# Article information:

Deep learning‐based automatic pipeline for quantitative assessment of thigh muscle morphology and fatty infiltration - Gaj - Magnetic Resonance in Medicine - Wiley Online Library
<https://onlinelibrary.wiley.com/doi/full/10.1002/mrm.29599>

# Article summary:

1. Post-traumatic osteoarthritis (PTOA) is a common condition that affects 12% of the 600 million cases of osteoarthritis worldwide.

2. Manual or semi-automated methods for segmenting muscles from MRI are time-consuming and prone to intra and inter operator variations.

3. Deep learning (DL)-based automatic segmentation has been successful in many knee joint tissue segmentation tasks, but may have limitations such as difficulty in distinguishing muscle boundaries and overfitting when training with small sample sizes.

# Article rating:

Appears well balanced: The article presents the information in a reliable and balanced way, without biases and prejudices. The claims made in the article are well supported and, where applicable, all sides of the argument are given opportunity to present their point of view. The article appears trustworthy and reliable.

# Article analysis:

The article provides an overview of the current state of deep learning-based automatic pipeline for quantitative assessment of thigh muscle morphology and fatty infiltration, which is a useful tool for identifying imaging biomarkers associated with modifiable risks for early knee deterioration and PTOA development. The article is well written, providing a comprehensive review of the existing literature on manual or semi-automated methods for segmenting muscles from MRI, as well as deep learning (DL)-based automatic segmentation techniques such as UNet. The authors also discuss potential limitations of UNet structures, such as difficulty in distinguishing muscle boundaries and overfitting when training with small sample sizes.

The article does not present any counterarguments or alternative perspectives on the topic, nor does it provide any evidence to support its claims about the efficacy of DL-based automatic segmentation techniques. Additionally, there is no discussion about possible risks associated with using these techniques or how they might be mitigated. Furthermore, there is no mention of any promotional content or partiality in the article, suggesting that it is unbiased and trustworthy overall.

# Topics for further research:

* Risks associated with deep learning-based automatic segmentation
* Mitigation strategies for deep learning-based automatic segmentation
* Comparison of manual and semi-automated segmentation techniques
* Advantages and disadvantages of UNet structures
* Deep learning-based automatic segmentation for PTOA development
* Deep learning-based automatic segmentation for knee deterioration

# Report location:

<https://www.fullpicture.app/item/79f68329b4dbaef8cdb1238c505c4cd7>