

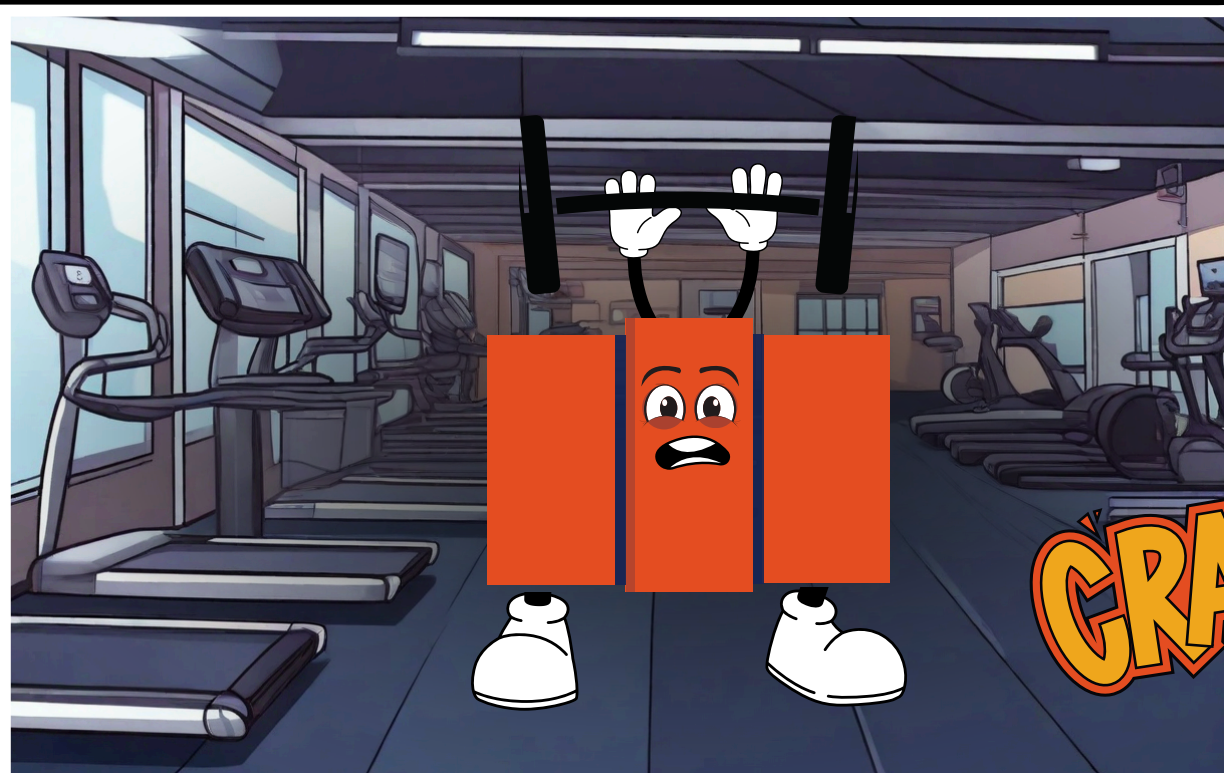
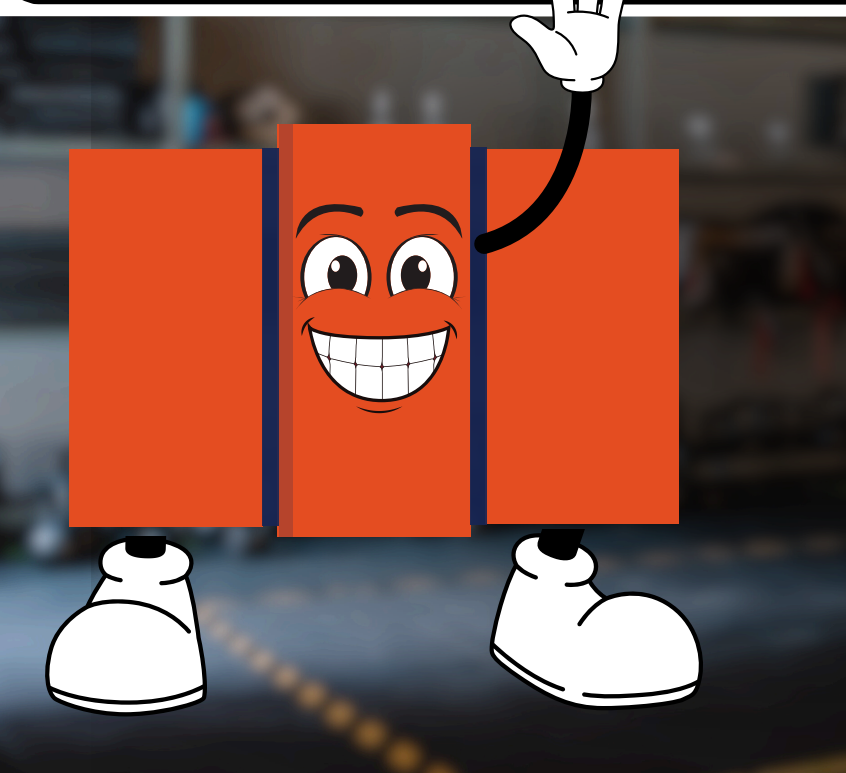
EXPLORING THE SHEAR BEHAVIOR OF MASONRY TRIPLETS VIA DIGITAL IMAGE CORRELATION

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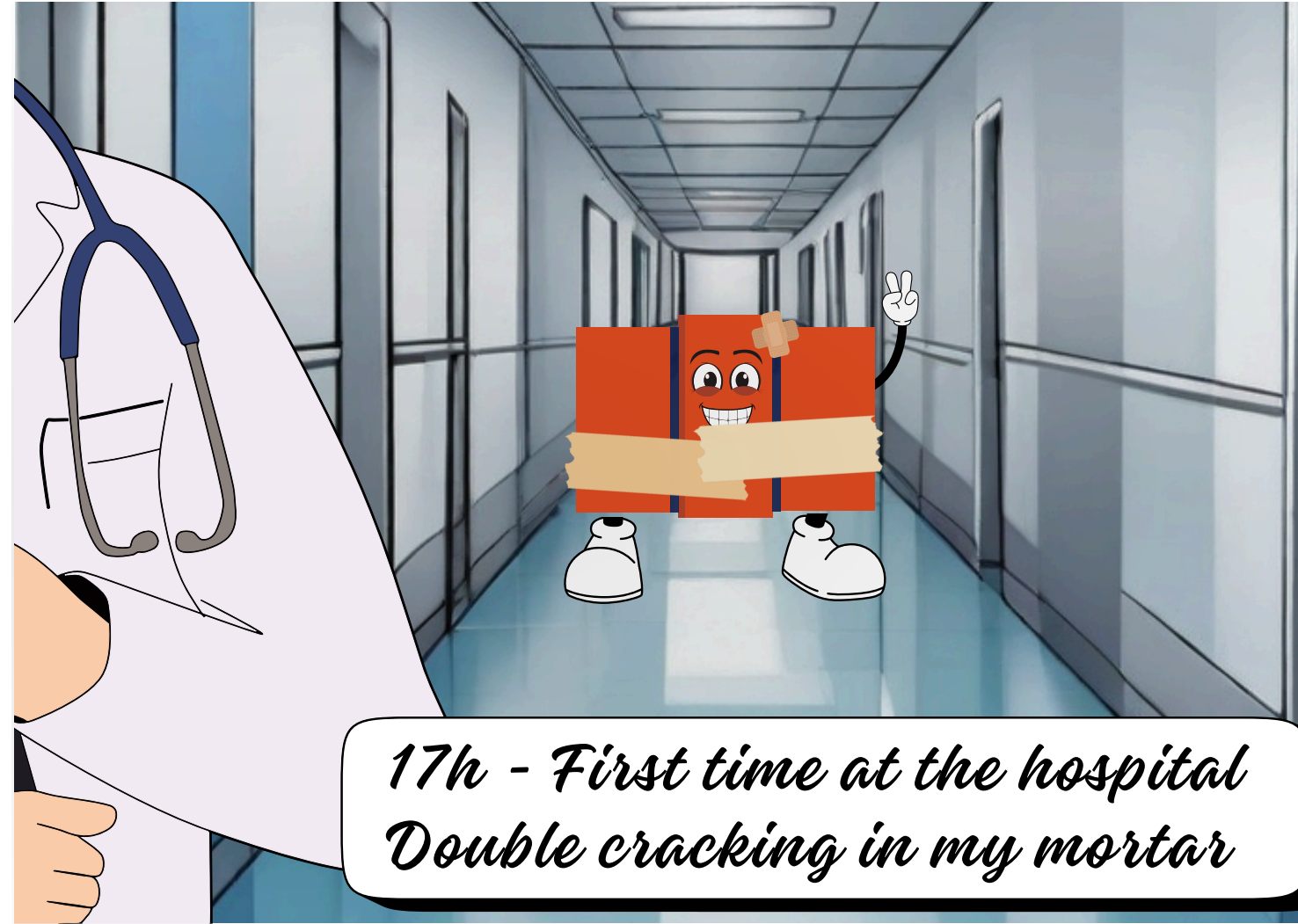
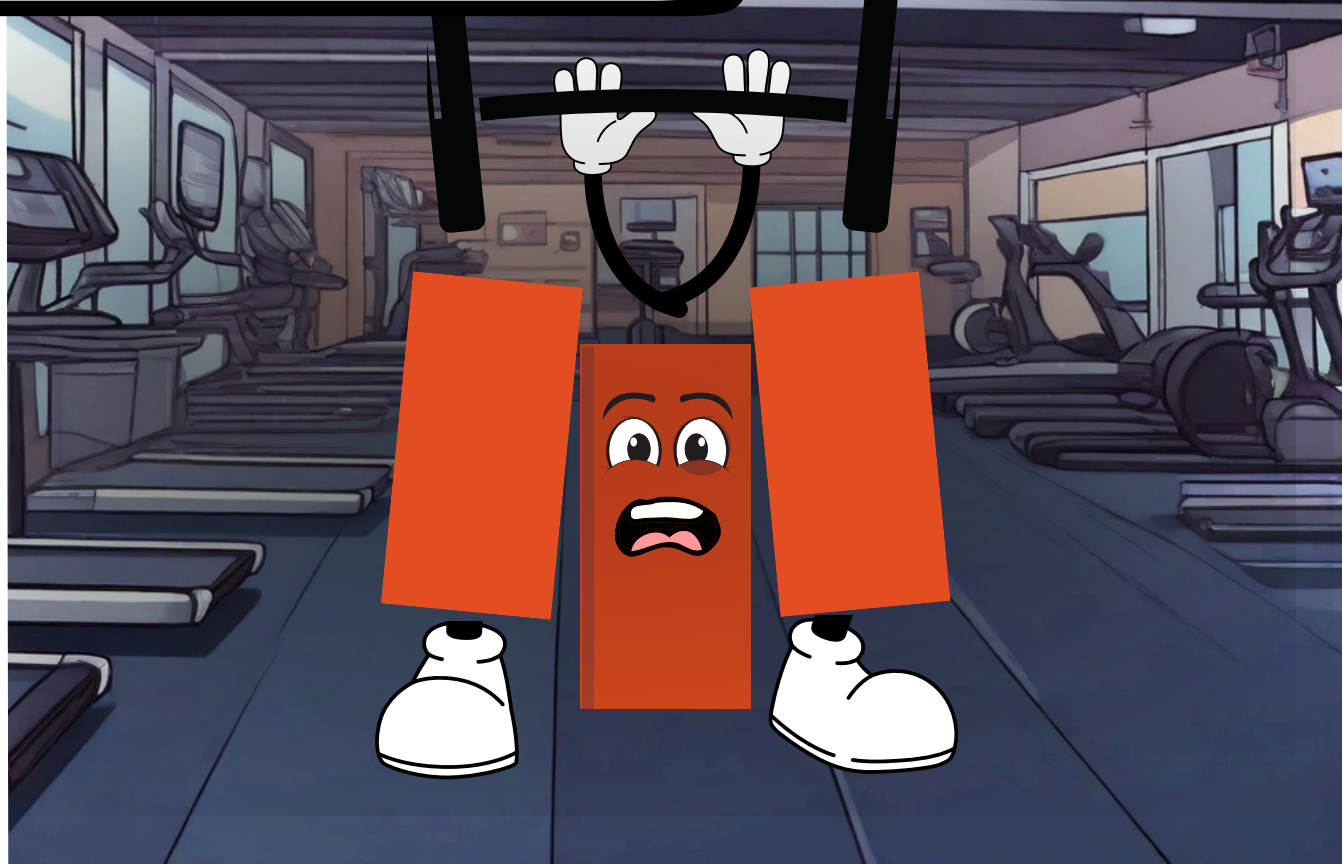


All visuals in this comic were designed with Canva.

Part 1 - Hi, I'm Blocky, a masonry triplet. My dream is to improve my shear resistance to lift as much weight as possible at the gym. Here is the beginning of my training routine.

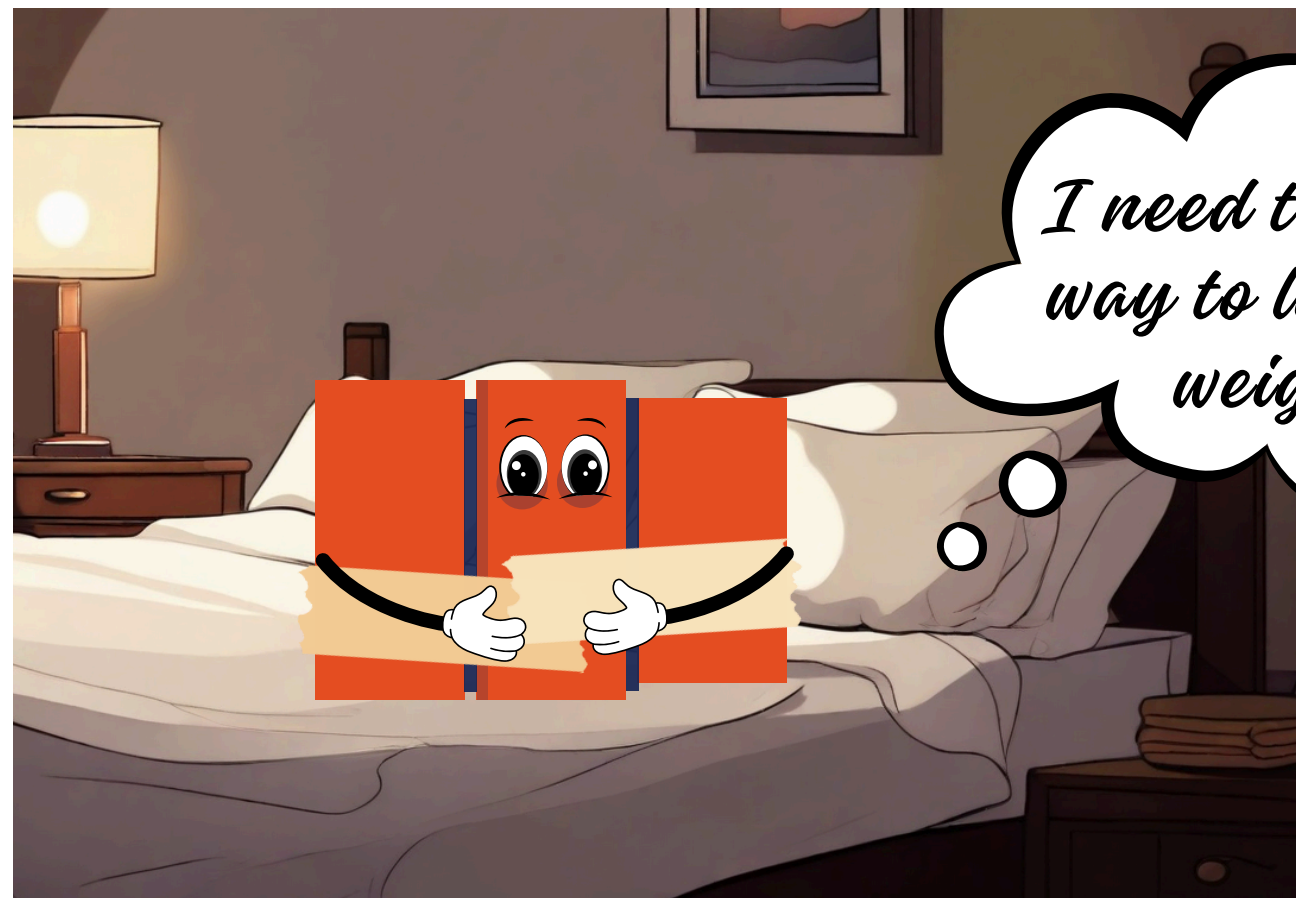
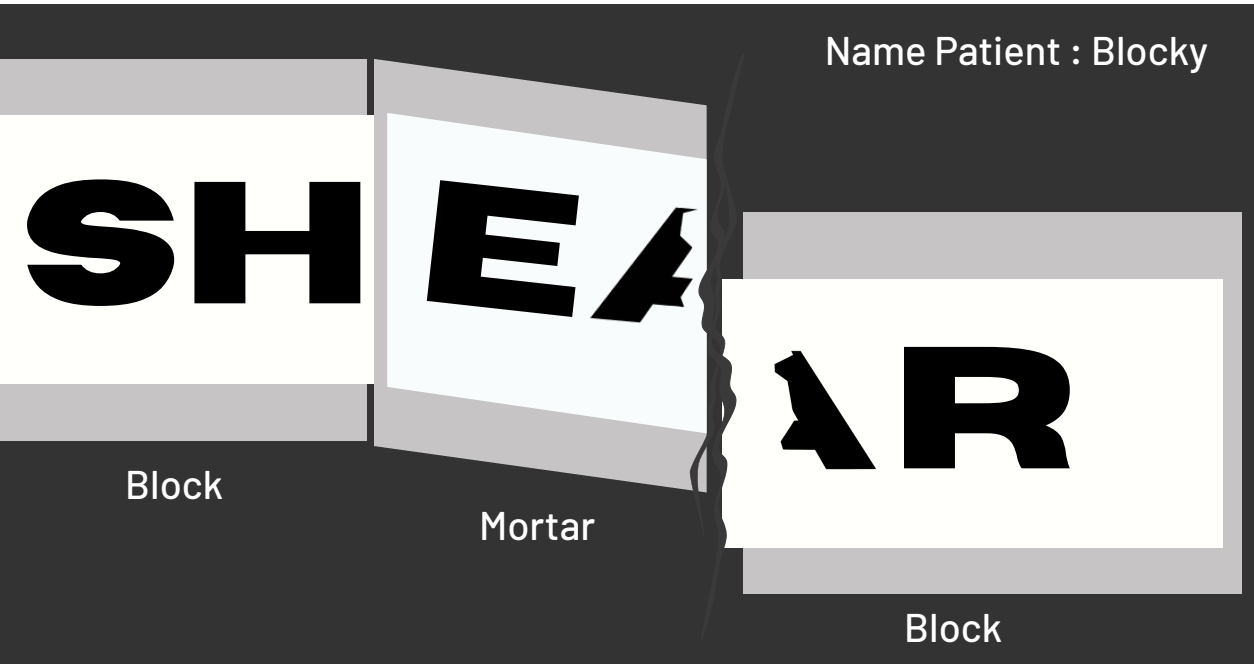


First attempt (fail) with 10 tonnes.



17h - First time at the hospital
Double cracking in my mortar

'It's shear in the mortar', that's what the doc said when he saw the X-ray.

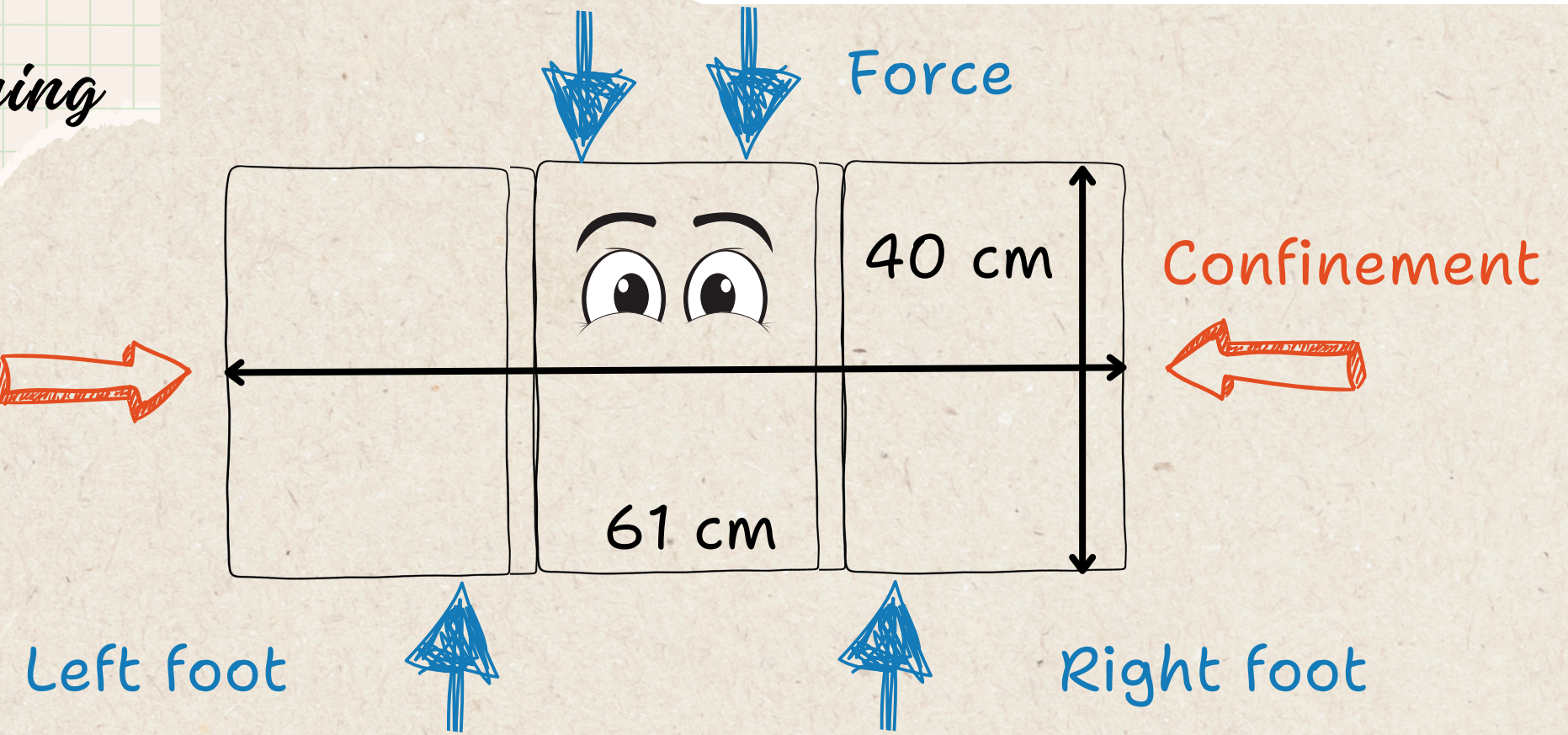


I need to find a way to lift higher weight

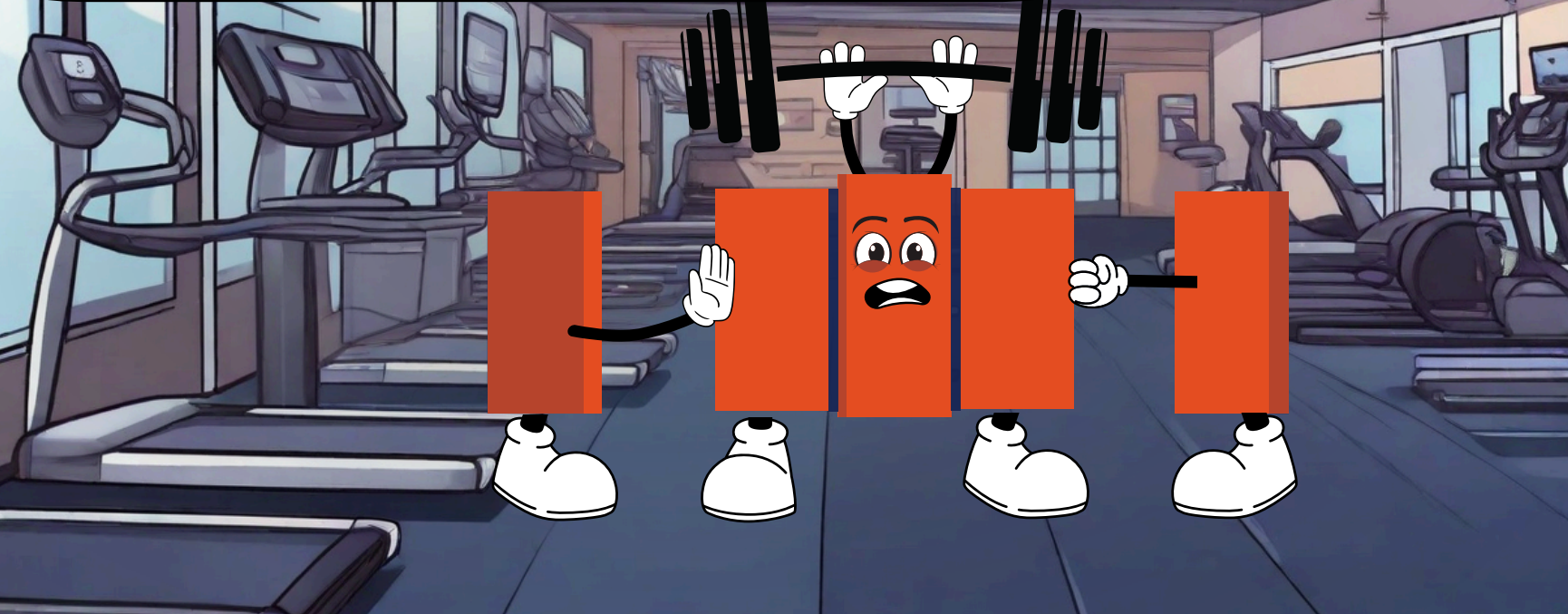
TOP SECRET

I could try applying confinement on myself...

see if that boosts my shear resistance.



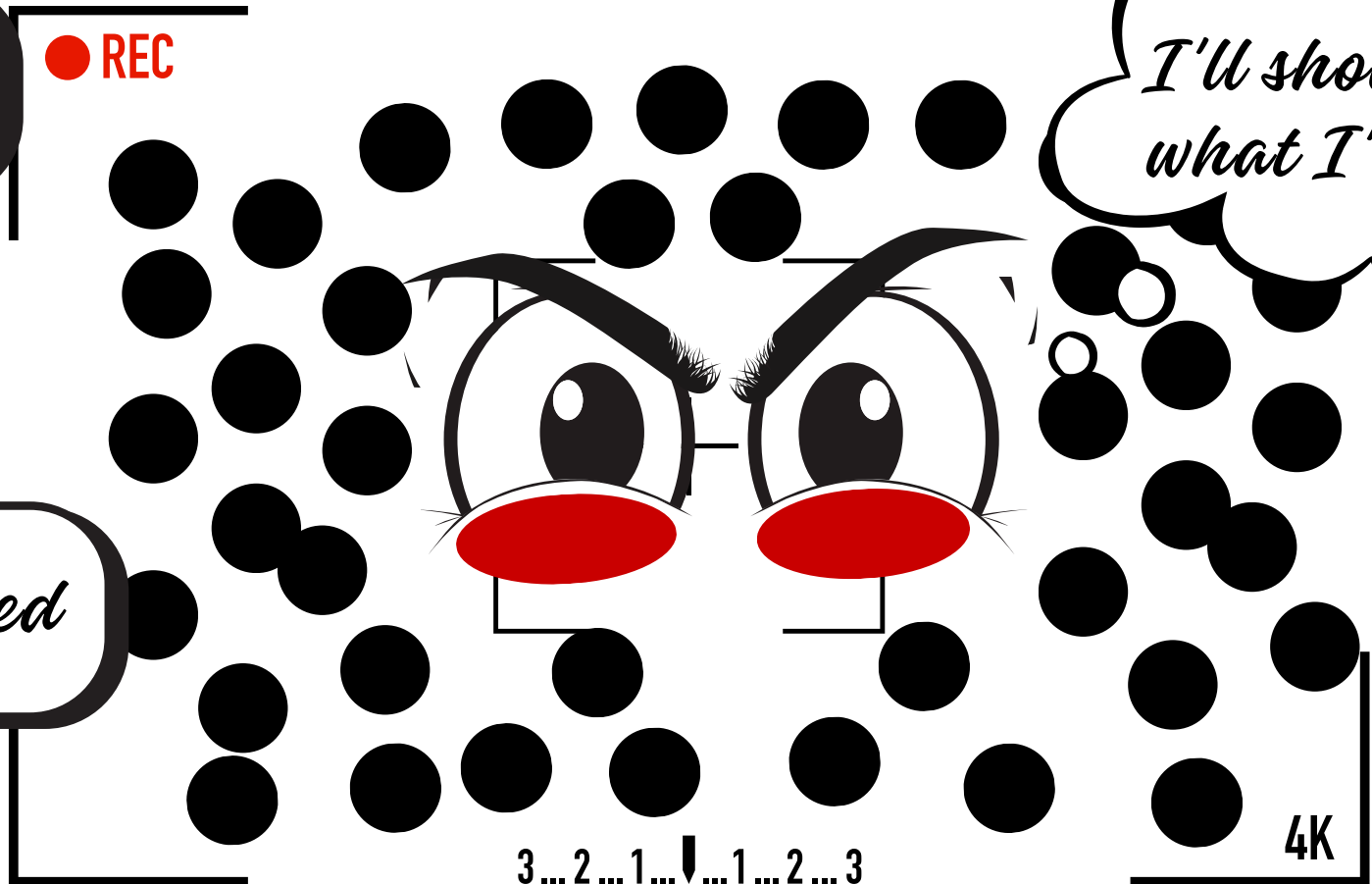
Alright—time to call in some backup ... and give that 10 tonnes another shot!



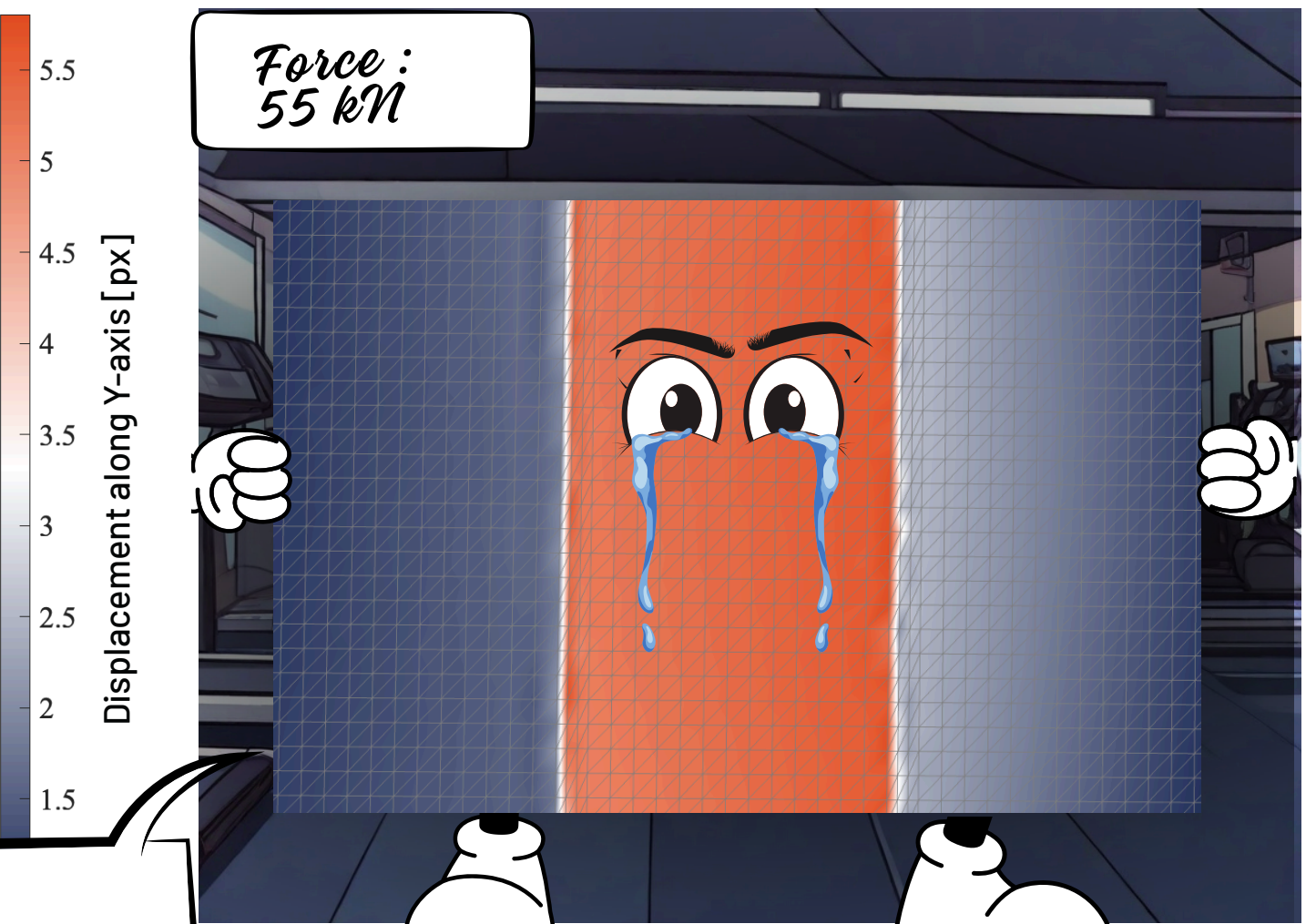
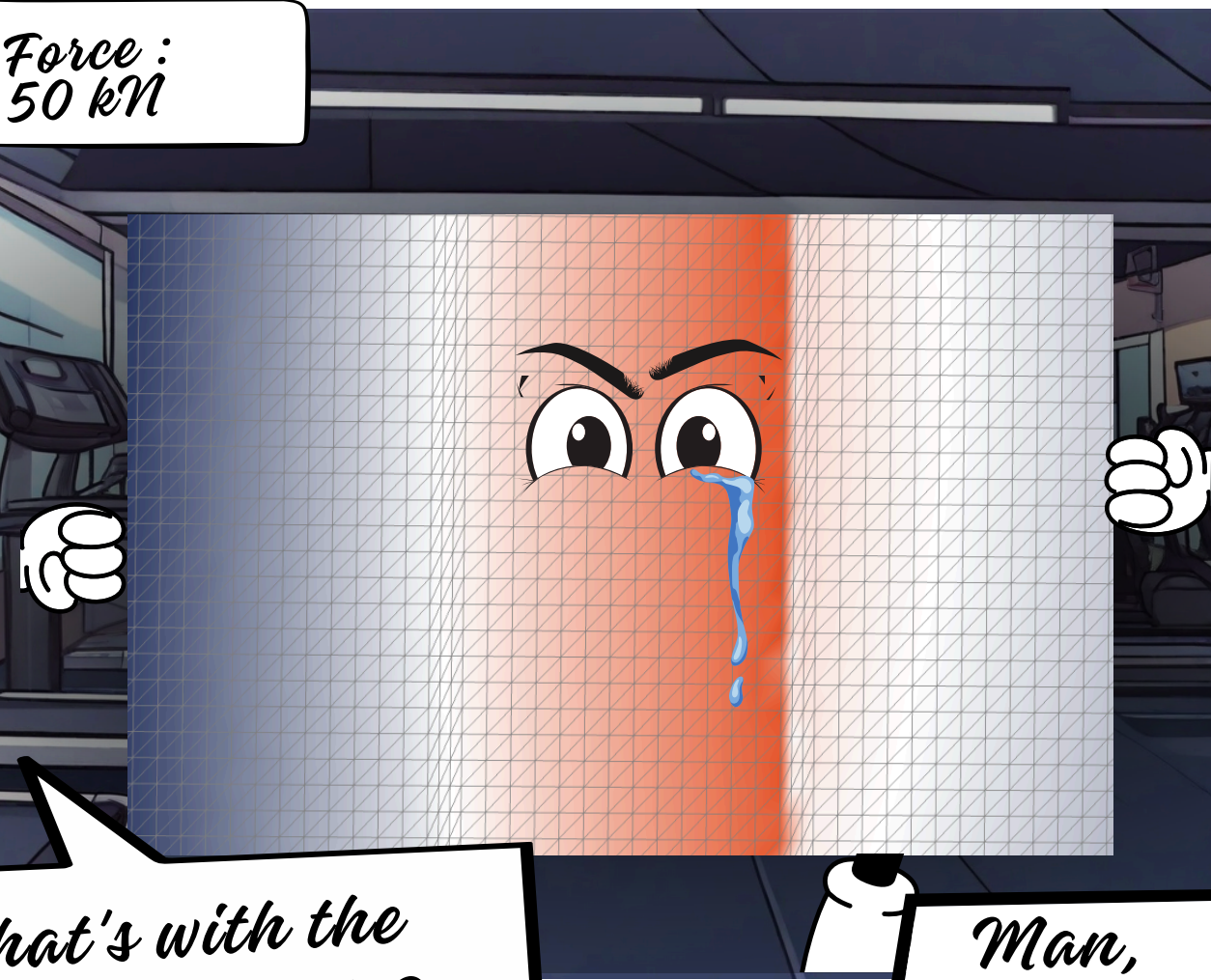
AAAAAH

We just pranked you

and all is recorded

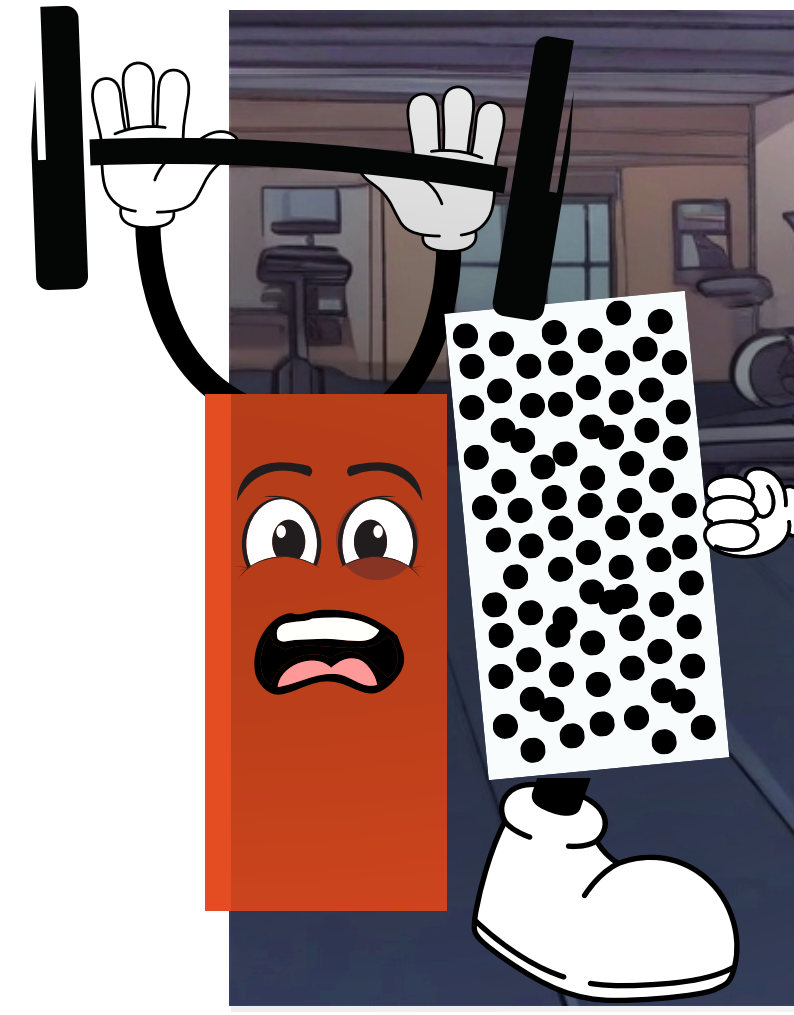


I'll show them what I'm made of



What's with the blushing, dude?

Man, are you ok ?



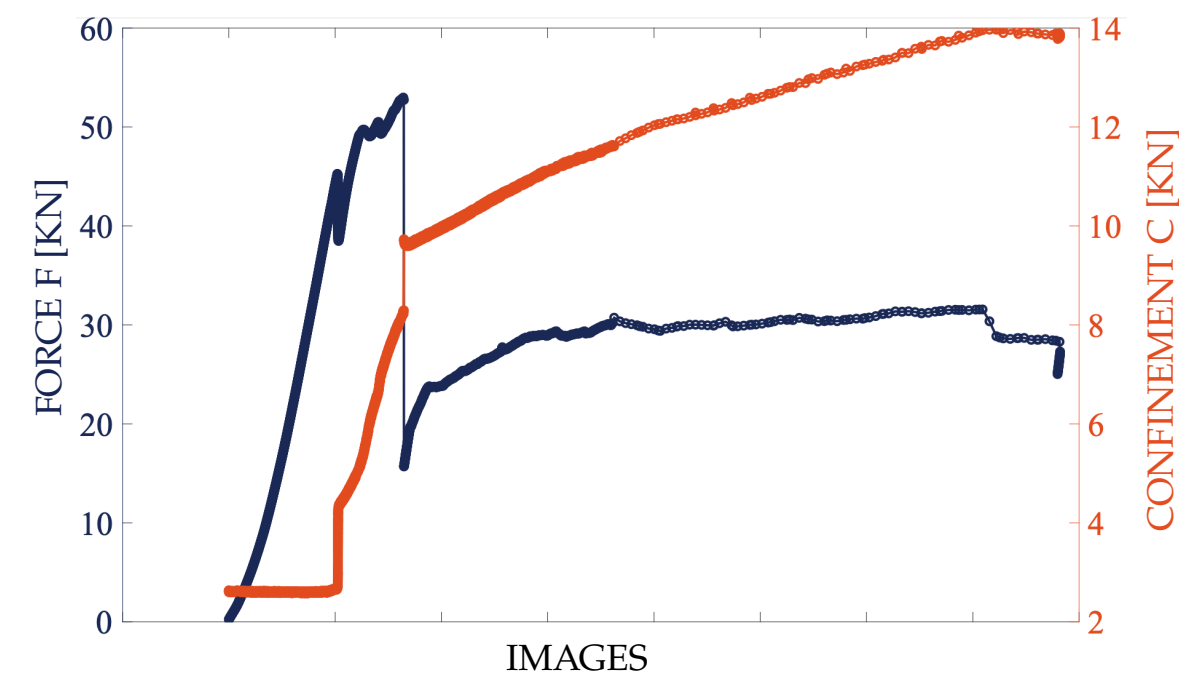
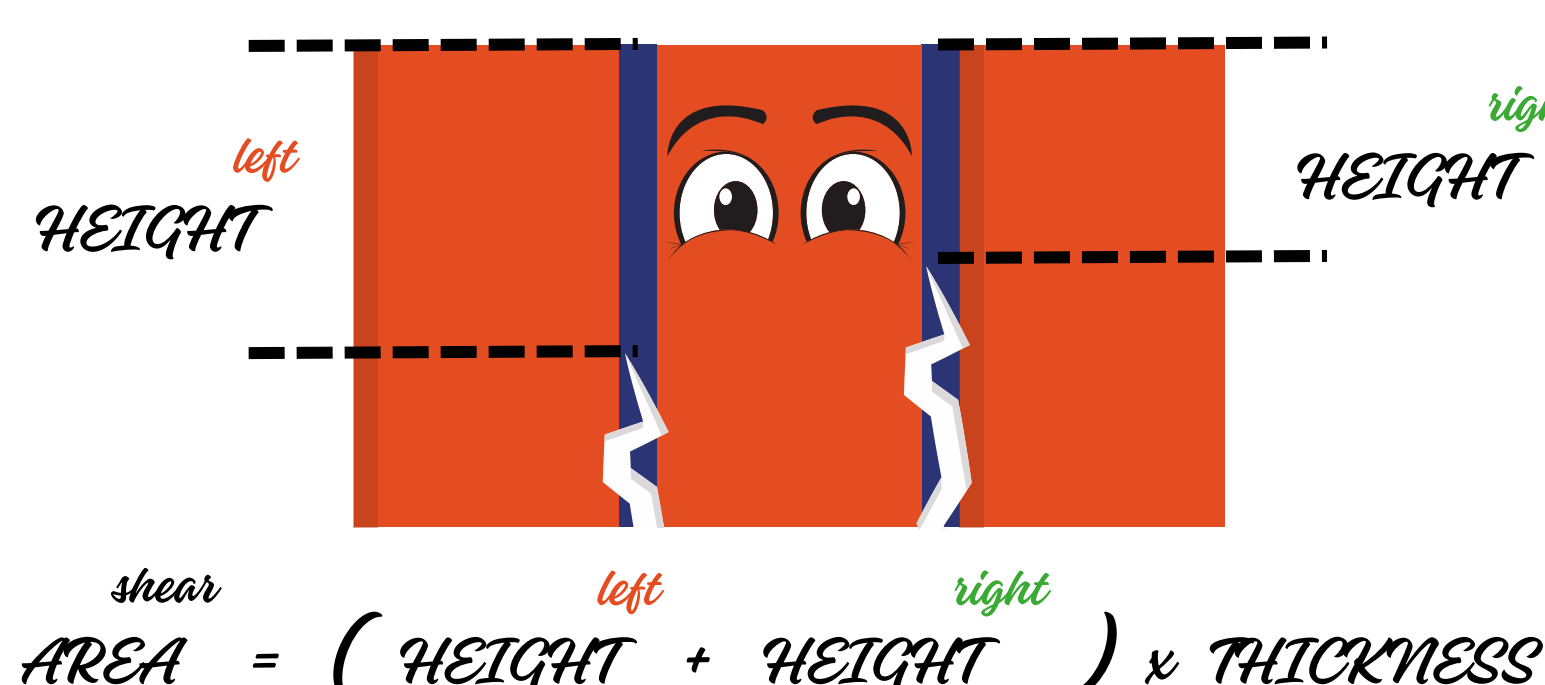
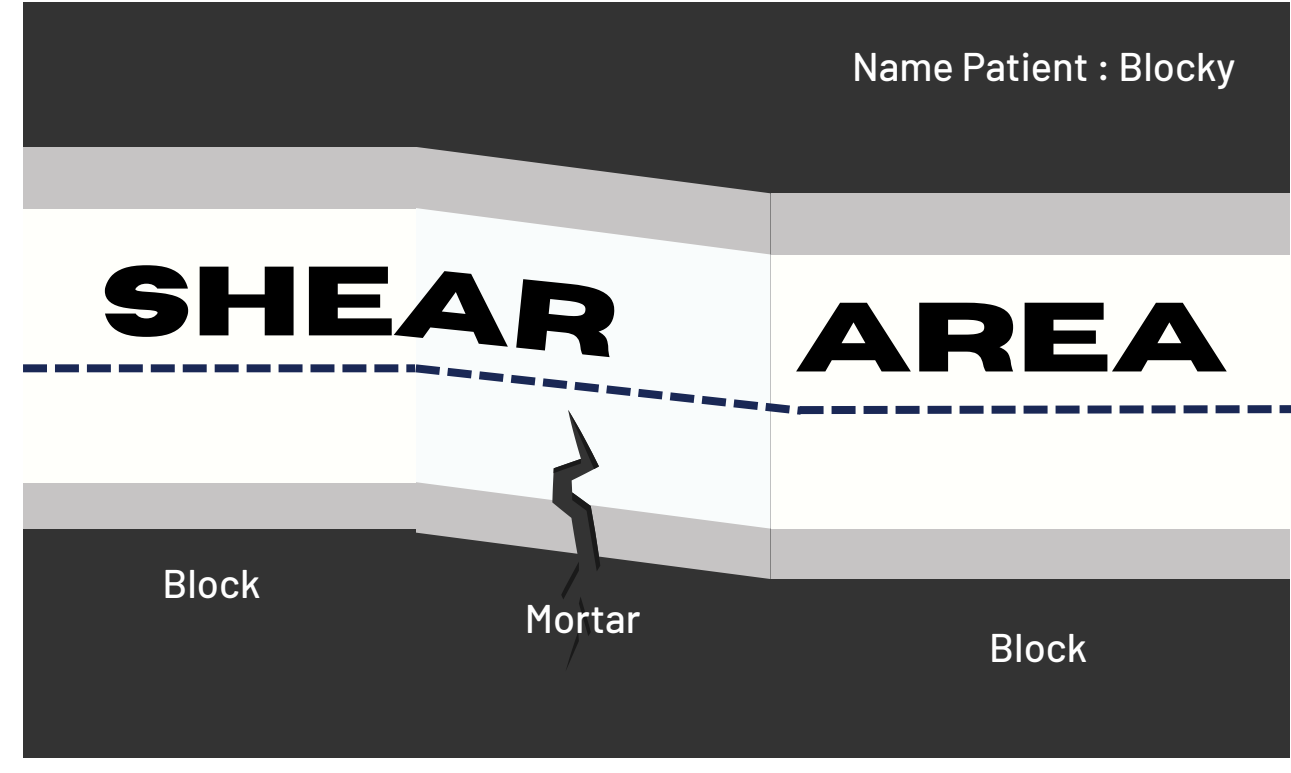
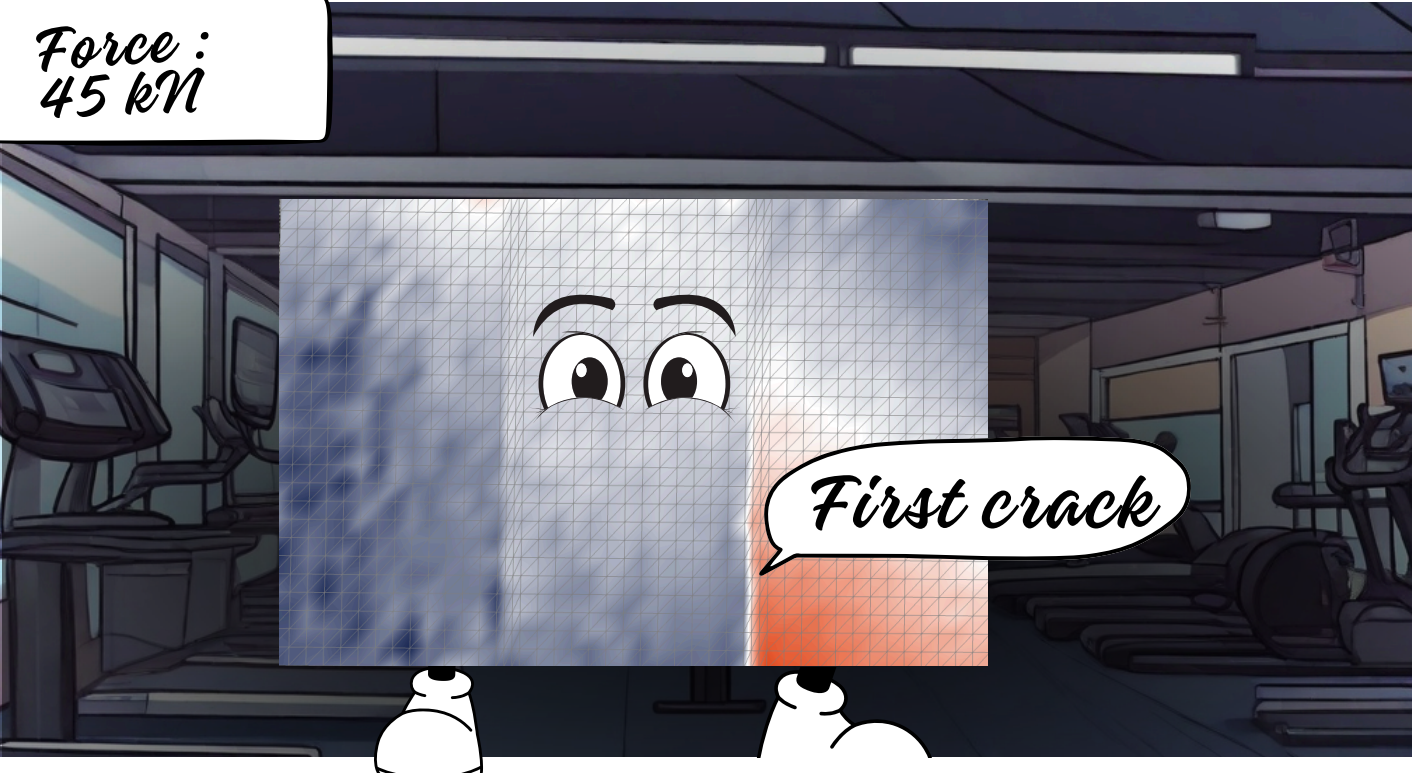
Once I got to the hospital, the doctor explained that thanks to the camera and the black spots on me, they could measure displacement fields. It's called Digital Image Correlation (DIC).

Using this data, they can track how the cracks form in my mortar...

... figure out how high the crack goes, and see which parts of the shear area are still holding.

They just measure the uncracked heights in my joints — and boom, total shear area calculated.

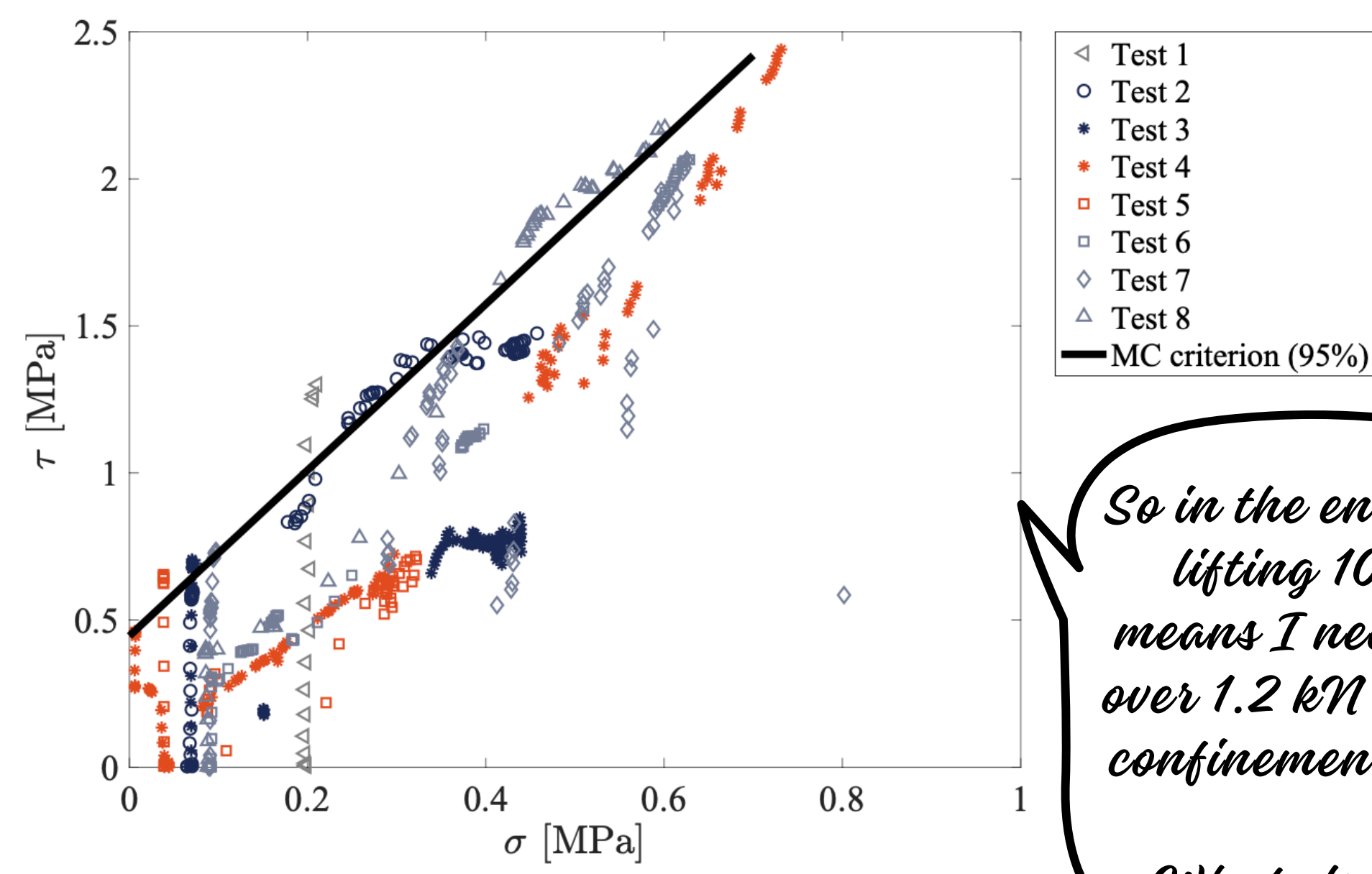
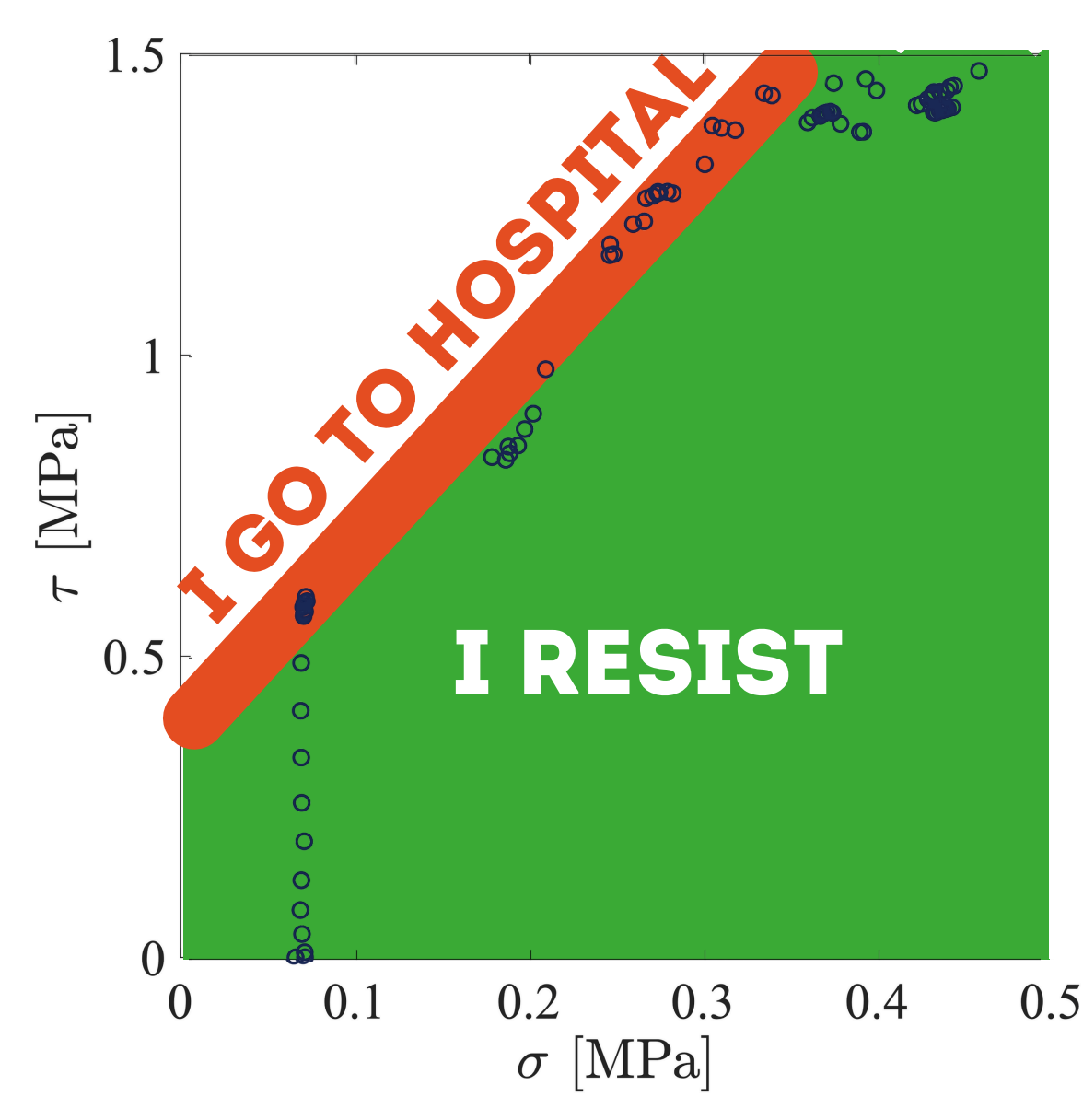
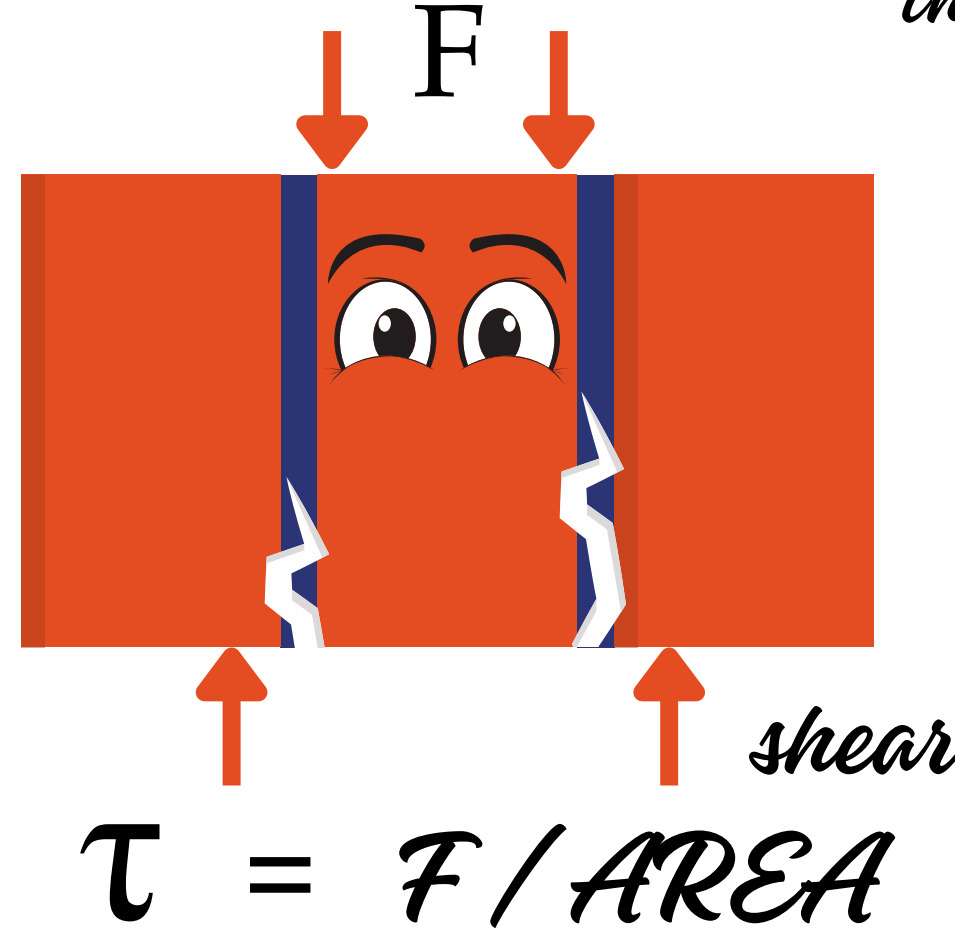
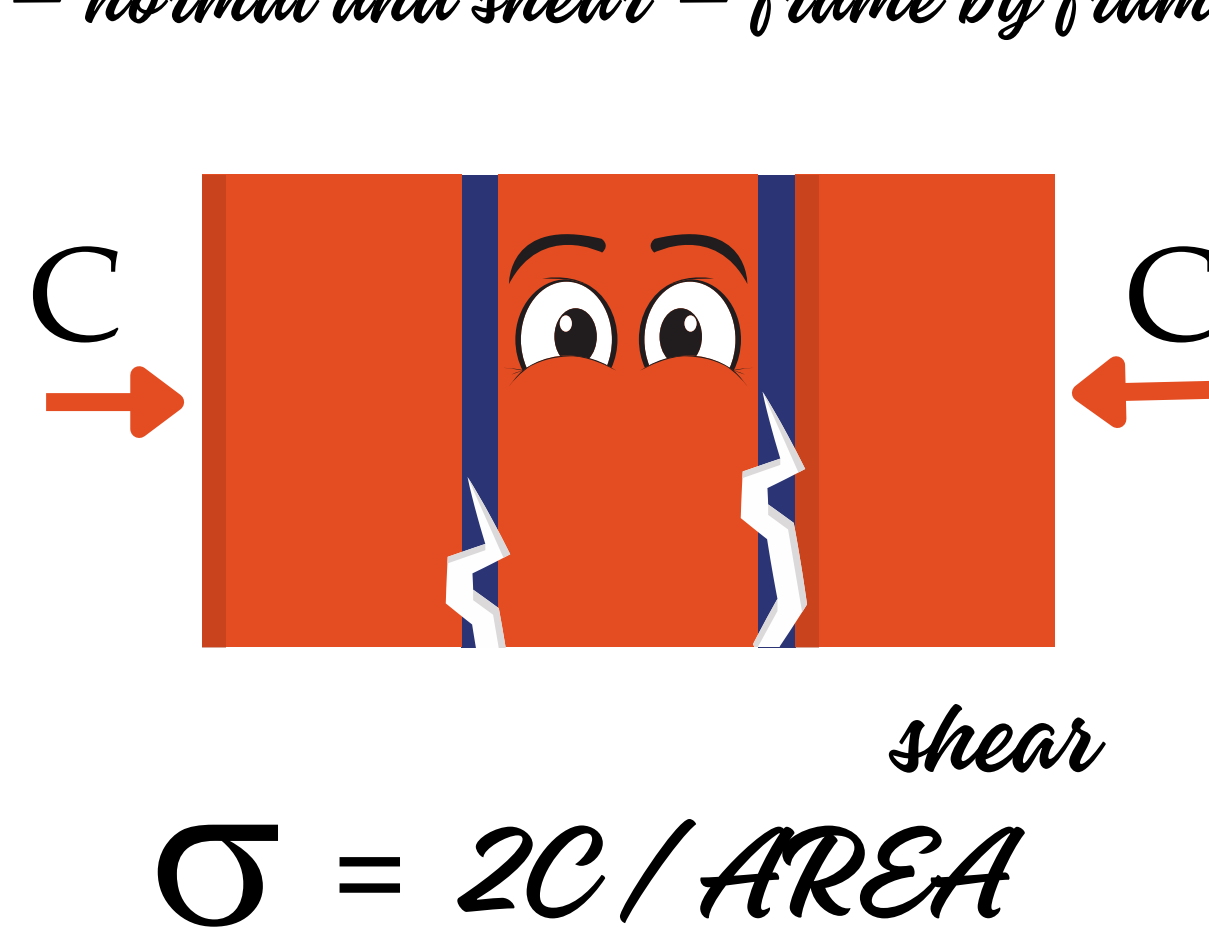
Each time they tested me, I kept track of the force... and how much I was confined



Thanks to all that data, they know exactly what stress I'm under — normal and shear — frame by frame...

... Plot their evolution, and boom the Mohr-Coulomb criterion shows up.

With eight tests, the Mohr-Coulomb criterion stands out clearly. But eight hospital visits? Let's just say, I've had enough.



So in the end, lifting 10 T means I need over 1.2 kN of confinement.

What else ?

L. Collin, F. Gatuingt, C. Giry, and F. Hild. "Exploring the Shear Behavior of Masonry Triplets via Digital Image Correlation, Damage Quantification, and Mohr-Coulomb Criterion Identification". 2025.



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