

Comparison between intra-articular contact patterns in the trapeziometacarpal joint of healthy and arthritic subjects

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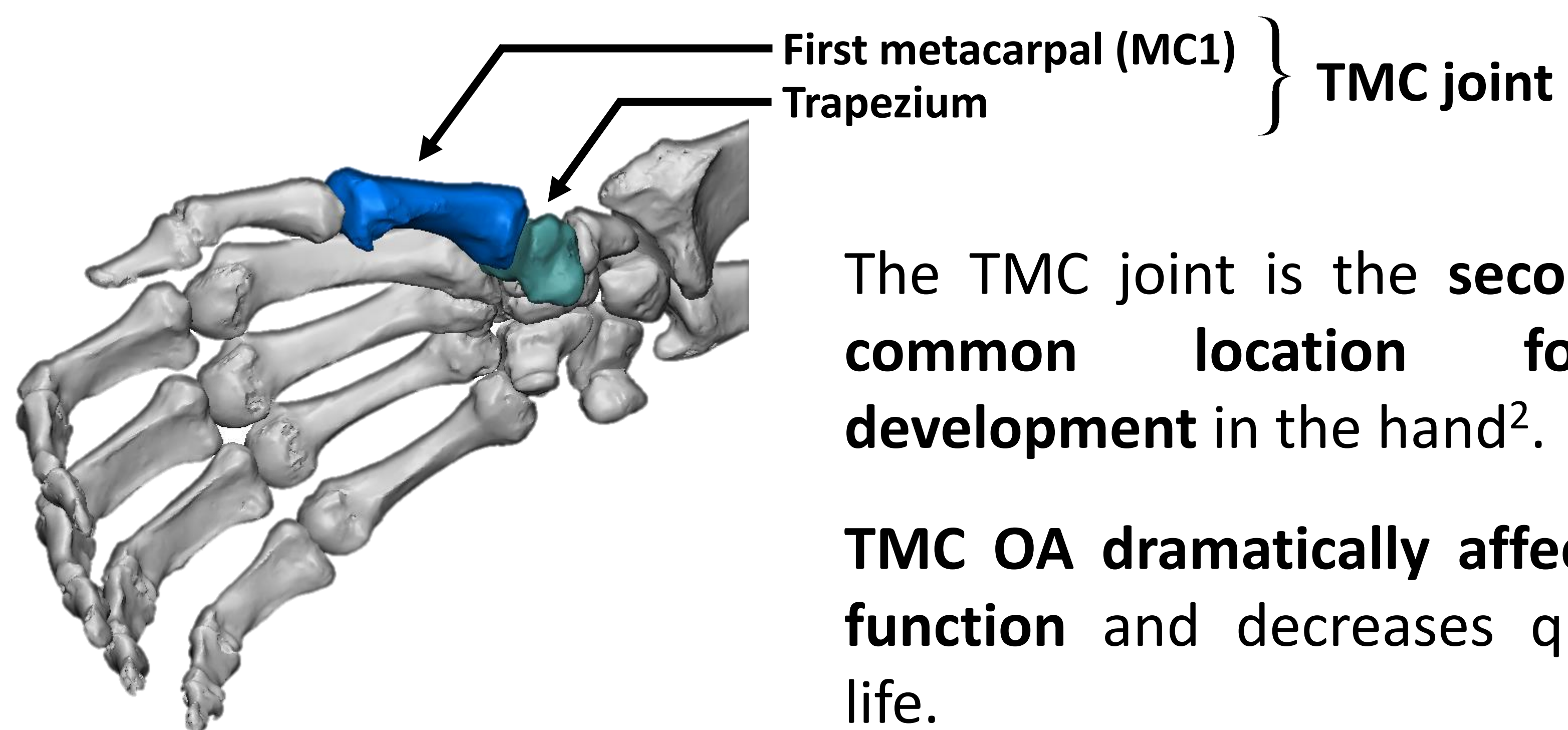
Objectives

- 1) Design a **clinical tool** to estimate the *in vivo* distribution of intra-articular pressure from CT images
- 2) Provide further insight on the **development of osteoarthritis (OA)** in the trapeziometacarpal (TMC) joint

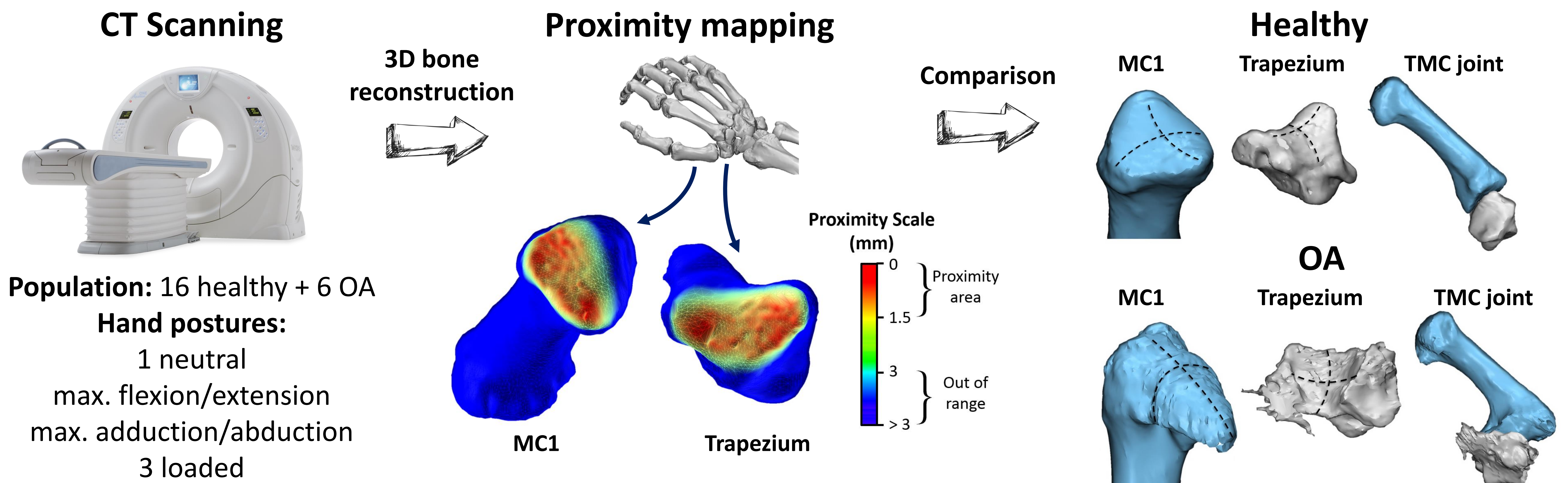
Motivations

The trapeziometacarpal (TMC) joint has a **major physiological role**.

It provides the ability to perform a **variety of prehensile tasks** (e.g. writing, typing, holding and grasping objects/tools)¹.



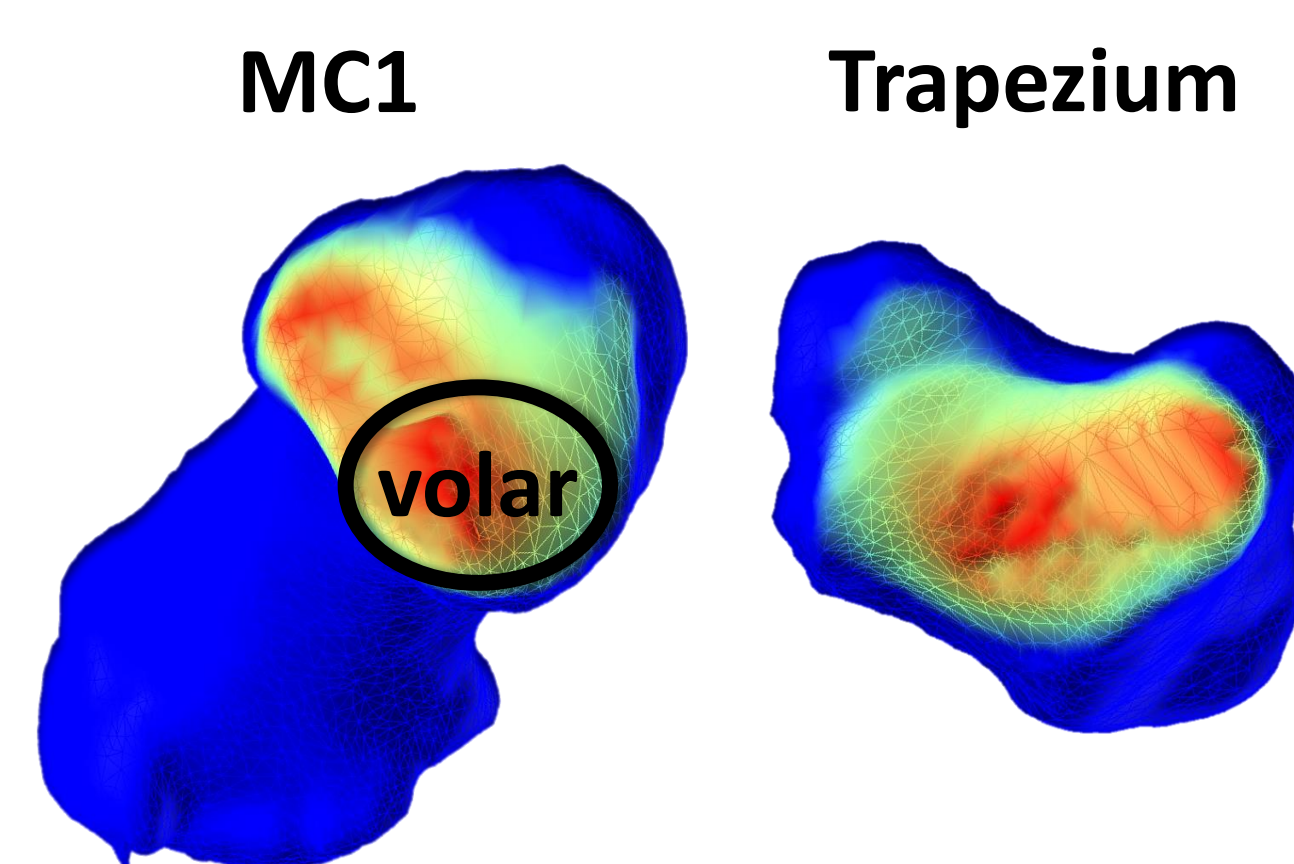
Methodology



Results

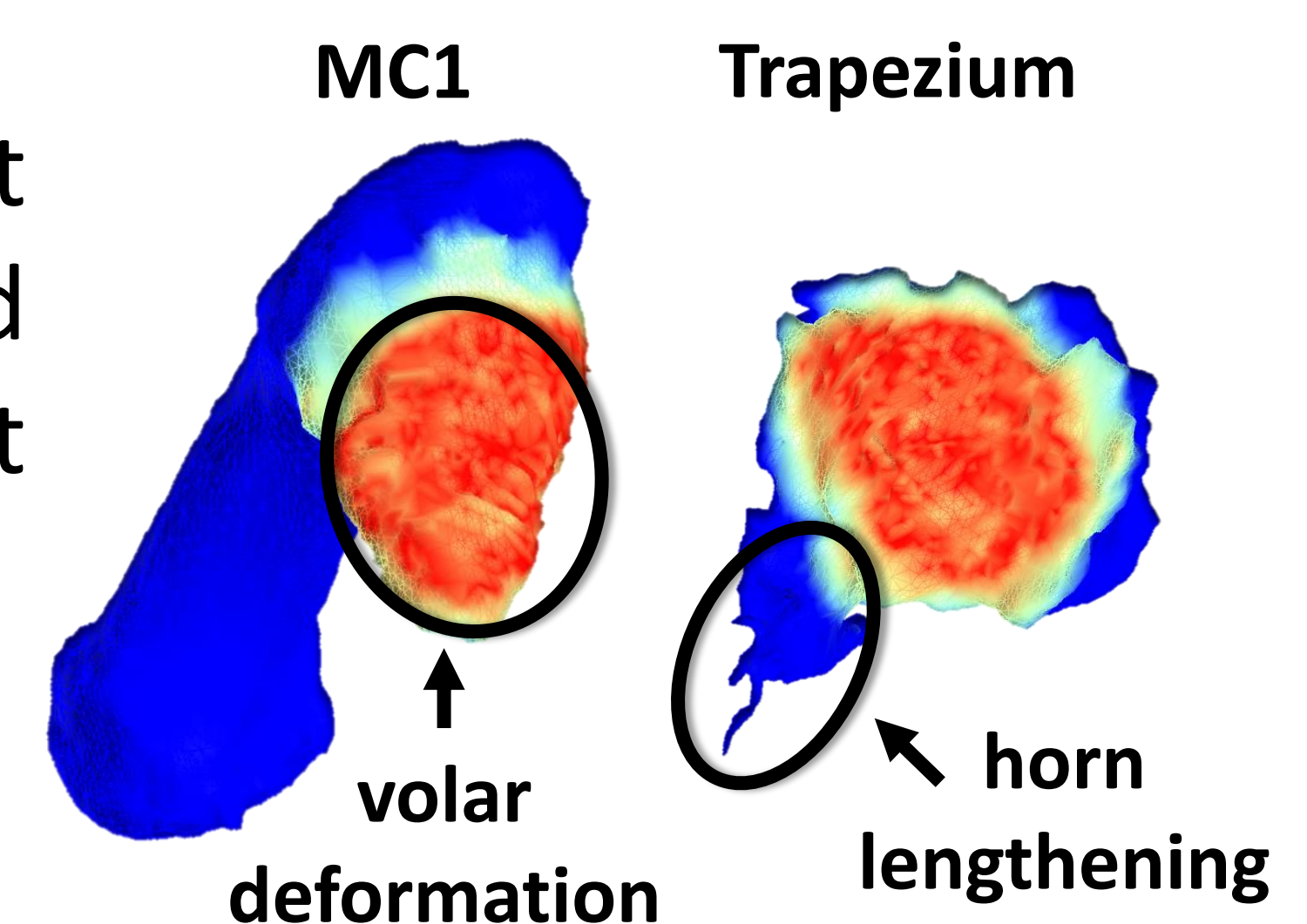
Healthy

Distinct proximity patterns observed across tasks with a recurrent pattern reported on the volar aspect of the MC1.



OA

Larger articular surfaces, joint space narrowing, increased joint congruence, important articular deformations.



Conclusions

- The method enables the *in vivo* assessment of joint space with proximity as a surrogate for pressure.
- The **recurrent volar proximity pattern (MC1)** explains the volar deformation observed in OA patients.
- The **lengthening of the trapezial horns** explains the impaired abduction reported in OA patients.
- The method can be used in a clinical setting to **better understand and prevent OA development**.

References:

¹ Marzke et al., J Anat. 197(Pt 1): 121–140, 2000

² Batra et al., Curr. Orthop. 21: 135–144, 2007