

# Reproducibility and Reliability Analysis of the Luk Distal Radius and Ulna Classification for European Patients with Adolescent Idiopathic Scoliosis

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# Background and Purpose

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Current clinical and radiological methods of predicting a patient's growth potential are limited in terms of practicality, accuracy and known to differ in different races.

This information influences optimal timing of bracing and surgical intervention in AIS.

This study was performed to analyse reproducibility and reliability of the Luk Distal Radius and Ulna(LDRU) classification in European patients.

# Methods

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50 randomly selected left hand and wrist radiographs of patients with AIS referred to a tertiary referral centre were assessed for bone maturity using the LDRU classification.

Assessment was performed twice by four examiners at an interval of one month.

Statistical analysis was performed using the intraclass correlation (ICC) method to determine the reliabilities within and between the examiners.

# Results

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50 radiographs (M:F = 13:37) with average age of 13.7 years (range 10-18) were assessed for reliability.

The inter-rater ICC value was 0.918 for radius assessment and 0.939 for ulna assessment.

The intra-rater ICC values for radius assessment ranged between 0.897 and 0.769 and between 0.948 and 0.786 for ulna assessment.

There was near perfect correlation for both assessments.

## Inter-rater ICC Values for radius and ulna assessment

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	Inter-rater ICC Value	95% Confidence Interval
Radius Assessment	0.918	0.878 – 0.948
Ulna Assessment	0.939	0.908 – 0.962

# Intra-rater ICC Values for radius and ulna assessment

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	AC	DL	JH	SH
Radius Assessment	0.897	0.809	0.769	0.814
Ulna Assessment	0.948	0.843	0.786	0.810

# Conclusions

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This study provides independent evidence that the Luk Distal Radius and Ulna classification is a reliable tool for assessment of skeletal maturity for European patients.

Minimal clinical experience is required to reliably utilise it

# Disclosures

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None of the authors has any potential conflict of interest.