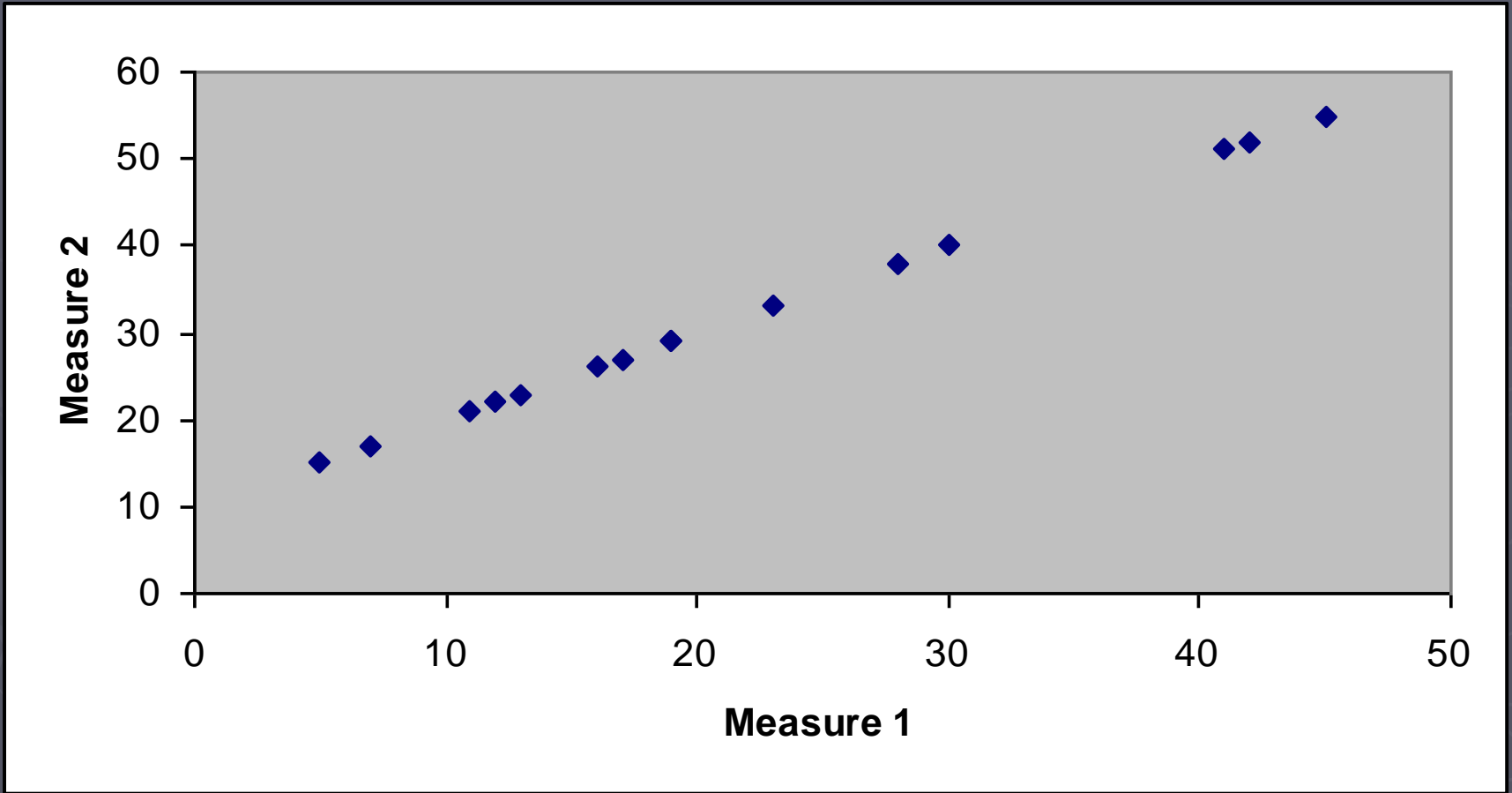


An Investigation of the Agreement Between Three-dimensional and Two-dimensional Measurements of Frontal Plane Knee Angles

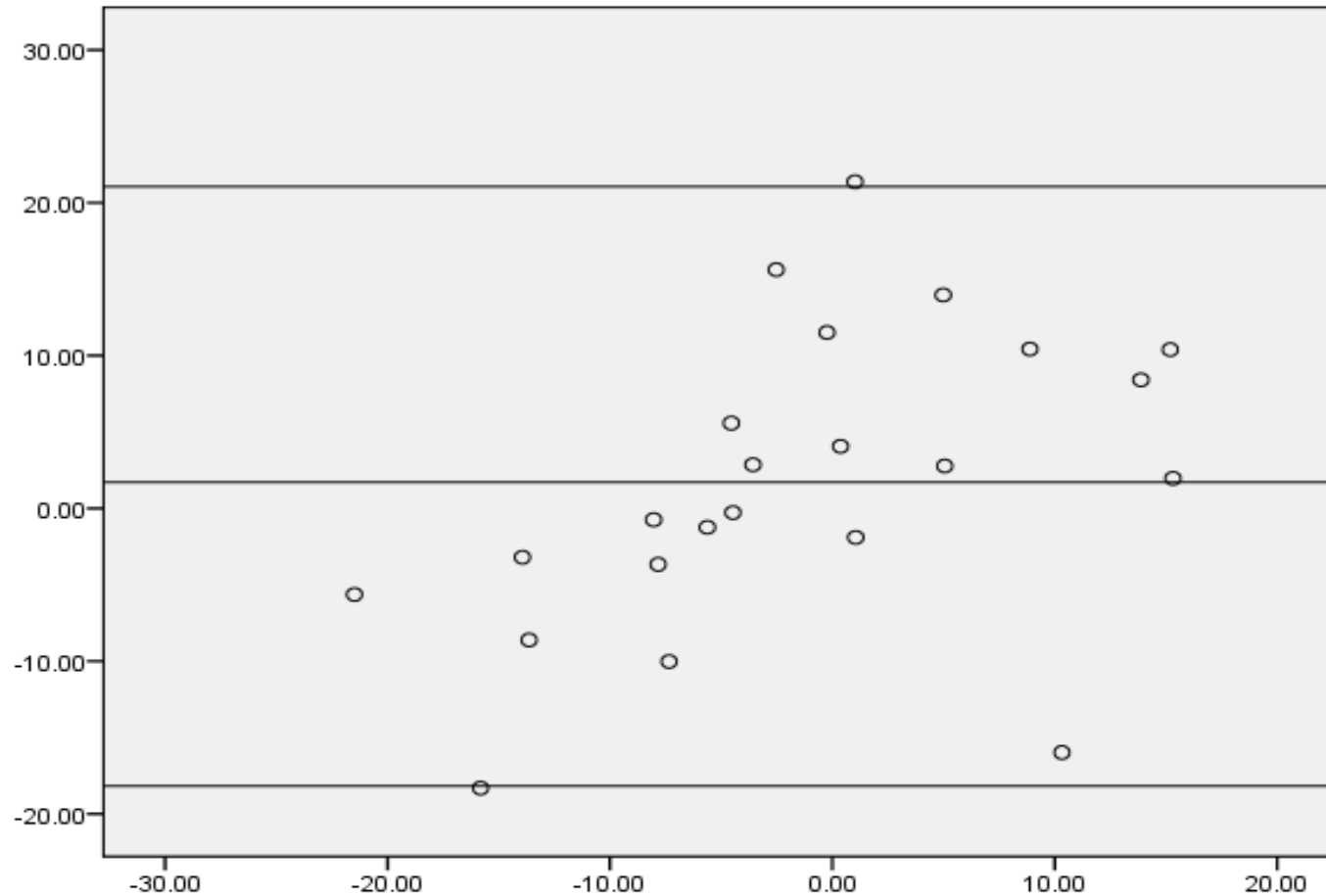
Jill Morgan

$$y = mx + c$$



Bland and Altman (1983) *Lancet*

Difference between 2 measures

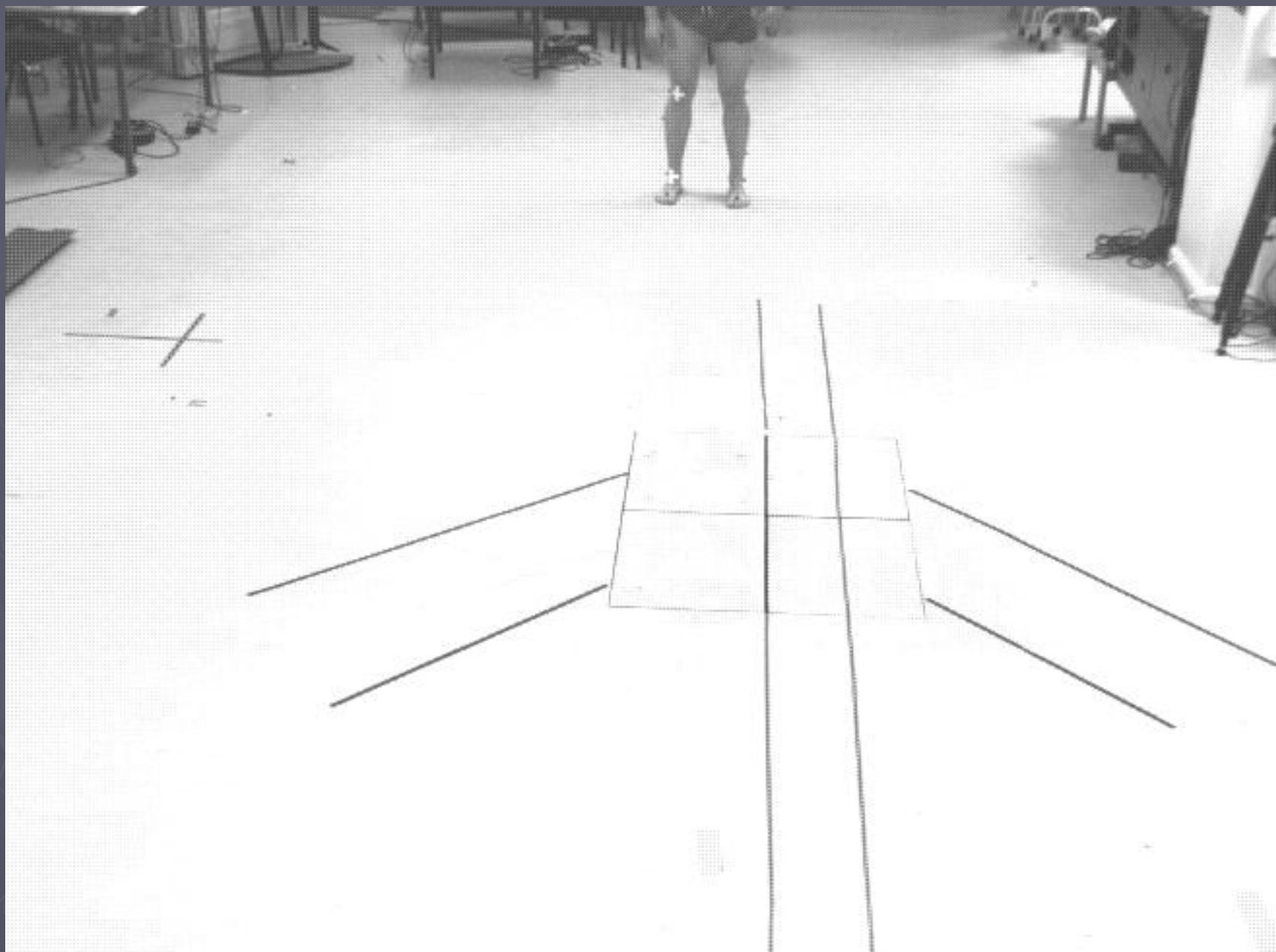


+95%

Mean

-95%

Average of 2 measures



Landing Type	Spearman's Rank Correlation	Mean Difference of Two Measures	Upper limit (+95%)	Lower Limit (-95%)
2-footed	0.632*	1.71	21.05	-18.17
1-footed	0.654*	5	21.81	-11.81
Run-on	0.467*	4.8	17.66	-8.06

Conclusions / Implications

- 2D and 3D measures correlate but do not give specific agreement
- Dynamic valgus includes abduction, flexion and rotation
- Difficult to locate joint centre/axis of rotation with 2D analysis
- 2D still useful as a screening tool

- ▶ Bland JM and Altman DG (1986) Statistical methods for assessing agreement between two methods of clinical measurement *Lancet* **i**: 307-310
- ▶ Ford KR, Myer GD and Hewett TE (2003) Valgus Knee Motion during Landing in High School Female and Male Basketball Players *Medicine and Science in Sports and Exercise* **35**(10): 1745-1750
- ▶ Hewett TE, Myer GD, Ford KR et al (2005) Biomechanical Measures of Neuromuscular Control and Valgus Loading of the Knee Predict Anterior Cruciate Ligament Injury Risk in Female Athletes *American Journal of Sports Medicine* **33**(4): 492-501
- ▶ Hillman SJ, Hazelwood ME, Loudon IR et al (1998) Can transverse plane rotations be estimated from video tape gait analysis? *Gait and Posture* **8**: 87-90
- ▶ Jacobs CA, Uhl TL, Mattacola CG et al (2007) Hip Abductor Function and Lower Extremity Landing Kinematics: Sex Differences *Journal of Athletic Training* **42**(1): 76-83
- ▶ Joseph M, Tiberio D, Baird JL et al (2008) Knee Valgus during Drop Jumps in National Collegiate Athletic Association Division 1 Female Athletes *American journal of Sports Medicine* **36**: 285-289
- ▶ Kato S, Urabe Y and Kawamura K (2008) Alignment control exercise changes lower extremity movement during stop movements in female basketball players *The Knee* **15**: 299-301
- ▶ McLean SG, Walker K, Ford KR et al (2005) Evaluation of a two dimensional analysis method as a screening and evaluation tool for anterior cruciate ligament injury *British Journal of Sports Medicine* **39**: 355-362
- ▶ Otago L (2004) Kinetic analysis of landings in netball: is a footwork rule change required to decrease ACL injuries? *Journal of Science and Medicine in Sport* **7**(1): 85-95
- ▶ Pantano KJ, White SC, Gilchrist LA et al (2005) Differences in peak knee valgus angles between individuals with high and low Q-angles during a single limb squat *Clinical Biomechanics* **20**: 966-972