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# Screening for refractive errors in children using the 2WIN binocular refractometer.

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## AIM OF THE STUDY

Photoscreening, especially in preverbal children, is of interest particularly with regard to the risk of amblyopia. Aim of the study is to evaluate the performance of the 2WIN ( a portable binocular refractometer made by Adaptica) in measuring refractive errors in comparison with NIKON Retinomax K-plus2 and NIDEK RKT-7700 Autorefractor.

## METHODS

208 children (416 eyes) were examined consecutively in our office.

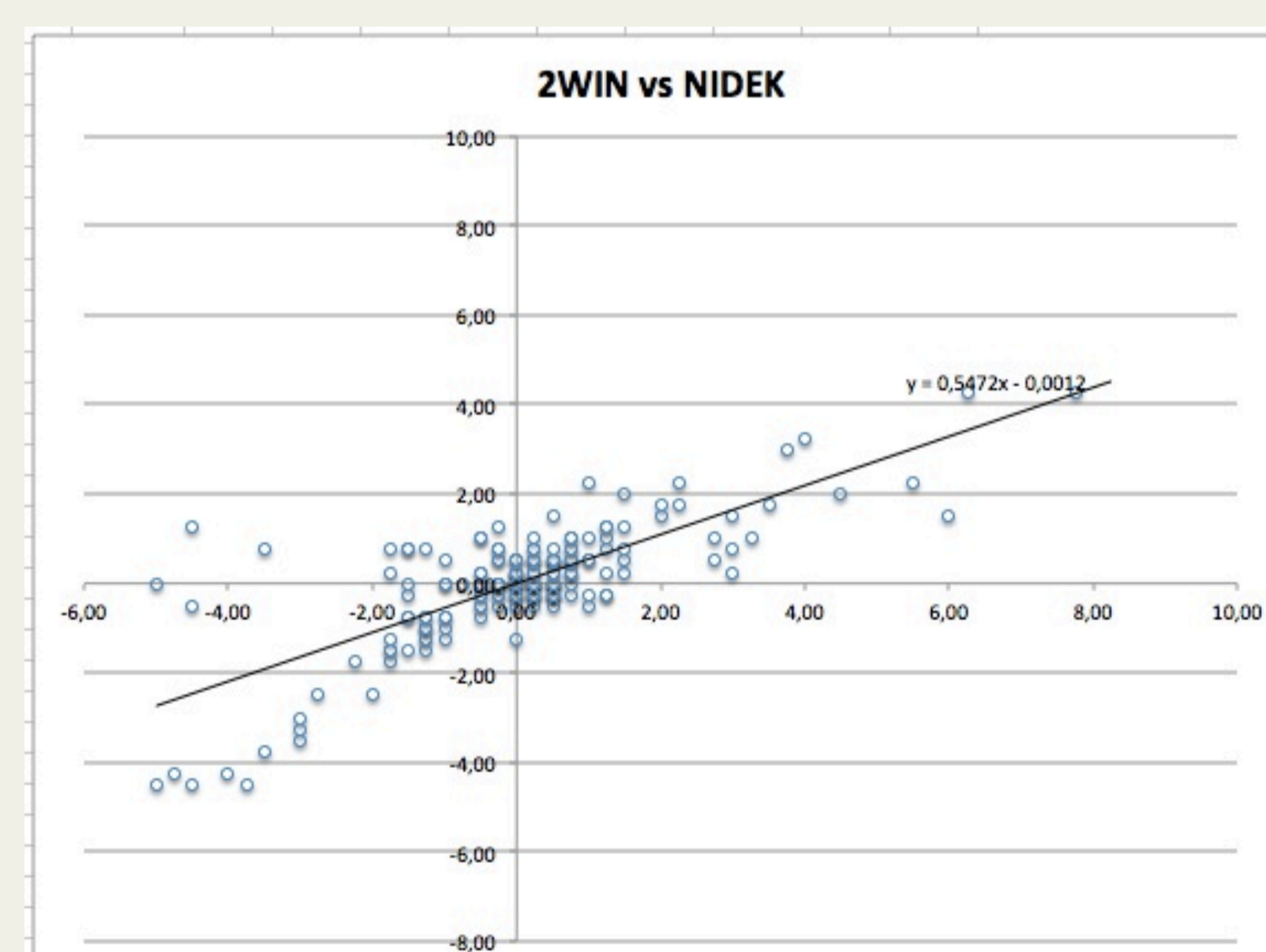
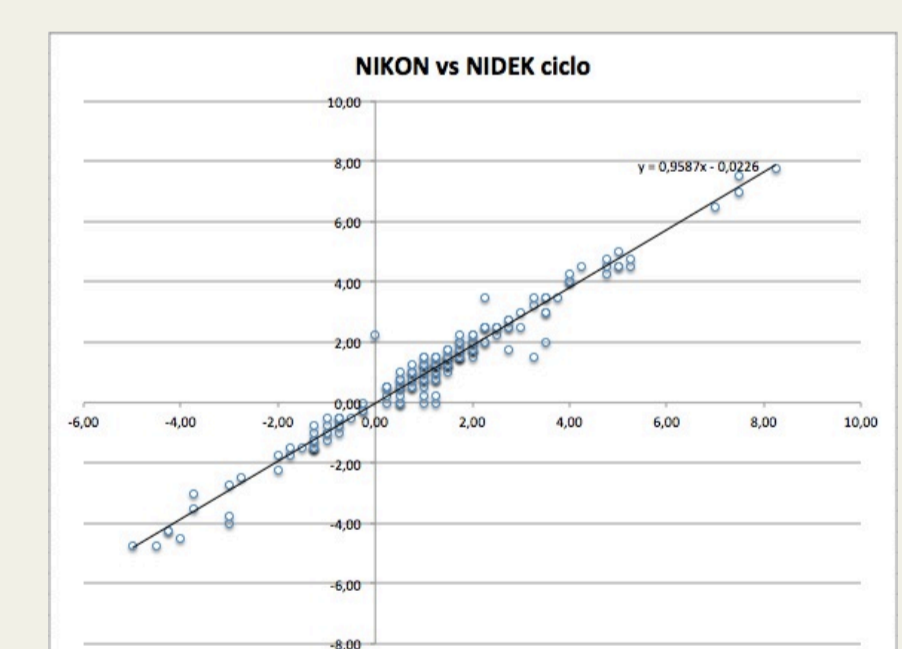
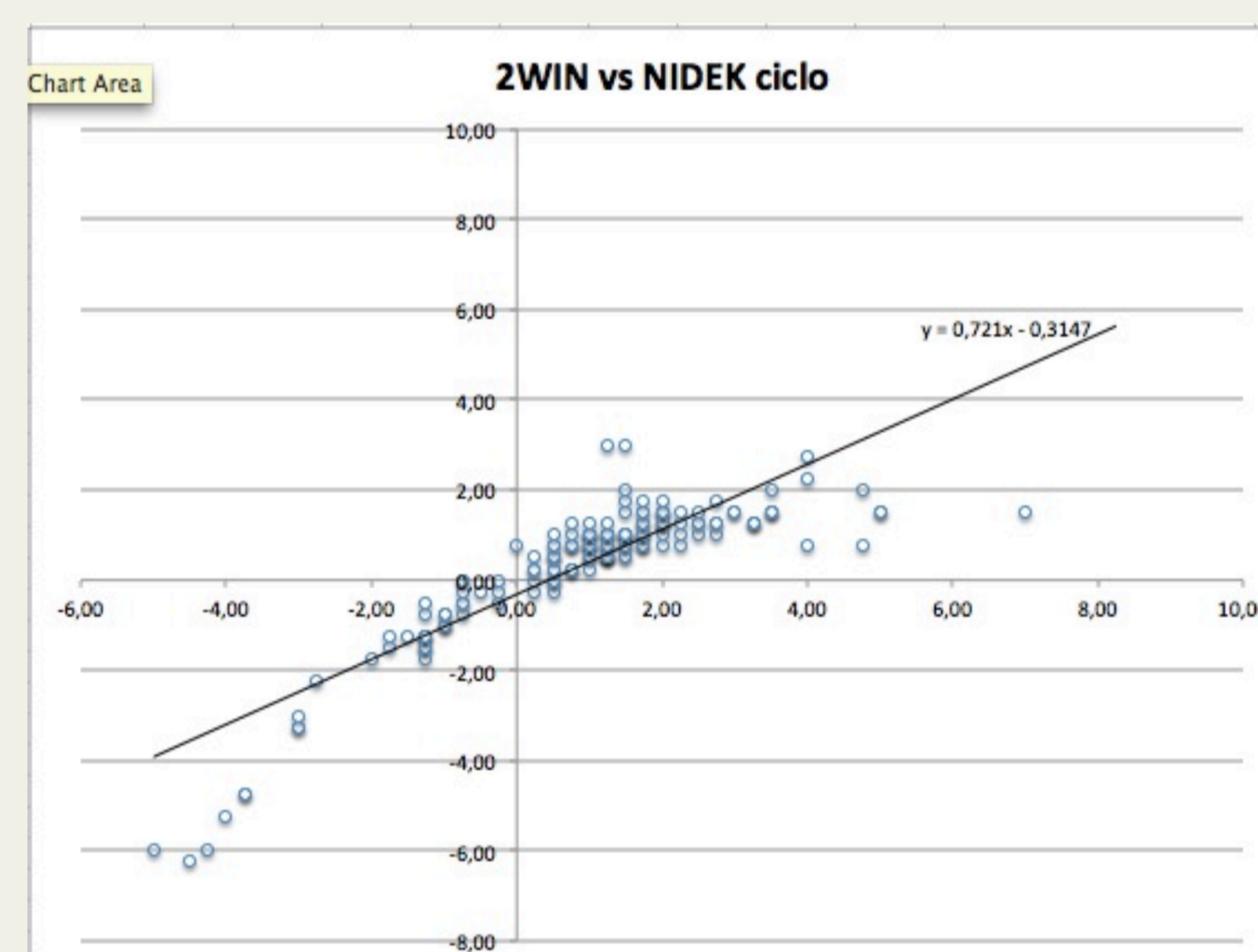
Each patient was screened with the 2WIN refractometer (rev. software 2.3), the NIKON Retinomax and the Nidek autorefractometer on the same day as part of a comprehensive pediatric ophthalmic examination.

The age range was between 10 months and 13 years.

2WIN is a novel portable refractometer (Adaptica, PD, Italy). It works at 1 meter distance from the patient and take the measurement in a few seconds

## RESULTS

- Compared to the NIKON Retinomax:
  - the mean difference in the sphere before cycloplegia was 0.40 D with a standard deviation of 1.19 D; after cycloplegia was -0.56 D with a standard deviation of 0.93 D.
  - the mean difference in the cylinder before cycloplegia was -0.2 D with a standard deviation of 0.5 D; after cycloplegia was -0.04 D with a standard deviation of 0.79 D.
- Compared to the Nidek RKT-7700:
  - mean difference in the sphere before cycloplegia was -0.02 D with a standard deviation of 1.28 D; after cycloplegia was -0.56 D with a standard deviation of 1.01 D
  - mean difference in the cylinder before cycloplegia was 0.07 D with a standard deviation of 0.49 D; after cycloplegia was 0.15 D with a standard deviation of 0.68 D



## CONCLUSION

2WIN refractometer have good performance in the detection of refractive errors compared to Retinomax K-plus2 and NIDEK RKT-7700 Autorefractor.

2WIN refractometer could be an easy-to-use, safe and reliable screening method of refraction in young children, especially for ophthalmologists unskilled in retinoscopy, orthoptists and pediatricians.