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**Abstract** title **Factors influencing the ultrasound characteristics of the lumbar multifidus: a systematic review**

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### **Introduction/Background**

Chronic low back pain (CLBP) is a worldwide problem with important personal and socio-economic implications. Mostly no specific cause is identified, and CLBP is considered “non-specific”. Structural changes in the lumbar multifidus (LM) are seen in these patients, but relationship with symptoms or clinical outcome is not yet clear. Insight in the factors influencing these structural characteristics is crucial to improve understanding of this relation. Ultrasound is a promising tool in the evaluation of LM structure because it is dynamic, widely available, cheap and safe. Its reliability and validity for the evaluation of the LM was demonstrated already. The objectives of this review are to provide an overview on the current knowledge on ultrasound imaging of structural features of the LM in healthy subjects and patients with CLBP, and to improve the knowledge on factors influencing these characteristics.

### **Material and Method**

A systematic search was performed in the databases Pubmed, Embase and Web of Science (last search on 18/10/2017). Additionally, reference lists of the included articles were screened. Selection of studies, data collection and assessment of risk of bias (Downs and Black checklist) was done by two independent reviewers (SR and ER). Eligibility criteria for inclusion in the review were:

- Full text available in English, Dutch or French
- Adults >18 years
- Asymptomatic or patients with non-specific CLBP (> 3 months)
- Outcome: structural characteristics (cross-sectional area, thickness, change during contraction, fatty infiltration) of the LM measured by ultrasound
- Exclusion: intervention studies, relation with prognostic factors, reliability or validity studies

### **Results**

1064 studies were screened for eligibility, of which 70 studies were included.

### **Conclusion**

An overview on the influence of gender, age, body mass index, activity level, lumbar level, side of the spine, posture and presence of LBP on the structural LM characteristics measured by ultrasound is provided