

# BMA™

## High Resolution Digital X-Ray for Skeletal Ultra Analysis

# Osteo Arthritis Application : Joint MicroAnalysis

With the current therapeutic focus in arthritis shifting from symptom control to actual disease modification, there is a growing demand for more objective and sensitive ways to evaluate bone erosion and joint-space narrowing.

The radiographic assessment of Osteo Arthritis is based on the cartilage loss, which corresponds to joint-space narrowing (JSN). These radiodiagnostic criteria can be quantified using specific joint space width (JSW) measurement to evaluate the stage of the disease and adapt therapeutic treatment and follow-up.

## Examination procedure

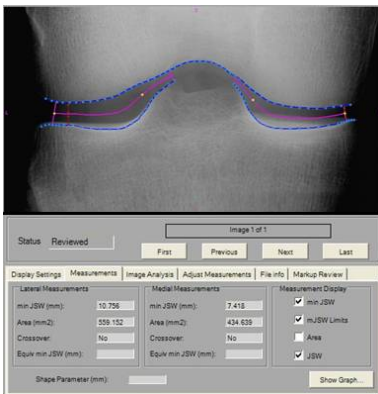
BMA™ design provides a very user-friendly patient positioning to measure accurately joint space width on knee in a few minutes. Thanks to the excellent Detection Quantum Efficiency (DQE) of the digital X-Ray detector and system design, the patient dose can be divided by up to 3 times compared to a conventional screen film system.



Postero-anterior (PA) X Ray image of the knee, using the metatarsal-phalangeal (MTP) positioning technique, for JSW measurement.

## Output

The combination of very high resolution X-Ray image (100 µm) provided by BMA™ and the Optasia™ knee Analyzer™ software allows the JSN quantification and sub-chondral tissue analysis automatically in both the medial and the lateral compartment of the knee, improving quality in the follow-up of patients.



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This Optasia™ software :

- measures the minimum joint space width, the joint space width profile and the cartilage area,
- plots the joint space width profile,
- quantifies the increase in sub-chondral sclerosis and a loss of bone in the subarticular region in the diseased compartment by Fractal Signature Analysis (cf. E.A Messent & al : "Differences in trabecular structure between knees with and without osteoarthritis quantified by macro and standard radiography respectively" Osteoarthritis & Cartilage 2006).

The advantages being :

1. Less human interaction reduces intra and inter user variability, particularly between base line and follow up.
2. Extracting measures that could not be extracted manually allows the maximum amount of data to be taken from images collected.

The key benefits of this integrated solution are :

- Image acquisition and JSN analysis are performed with the same system, avoiding the risk and complexity of image transfer. The exam results are immediately available, and there is no need to recall patients in case of manipulation error.
- No image processing expertise required and easily adjustable automated measurement.
- Improved workflow and faster analysis.
- Excellent reproducibility.
- Efficient storage, accurate retrieval, rapid resources access.