

**KORELASI *SUBCUTANEOUS FAT TISSUE THICKNESS* LUMBAL  
DENGAN DEGENERASI DISKUS INTERVERTEBRALIS PADA  
PASIEN *LOW BACK PAIN* MENGGUNAKAN  
*MAGNETIC RESONANCE IMAGING***

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**INTISARI**

**Latar Belakang:** Degenerasi diskus intervertebralis merupakan penyebab utama *low back pain* (LBP) dengan morbiditas tinggi secara global. Faktor metabolik seperti distribusi lemak tubuh regional berperan dalam proses degeneratif melalui mekanisme inflamasi dan peningkatan beban aksial. Ketebalan jaringan lemak subkutan lumbal (*Subcutaneous Fat Tissue Thickness* – SFTT) pada pemeriksaan MRI berpotensi menjadi indikator risiko derajat degenerasi diskus intervertebralis.

**Tujuan:** Menilai korelasi antara SFTT lumbal dengan derajat degenerasi diskus intervertebralis pada pasien LBP, serta hubungan parameter adipositas lain seperti *Abdominal Diameter* (AD), *Sagittal Abdominal Diameter* (SAD), dan *Visceral Subcutaneous Thickness* (VST).

**Metode:** Penelitian analitik observasional dengan desain *cross-sectional* retrospektif terhadap 85 pasien LBP yang menjalani MRI lumbosakral di RSUP Dr. Sardjito Yogyakarta periode Januari 2024–Juni 2025. Pengukuran SFTT, AD, SAD, dan VST dilakukan pada potongan *mid-sagittal* dan aksial sekuens T2W. Derajat degenerasi dinilai dengan klasifikasi *Pfirschmann* dan dianalisis menggunakan uji korelasi *Spearman* serta regresi logistik ordinal.

**Hasil:** Rerata SFTT lumbal  $19,78 \pm 8,10$  mm. Terdapat korelasi positif sedang antara SFTT dan derajat degenerasi diskus intervertebrali ( $\rho = 0,476$ ;  $p < 0,001$ ), sedangkan AD, SAD, dan VST tidak menunjukkan korelasi bermakna ( $p > 0,05$ ). SFTT merupakan prediktor independen terhadap derajat degenerasi (OR = 1,19 per mm; 95% CI 1,11–1,28;  $p < 0,001$ ).

**Kesimpulan:** SFTT lumbal berkorelasi positif dengan derajat degenerasi diskus intervertebralis dan dapat digunakan sebagai parameter radiologis tambahan dalam evaluasi LBP. Parameter AD, SAD, dan VST tidak menunjukkan hubungan yang bermakna secara statistik.

**Kata Kunci:** SFTT, degenerasi diskus intervertebralis, *low back pain*, MRI *Pfirschmann*.

## **CORRELATION BETWEEN LUMBAR SUBCUTANEOUS FAT TISSUE THICKNESS AND INTERVERTEBRAL DISC DEGENERATION IN PATIENTS WITH LOW BACK PAIN USING MAGNETIC RESONANCE IMAGING**

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### **ABSTRACT**

**Background:** Intervertebral disc degeneration is a major cause of low back pain (LBP) and contributes significantly to global morbidity. Metabolic factors, particularly regional fat distribution, play an important role in the degenerative process through inflammatory mechanisms and increased axial load. Lumbar subcutaneous fat tissue thickness (SFTT) measured on magnetic resonance imaging (MRI) may serve as a potential risk indicator for disc degeneration severity.

**Objective:** To evaluate the correlation between lumbar SFTT and the degree of intervertebral disc degeneration in patients with LBP, and to analyze the relationship of other adiposity parameters, including Abdominal Diameter (AD), Sagittal Abdominal Diameter (SAD), and Visceral Subcutaneous Thickness (VST), with disc degeneration grade.

**Methods:** This analytical observational study employed a retrospective cross-sectional design involving 85 patients with LBP who underwent lumbosacral MRI at Dr. Sardjito General Hospital, Yogyakarta, from January 2024 to June 2025. SFTT, AD, SAD, and VST were measured on mid-sagittal and axial T2-weighted sequences. Disc degeneration was graded using the Pfirrmann classification. Data were analyzed using Spearman's correlation and ordinal logistic regression.

**Result:** The mean lumbar SFTT was  $19.78 \pm 8.10$  mm. A moderate positive correlation was observed between SFTT and disc degeneration grade ( $p = 0.476$ ;  $p < 0.001$ ), whereas AD, SAD, and VST showed no significant correlation ( $p > 0.05$ ). SFTT was identified as an independent predictor of disc degeneration (OR = 1.19 per mm; 95% CI: 1.11–1.28;  $p < 0.001$ ).

**Conclusion:** Lumbar SFTT shows a significant positive correlation with intervertebral disc degeneration and may serve as an additional radiologic parameter for LBP evaluation. Other adiposity parameters (AD, SAD, and VST) were not significantly associated with disc degeneration.

**Keywords:** SFTT, intervertebral disc degeneration, low back pain, MRI, Pfirrmann classification.