Accuracy and Reproducibility of QMA®

QMA® has been independently validated in numerous scientific studies. These studies have consistently shown an average error of 0.5 deg with an upper limit of ≤ 1.4 deg.


- **Lumbar validation study**: Reported an average accuracy of 0.47 deg ± 0.24 deg and a 95% confidence interval 0 to 1.4 deg.


- **Cervical validation study**: Reported a mean absolute accuracy of < 0.5 deg and < 0.3 mm with maximum errors of 1.4 deg and 0.8 mm.


- **Lumbar reproducibility study**: Reported a 95% confidence interval of ± 1 deg and ± 0.6 mm with an ICC > 0.85 for agreement amongst observers.


- **Cervical reproducibility study**: Reported an ICC of 0.82 for measurements of intervertebral motion using QMA compared to 0.68 for manual measurements.


- **Cervical reproducibility study**: Reported an average difference amongst observers of 0.18 deg with a max difference of 1.2 deg and a correlation coefficient always above 0.96


- **Parallax sensitivity study**: Reported that range of motion measurements made with QMA were not significantly affected by X-ray beam parallax effects (P=0.22)


- **Reproducibility of visual assessments aided with QMA**: Reported significantly improved observer agreement amongst physicians for various clinical diagnoses; kappa increased from 0.17 before application of QMA to 0.77 after use of QMA