

Assessment of gross motor performance of infants based on video recordings made by parents: a validation study



Gross mOTOR Development of Infants using home-Video registration with the Alberta infant motor scale

Marike Boonzaaijer PPT MSc¹, Ellen van Dam PPT MSc³, Ingrid C van Haastert PPT PhD², Jacqueline Nuysink PPT PhD¹

¹: Department of Physiotherapy of Institute for Human Movement Studies, Research Center for Innovation in Healthcare, University of Applied Sciences Utrecht, The Netherlands

²: Neonatology, Wilhelmina Children's Hospital, University Medical Center Utrecht, The Netherlands

³: Department of Rehabilitation, Academic Medical Centre, University of Amsterdam, The Netherlands

INTRODUCTION

Assessment of motor performance determined by a single observation involves a risk of under- or overestimation of any developmental disorder.²⁻⁴ Therefore, longitudinal observations are needed to define gross motor developmental pathways of infants more accurately.

Frequent visits to an outpatient clinic can be burdensome for parents and/or infants. Assessing gross motor performance based on video registration by parents can be an addition to the original method but needs to be assessed on comparability.⁵

OBJECTIVE

- To determine the comparability of test results on the Alberta Infant Motor Scale (AIMS)¹ assessed on a home video registration created by parents, with an observation on site by a Pediatric Physical Therapist (PPT).
- To explore the feasibility of the video-method for parents.

METHOD

Design

1. One of twelve trained PPT testers participated in a live assessment of the AIMS while parents made a video of their child. Subsequently the video recording was assessed by another tester. To standardize the recording, parents were guided by tutorial material.

Participants

N = 52 infants, age range: 2 weeks to 19 months

Inclusion

Parents with a question or concern about the motor development of their infant
Good understanding of the Dutch language

Exclusion

Infants with atypical motor development
PT parents

Measurements

- AIMS¹
- Questionnaire for parents (N=50) and semi-structured interviews (N=10)

Data analyses

Intraclass Correlation Coefficient (ICC_{agreement})

Standard Error of Measurement (SEM)

Bland and Altman plot (BA)

Smallest Detectable Change (SDC)

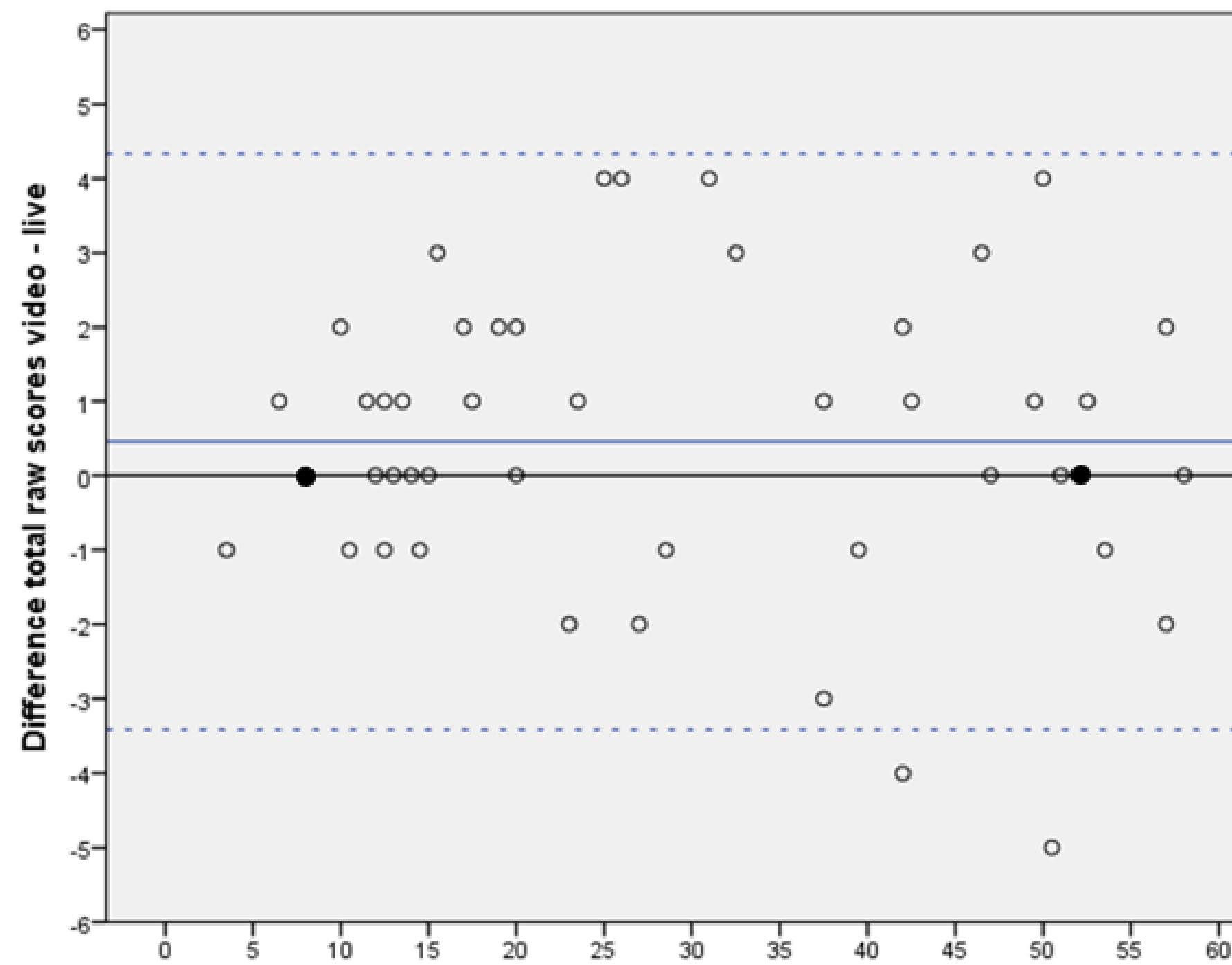


Table 1. BA Plot Difference video-live scores to mean total raw score

RESULTS

N=48* (24♂, 24♀; range 1.5–19 months)

*4 cases excluded for procedural faults

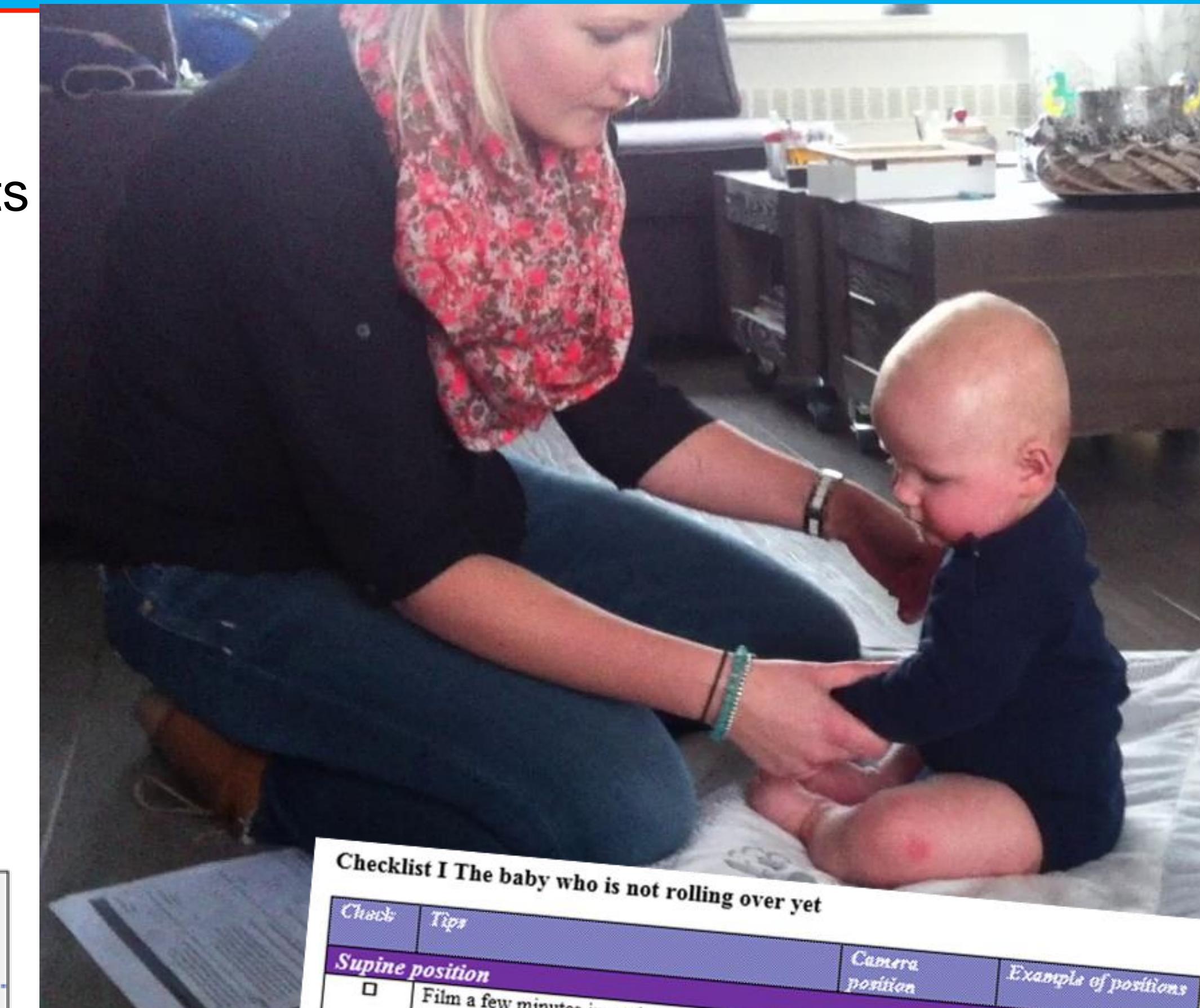
Mean diff. video - live score= 0,46 item (SD \pm 1,98)

ICC_{agreement} = 0,99

SEM = 1,41 item

SDC = 3,88 item

74% of parents are highly educated. According to 94% of the parents, recording their infants' movement repertoire was easy to perform. Choosing their own time and staying at home was considered comfortable.



Check	Tips	Camera position	Example of positions
<input type="checkbox"/>	Film a few minutes in supine position without a toy.	From the side From the feet	
<input type="checkbox"/>	Present a little toy above your baby, to elicit reaching and/or grabbing.	From the side From the feet	
<input type="checkbox"/>	Lay your baby down in prone position with his/her hands at shoulder level. Film a few seconds without making contact. After that make contact with your baby to see if he/she is able to actively raise the head.	From the side From the head	
<input type="checkbox"/>	Present a small toy right in front of your baby.	From the side From the head	
<input type="checkbox"/>	Make eye contact with your baby in supine position, so he/she turns the head to the midline. Then hold the wrists of your baby and pull gently. When the head still lags behind, lay down your baby gently.	From the side	
<input type="checkbox"/>	Repeat this one more time.		
<input type="checkbox"/>	Keep your baby supported in the sitting position and see if you can make eye contact.	At the front From the side	
<input type="checkbox"/>	See if your baby can sit without support for a brief moment. Your baby may use the arms as support forward. Keep your hands close by, sitting is not a stable position yet.	At the front From the side	
<input type="checkbox"/>	Hold your baby between the pelvic and the shoulders. Let the feet touch the floor and see if your baby takes some weight on the feet or toes.	At the front From the side	

References

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- Darrah J, Senthilvel van A, Magill-Evans J. Trajectories of serial motor scores of typically developing children: Implications for clinical decision making. *Infant Behav Dev*. 2009;32(1):72-8.
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CONCLUSION

Assessment of the AIMS based on video recordings is **comparable** to assessment by observation on site and a promising method. Time and distance become less important barriers. The video is a lasting objectification of motor performance. Parents are able to make adequate videos of their child and report positive experiences with the video method.

DISCUSSION

Is a live observation of the AIMS the gold standard for the assessment of motor performance in infancy? What are the pro's and con's of video- or live-observation? Is the video method feasible for all parents?