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Ultrashort Echo Time, MRI porosity index, and suppression ratio correlate with the cortical bone microstructural and mechanical properties

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Synopsis

Keywords: Bone, BoneThe cortical bone porous microstructure can be evaluated using ultrashort echo time (UTE) MRI. UTE-MRI-based evaluation of bone has been underutilized partly due to the high cost and time demands of MRI in general. The porosity index (PI) and the suppression ratio (SR) are two rapid UTE-based bone evaluation techniques (~ 5 mins scan time each), which can potentially reduce the time demand and cost in future clinical studies. We have investigated the relationship of PI and SR measures with human cortical bone microstructural and mechanical properties. Pl and SR showed significant correlations with microstructural and mechanical properties.

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Abstract

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Keywords

dehydration translatable

curve

calculating developed susceptibility strong demand radiology reduce chung scatterplots sector randomly studies future pixel regressions reason respectively cones pore diego ultimate plastics requestion respectively cones pore diego ultimate plastics per respectively clinical speciment porous veterans measures surrounding human failure front mechanical update authors bending ultrashort stress bending ultrashort change porosity cost diameter arabia mins yield cortical free correlations optimal minimize woods wright femoral optimal minimize finding since annual better saudi improvemented correlation softwareschematics of the properties annual better saudi improvemented annual better saudi improvemented assess equation considered avoids assess equation considered avoids assess equation considered avoids assess equation considered avoids and machine machine strains of the properties annual better saudi improvement to the properties of the