

Intra-individual Motor Trajectories of Very Preterm Infants through to 15 Months Corrected Age



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Introduction

With regard to early gross motor development in typically developing infants, fluctuations in scoring patterns within individuals over time have been reported.¹ Infants born preterm appear to have their own pathways in different aspects of their development compared to infants born full-term.² Little is known about their intra-individual trajectories.

Objective: This study aimed to explore intra-individual variability of early gross motor developmental trajectories through to 15 months corrected age (CA) in infants born at <30 weeks of gestation or with a birth weight <1000 grams



Method

Design: Prospective longitudinal cohort study with three measurements

T1: 3 months CA (home setting)

T2 and T3: 6 and 15 months CA (in neonatal follow-up clinic)

Included: n=112 (53.6% boys)

Excluded: n=17 abnormal medical condition

n=1 atypical locomotion

Measurement: Alberta Infant Motor Scale (AIMS)³; single construct: gross motor maturity; preterm norm values were used.⁴

We previously reported on this cohort infants (2013) but with different research questions.^{5,6}

Data analysis: Descriptives and analysis of differences in Z-scores between T2-T1, T3-T1 and T3-T2

Linear mixed model analysis

Results

Table 1: Characteristics of the cohort

| | Count (%) | Min. – Max. |
|---------------------------------------|---------------|-------------|
| Gestational age: mean (SD) | 28 (1.57) wks | 24.7 – 32.0 |
| Birth weight: mean (SD) | 1064 (241) g | 570 – 1680 |
| Ethnicity: non-Western | n=20 (17.7) | |
| Multiple birth: twins/triplets | n=43 (38.1) | |

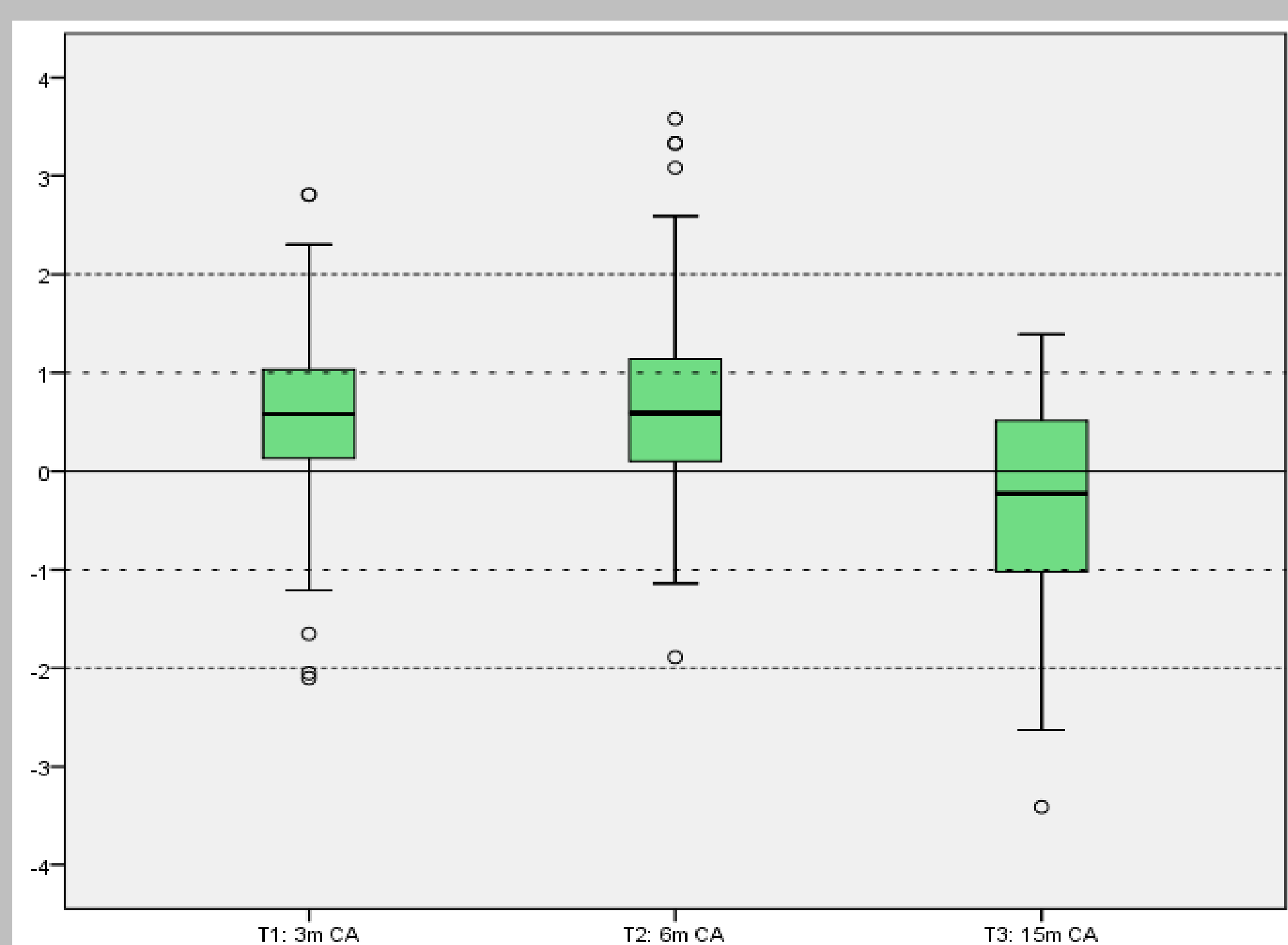


Figure 1: Z-scores AIMS PT norms displayed at the 3 time points cross-sectional

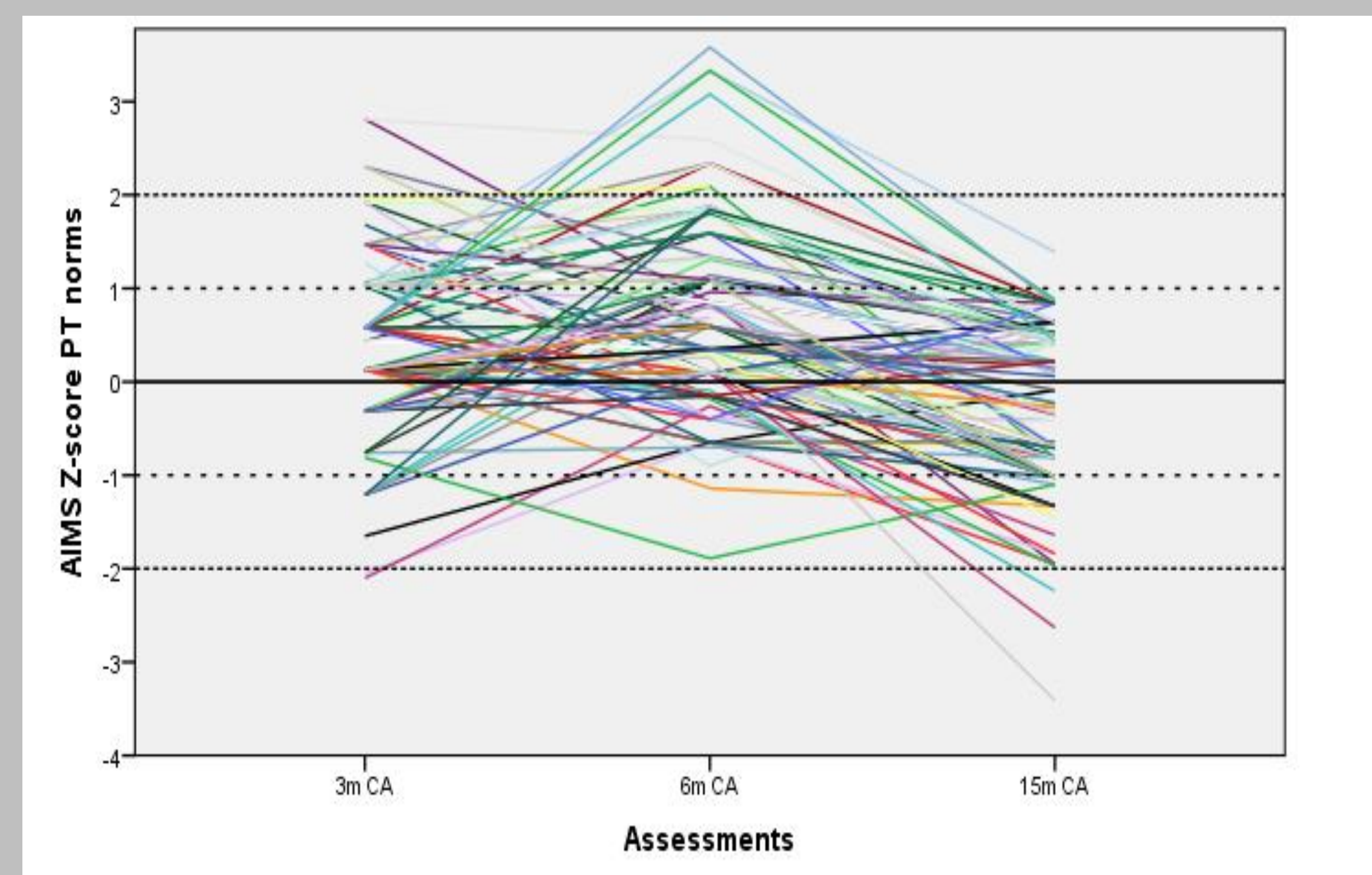


Figure 2: Z-scores AIMS within-subject longitudinally

Table 2: Within-subject differences in AIMS Z-scores over time

| Interval | Mean difference | 95% CI | SD | Min. | Max. |
|----------|-----------------|------------------|-------|-------|------|
| T2-T1 | 0.21 | -0.009 to +0.436 | 1.126 | -2.32 | 3.00 |
| T3-T1 | -0.75* | -0.986 to -0.511 | 1.201 | -4.76 | 1.85 |
| T3-T2 | -0.96* | -1.148 to -0.776 | 0.942 | -3.67 | 1.32 |

*P<0.05

Linear Mixed Effects Model with a first order autoregressive correlation provided the best fit: Correlation between T1-T3 < T1-T2 or T2-T3

Conclusion

The value of early prediction of gross motor developmental problems is restricted due to within-subject variability.

The variability in intra-individual gross motor trajectories advocates a developmental surveillance during a neonatal follow-up program to determine the need of early intervention, instead of decisions on single point assessments.

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