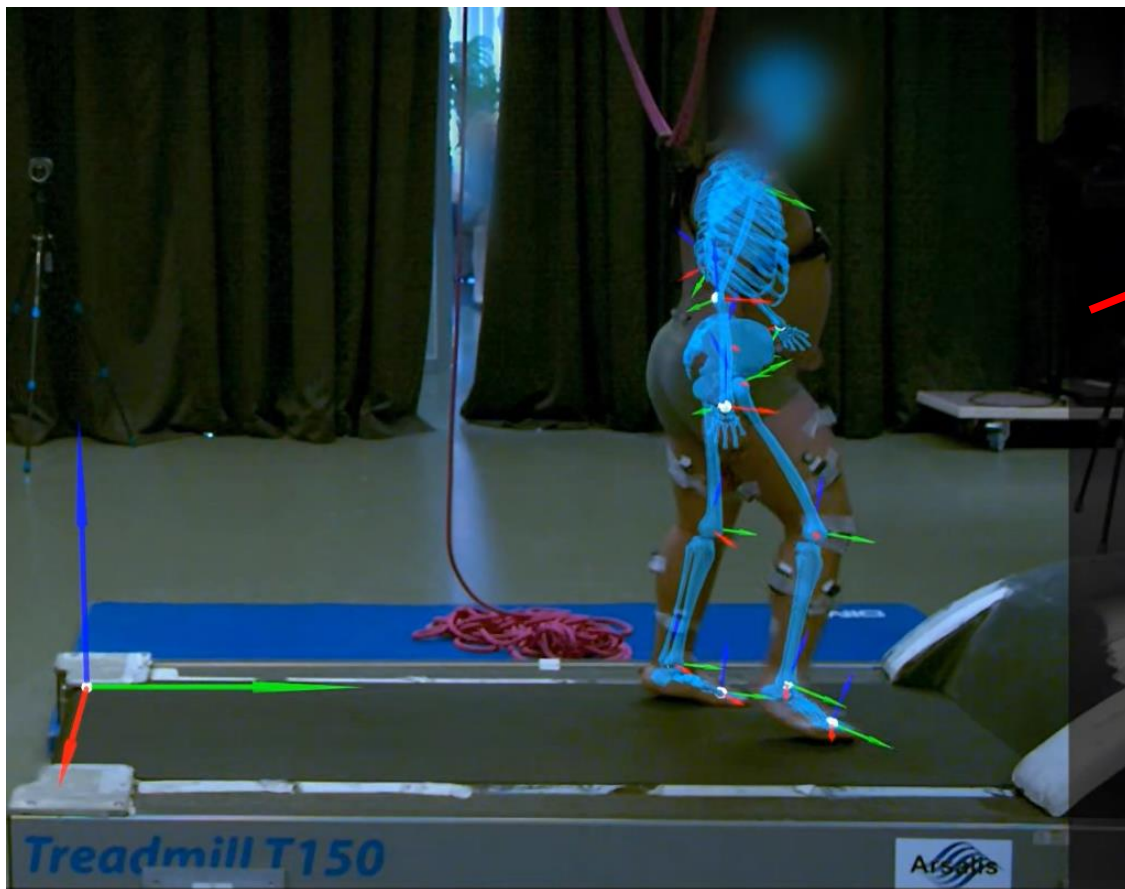
Stand on left leg



- Deng, J., Liu, F., Feng, Z., & Liu, Z. (2024). Population longitudinal analysis of Gait Profile Score and North Star Ambulatory Assessment in children with Duchenne muscular dystrophy. *CPT: Pharmacometrics & Systems Pharmacology*, 13(5), 891-903.
- Yoneno, S., Takeshita, E., Shimizu-Motohashi, Y., Oba, M., Hara, T., Hirayama, M., & Komaki, H. (2025). Natural history of timed rise from floor in young individuals with Duchenne muscular dystrophy: A single-center retrospective study. *Brain and Development*, 47(4), 104396.
- Rabbia, M., Guridi Ormazabal, M., Staunton, H., Veenstra, K., Eggenpieler, D., Annoussamy, M., ... & Strijbos, P. (2024).

Gait analysis in Duchenne Muscular Dystrophy: a selective tool for gene therapy functional evaluation -> General Aspects

Treadmill walking One-year follow-up



First Session S1: Dotted lines.

Second Session S2: Continuous lines.

Shaded area and black line: Typically developing children

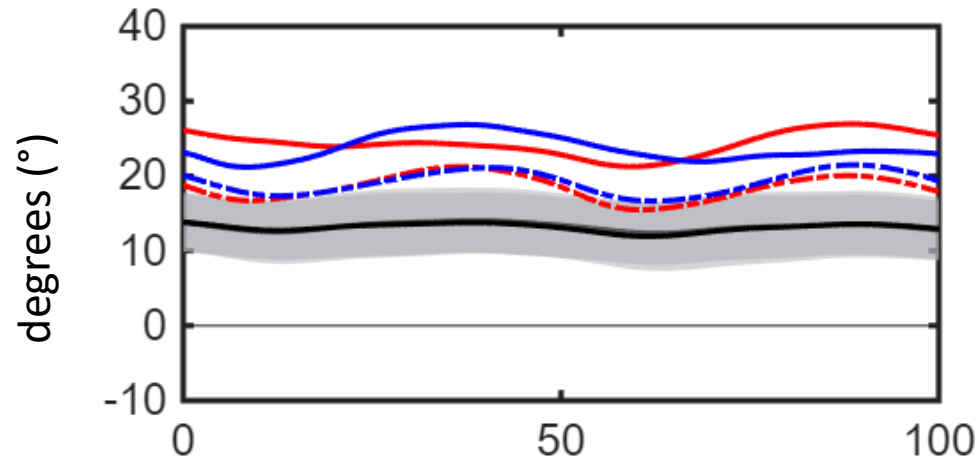
Preliminary changes observed in sagittal-plane gait kinematics after treatment.

Patient 01

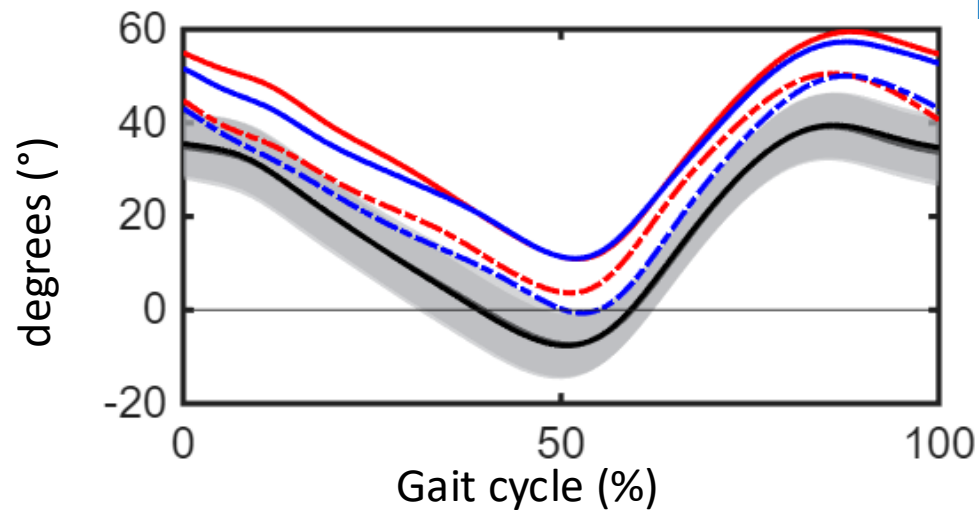
Corticosteroids

2-year follow-up

Pelvis tilt



Hip flexion – extension

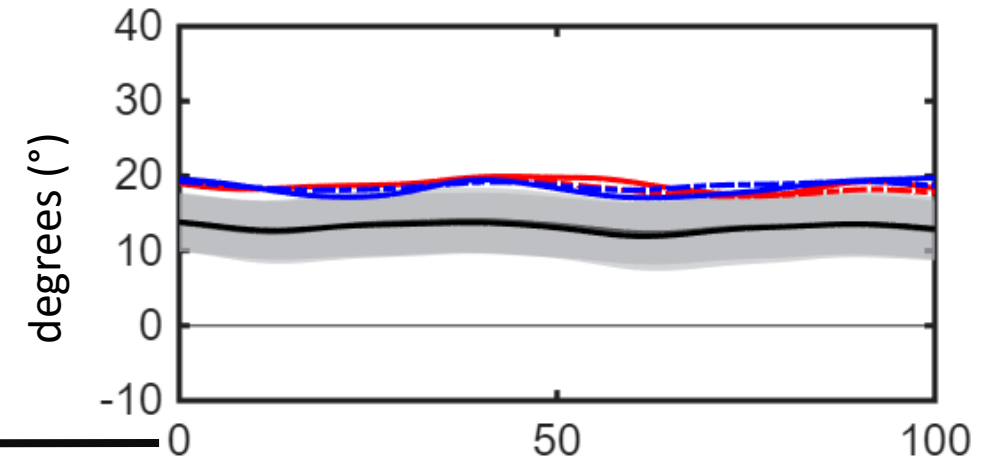


Patient 02

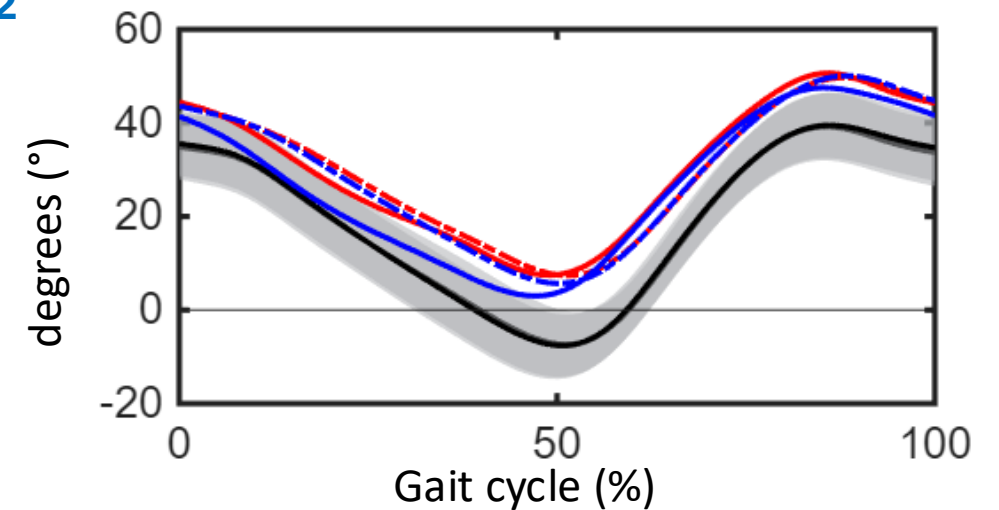
Corticosteroids + Gene-based therapy

2-year follow-up

Pelvis tilt



Hip flexion – extension



- +
Post Ant



TD S1

DMD Right S1
DMD Left S1

S2
S2

- +
Ext Flex



Conclusions and Next Steps

- ✓ Kinematic analysis can quantify subtle longitudinal changes in DMD disease.
- ✓ Preliminary findings suggest changes following gene-based therapy.
- ✓ MRI tests in children with DMD to correlate with 3DGA data.