



ACCURACY AND PRECISION OF GLUCOMETER-STRIPS SYSTEMS

Galileo, Newton and Contour Plus One



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Aims

1. To compare the **ACCURACY** of glucometer-strip system (GSS) Galileo Glu/Ket and Newton GDH-FAD using the GSS Contour Plus One as Reference
2. To compare the **PRECISION** of GSS Galileo, Newton and Contour Plus One

Methods

- Three devices for each GSS & up to 2 LOTs of strips were tested (**Fig. 1, Fig. 2**)
- Ten volunteers (19-34 y. o., BMI 18-31 kg/m²) were investigated in 2 sessions each
- Capillary plasma glucose (cPG) was estimated within 60 s on 9 GMS (**Fig. 3, video**)
- Each volunteer ingested Glucose–fructose–saccharose jelly 15 or 40 g (**Fig. 4**)
- The team working on the project consisted of 6 Students (**Fig 5**)
- A total of 420 cPG pairs in 140 triplets were analysed using IBM SPSS Statistics for Windows, V. 23.0. $P < 0.05$ was considered significant.
- The results were recorded: <https://youtu.be/Di3vcXtLdnQ>.



Fig.1 The 3 GSS: Galileo, Newton & Contour Plus One



Fig.2 GSS results of a participant 20 minutes after ingestion of glucose.



Fig.4 15g & 40g glucose-fructose-saccharose jelly shots respectively.



Fig.5 Group of students working on project.



Fig.3 Participant pricked and blood sample used to provide measurements of cPG

Results & Conclusion

ACCURACY

Accuracy of Galileo & Newton were assessed using 420 pairs with reference values of GSS Contour Plus given its compatibility proven by the laboratory analyser Cobas Integra 400 employing the approved hexokinase method.

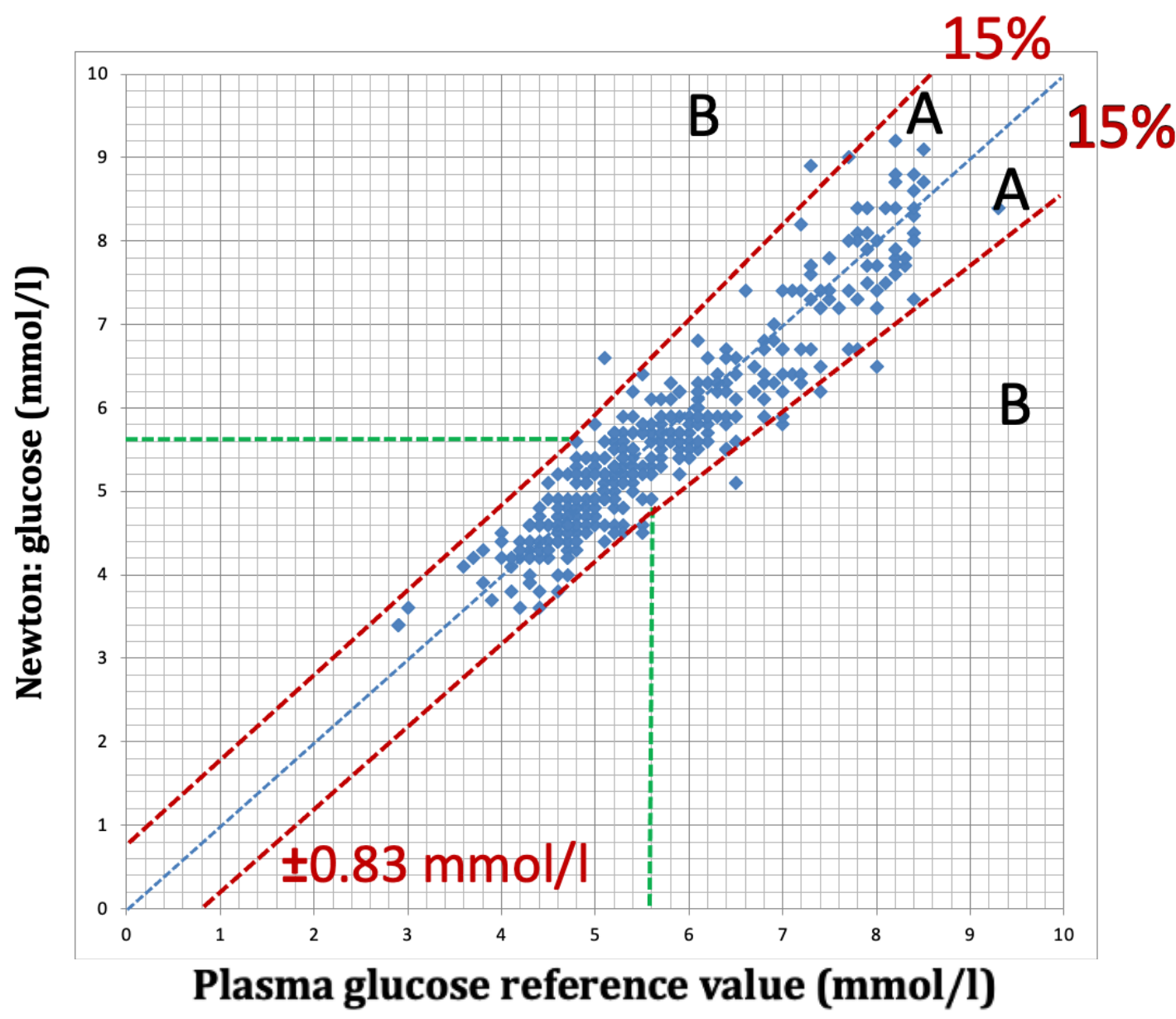


Fig.6 Graph plotting Newton GSS cPG readings against Reference values.

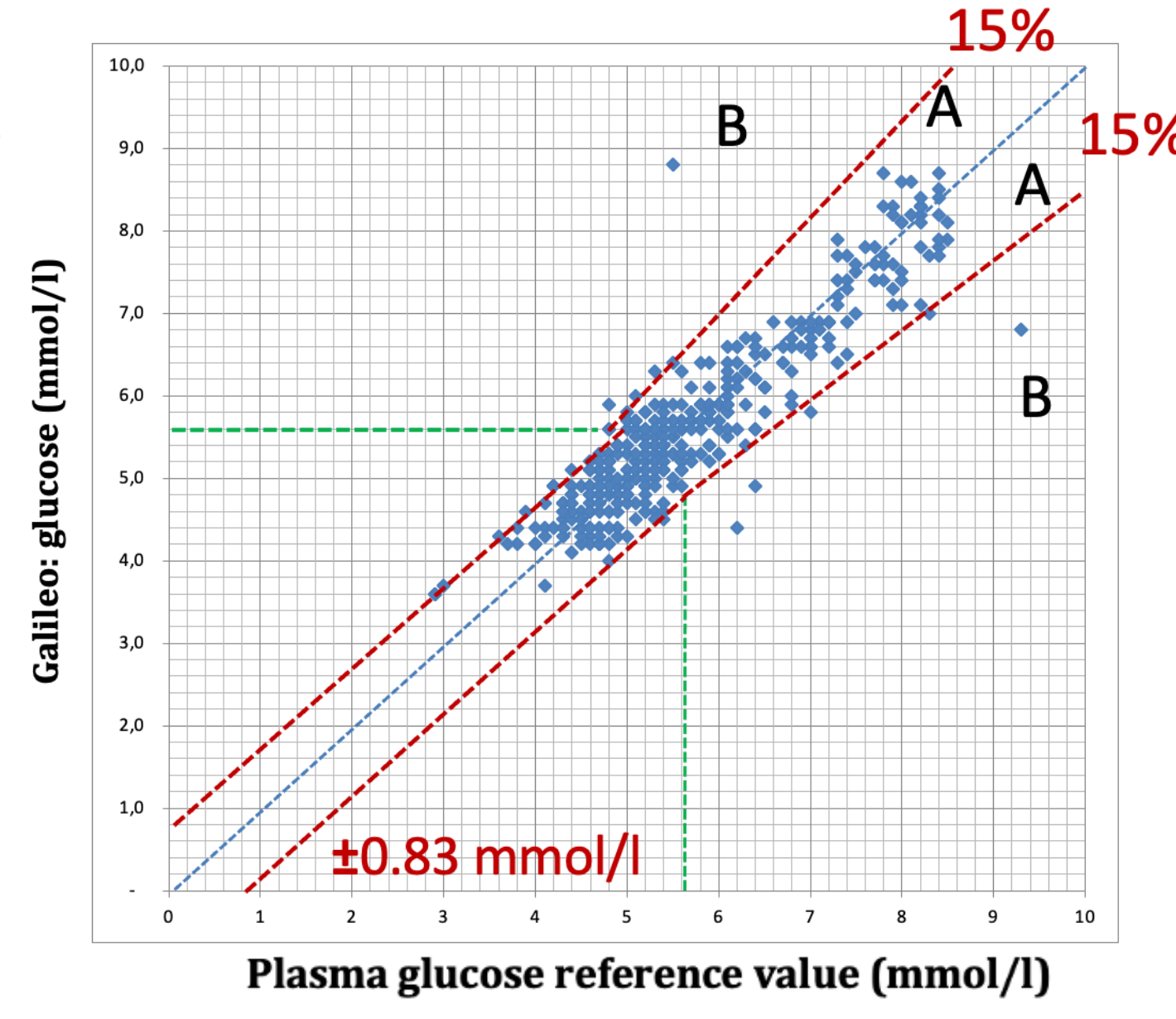


Fig.7 Graph plotting Galileo GSS cPG readings against Reference values

1. Accuracy of Newton related to Reference GSS Contour Plus (for cPG 2.9–9.3 mmol/l) shows 412 out of 420 (98%) pairs within limits of ISO 15197.
2. Accuracy of Galileo (cPG 2.9–9.3 mmol/l) shows 402 out of 420 (95%) pairs within limits of ISO 15197.
3. No significant difference between accuracy of Galileo, Newton and Contour could be seen.

PRECISION

Precision of individual GSS was estimated using standard deviation (SD) of average differences between each of respective 140 triplet PG measurements.

GSS	Mean	SD	p-value (vs. Contour)
Galileo	0,195	0,192	< 0,0001
Newton	0,254	0,155	< 0,0001
Contour	0,103	0,087	-

Table.1 Descriptive characteristics of standard deviations of GSS triplets & P-values.

1. Higher cPG variability in triplets from Galileo or Newton when compared to Contour Plus One was shown.
2. Lower cPG variability in triplets from Newton when compared to Galileo was demonstrated ($p < 0,0001$).

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