Chondral Quant

Automated, quantitative, and structured analysis of knee cartilage

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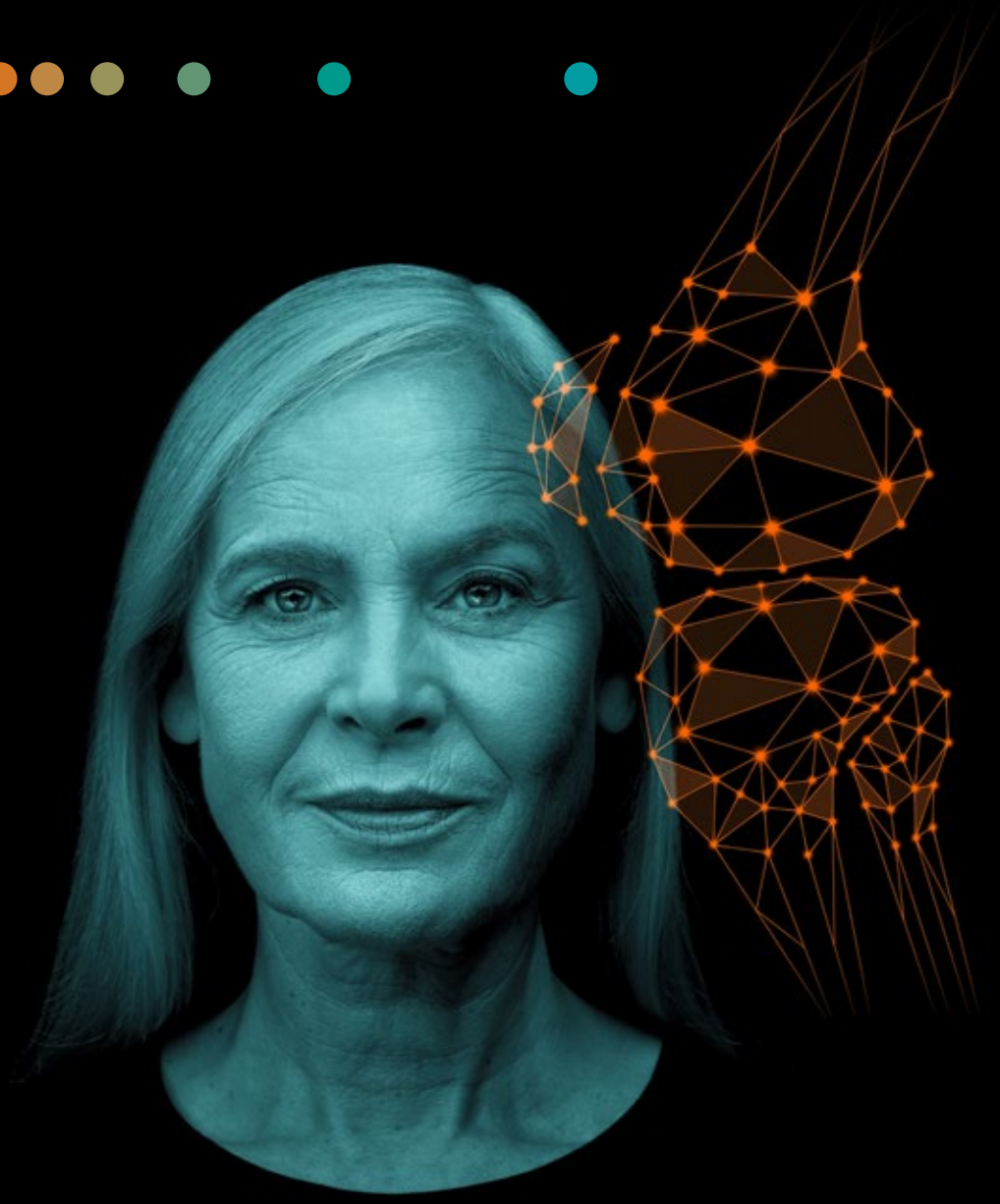


SIEMENS Healthineers

Chondral Quant

Automated, quantitative, and structured analysis of knee cartilage

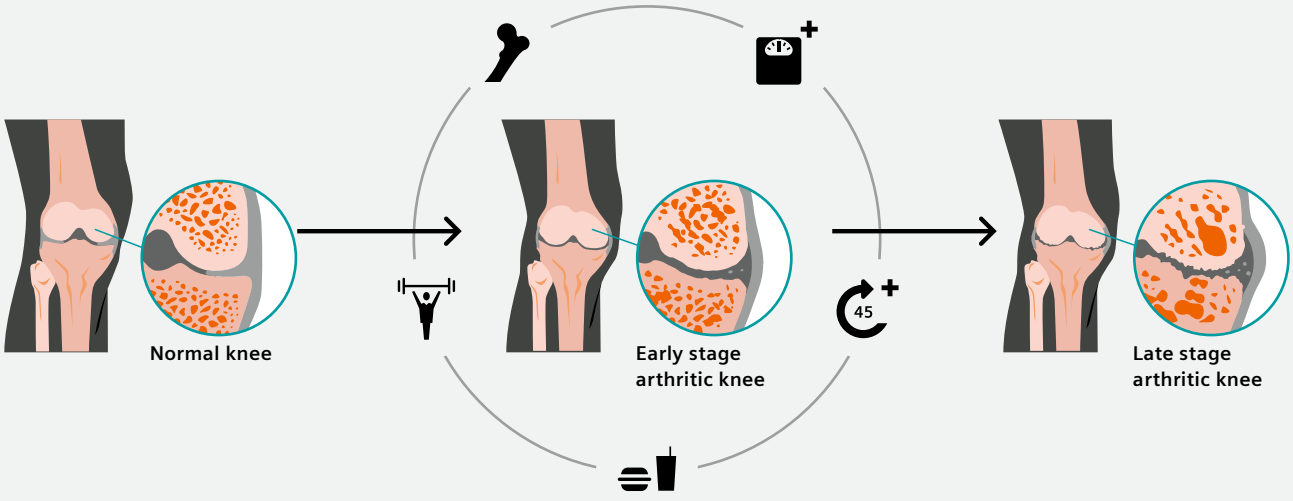
Osteoarthritis is a degenerative disease characterized by a loss of cartilage and damage of surrounding soft tissue such as the ligaments and menisci. In a later stage, a change in bone structure can occur with obese patients being more prone to develop osteoarthritis. Patients with osteoarthritis suffer often from joint pain, loss of mobility, and an overall lower quality of life. Detecting osteoarthritis early is key to better managing this disease and offering an improved quality of life for patients.

Osteoarthritis affects a large portion of the global population

22%

of adults **over 40** suffer from osteoarthritis[1]

The knee joint and risk factors to develop osteoarthritis



Early detection

Early identification of osteoarthritis is key to adapt treatment options

"There is an increasing awareness on the importance in identifying early phases of the degenerative processes in knee osteoarthritis, the crucial period of the disease when there might still be the possibility to initiate treatments preventing its progression."[1]

Medication
Pain and anti-inflammatory medications are available

Healthy lifestyle
Eating healthy, not smoking, consuming alcohol in moderation, control blood sugar, weight loss and strengthening exercises

Surgery
Operations to replace damaged cartilage and joints can restore mobility

Publications show quantitative MRI can be effective in detecting cartilage defects

Can signal abnormalities detected with MR imaging in knee articular cartilage be used to predict development of morphologic cartilage defects?

Schwaiger, B. J., Gersing, A. S., Mbapte Wamba, J., Nevitt, M. C., McCulloch, C. E., & Link, T. M. (2016). 48-Month Data from the Osteoarthritis Initiative. Radiology, 281(1), 158–167.

Quantitative MRI evaluation of articular cartilage in patients with meniscus tear

Chen, E., Hou, W., Wang, H., Li, J., Lin, Y., Liu, H., Du, M., Li, L., Wang, X., Yang, J., Yang, R., Zhou, C., Chen, P., Zeng, M., Yao, Q., & Chen, W. (2022). Frontiers in endocrinology, 13, 911893.

Introducing Chondral Quant

For efficient and quantitative knee cartilage evaluation

- Bring quantitative knee cartilage evaluation into a clinical setting
- Efficient and reproducible assessment of morphological and quantitative parameters.
- Detailed and structured reporting of cartilage findings to align treatment options

Chondral Quant

Using a trained algorithm, knee cartilage is segmented automatically in 21 predefined sub-zones.

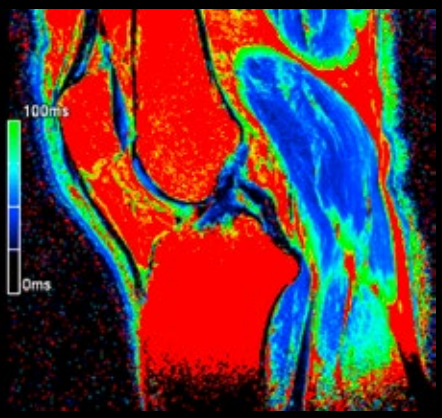
Cartilage volume and thickness are calculated, and T2 or T2* values are displayed in an easy-to-read table.

Chondral Quant provides easy and fast analysis, making a quantitative evaluation of knee cartilage now feasible in a clinical setting.

Detecting osteoarthritis in the initial stages can help develop proactive therapies along with preventative strategies to slow the degenerative process.

Save time when evaluating knee cartilage

A trained algorithm segments the knee cartilage **automatically** in 21 predefined sub-zones.[2]



MapIt (optional) provides inline generated T2 and T2* maps to evaluate the risk of an early onset of osteoarthritis.

Region	Volume(cm³)	Parametric Map		
		Mean	StdDev	Median
Femur	7.56	79.87	88.61	57.00
-medial posterior	0.63	32.30	34.20	29.00
-medial central	0.93	76.18	92.33	53.00
-medial anterior	0.85	88.14	69.42	84.00
-trochlea medial	0.48	85.76	53.97	76.00
-trochlea central	1.16	73.54	64.32	57.00
-trochlea lateral	1.10	73.29	90.01	50.00
-lateral posterior	0.78	47.99	58.19	36.00
-lateral central	0.83	115.45	115.53	99.00
-lateral anterior	0.80	121.99	127.84	105.00
Patella	2.88	61.34	57.50	49.00

Cartilage volume and thickness are calculated, T2 or T2* values are displayed in an easy-to-read table.

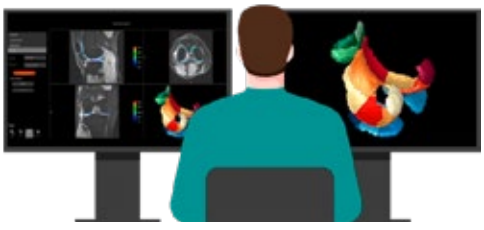
Easy and fast analysis of knee cartilage

Now feasible in a clinical setting

3D morphological scan
T2 mapping scan (optional)

syngo.via VB60 and higher

Automated results



Customer voices

"In collaboration with MRI experts from academia and based on recent clinical trial data, we see immense potential in Chondral Quant for osteoarthritis drug testing, driving forward the future of patient care."

Didier Laurent, PhD,
Imaging Expert & Director, Novartis Biomedical Research,
Clinical Imaging & Analytics, Basel, Switzerland

Initial Experience with Automatic Knee Cartilage Segmentation using MR Chondral Health

*"**Fully automatic tissue segmentation is an essential step** toward applying quantitative MRI techniques in a clinical setting. These advances in MR imaging may contribute to the **development and evaluation of effective therapeutic strategies** that target early structural changes."*

MAGNETOM Flash, issue 79, 2/2021

Chondral Quant is not commercially available in all countries.
Its future availability cannot be guaranteed.

On account of certain regional limitations of sales rights and service availability, we cannot guarantee that the product included in this brochure is available through the Siemens Healthineers sales organization worldwide. Availability and packaging may vary by country and is subject to change without prior notice.

[1] *Madry, H., Kon, E., Condello, V., Peretti, G. M., Steinwachs, M., Seil, R., Berruto, M., Engebretsen, L., Filardo, G., & Angele, P. (2016).*

[2] *Following a modified ICRS model, IR. K. Surowiec et al., "T2 values of articular cartilage in clinically relevant subregions of the asymptomatic knee," Knee Surg. Sports Traumatol. Arthrosc. Off. J. ESSKA, vol. 22, no. 6, pp. 1404–1414, Jun. 2014, doi: 10.1007/s00167-013-2779-2.*

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Published by Siemens Healthineers AG · QR700018501 · 16133 0225 ·