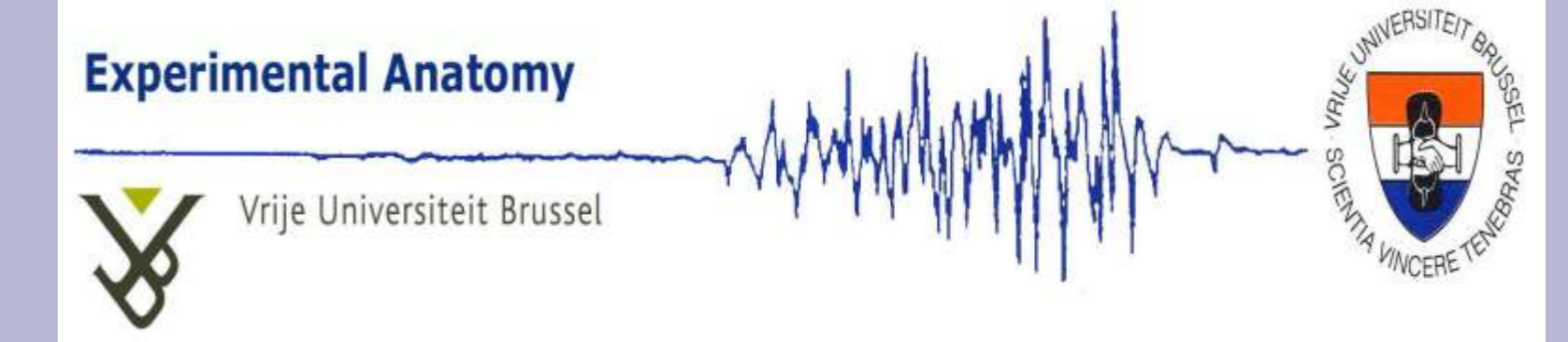# The 3D- reproducibility of the cervical 'pre-manipulative position test' in manual therapeutic examination.

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Purpose

To investigate the intra- and inter-examiner reliability of the 'pre-manipulative position test ' in a quantitative way.
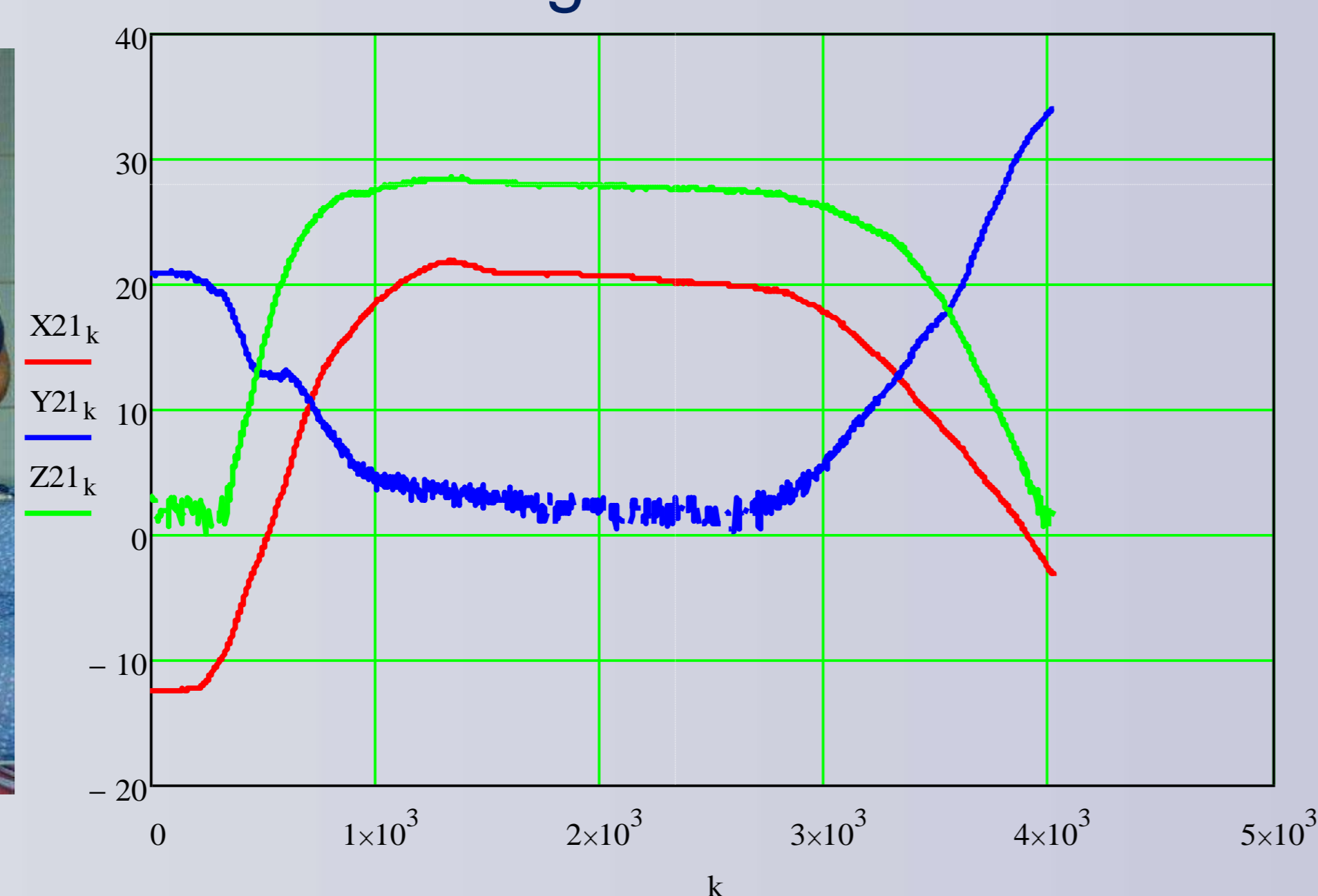
Methodology

-16 Healthy individuals positioned in the pre-manipulative position for a supine HVT at C12,C34 and C56 (Figure 1).
-Registration by electromagnetic trackers and calculation is done with a Mathcad routine.
-The reliability investigated by test-retest situation from rotations around an X-,Y-,and Z-axis .
-described by Intra Class Correlation Coefficient (ICC) (Figure 2).

Figure 1

Figure 2

Results

-Intra-examiner reliability: 'fair' to 'good' , ICC's 0.67 to 0.94. One 'poor' value (ICC=0.53) for the Y-motion component at C56 for examiner 1 (Table 1).
-Inter-examiner reliability 'fair' to 'good' at C12 and C34, ICC's 0.60-0.90. At C56 'poor' ICC's 0.42-0.81 (Table 2).

Discussion

-Cautious positive judgment about the reproducibility of the supine pre-manipulative position test.
-Reasonable base for extrapolating the results to other supine pre-manipulative tests.
-No extrapolation to pre-manipulative tests executed in sitting position and patient groups.
-large 95% confidence intervals for the ICC's of the inter-examiner reliability so interpretation with caution.

Table 1

	C1-2 R1	95% CI	C1-2 R2	95% CI	C3-4 R1	95% CI	C3-4 R2	95% CI	C5-6 R1	95% CI	C5-6 R2	95% CI
TX RX	0,860**	0,633-0,951	0,889**	0,690-0,963	0,935**	0,826-0,977	0,916**	0;770-0,971	0,671**	0,279-0,871	0,918**	0,781-0,970
TY RY	0,679**	0,274-0,879	0,887**	0,685-0,962	0,824**	0,567-0,935	0,908**	0,749-0,968	0,529*	0,062-0,805	0,944**	0,848-0,980
TZ RZ	0,184ns	-,345-0,624	0,905**	0,730-0,968	0,259ns	-,254-0,659	0,892**	0,709-0,962	0,013ns	-,492-0,472	0,806**	0,529-0,928

TX:testrotation round X-axis /RX:retest round X-axis / R1:examiner 1 /R2:examiner 2/*:significant. 0,05 /** significant 0,01/ ns: not significant sign.

Table 2

	C1-2	C1-2 95%CI	C3-4	C3-4 95%CI	C5-6	C5-6 95%CI
TX	0,899**	0,726-0,965	0,837**	0,594-0,940	0,418*	-0,081-0,749
TY	0,596**	0,140-0,843	0,729**	0,380-0,896	0,646**	0,238-0,860
TZ	-0,072ns	-0,549-0,441	0,141ns	-0,366-0,583	0,053ns	-0,440-0,522
RX	0,691**	0,275-0,889	0,834**	0,575-0,941	0,814**	0,547-0,931
RY	0,698**	0,286-0,892	0,691**	0,296-0,885	0,599**	0,165-0,839
RZ	0,706**	0,301-0,895	0,833**	0,573-0,941	0,426*	-0,071-0,753

T:test/R:retest/X:X-axis/Y:Y-axis/Z:Z-axis/*:significant 0,05/**: significant 0,01/ns: not significant

Conclusions

-Intra-examiner reliability of the 'pre-manipulative position test' is 'fair' to 'good'.
-For clinical practice this means that an experienced manual therapist is able to position and reposition the patient ,after the necessary pause, in the 'pre-manipulative position' before initiating a High Velocity Thrust.
-Inter-examiner reliability has to be interpreted with caution and future studies regarding the validity of the 'pre-manipulative position test' should bear this in mind.
-Clinically both test and manipulation are to be executed by the same therapist.

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