

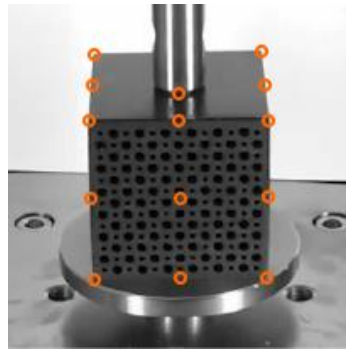
**Supplementary Information for  
“Perceptual judgments for the softness of materials under indentation”**

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**Supplementary Videos: Stimuli presented to observers**

The stimuli are video clips that shows the scenes of an elastic material pushed from the top surface by an indenter. The video resolution is 288 x 288 pixels at 29.97 frames per second. In total, there are 75 conditions (3 material compliance levels x 5 depth levels x 5 speed levels)

**Supplementary Figure 1: 14 points used for calculation of optical flow**



**Supplementary Table 1: Diameter of the holes of the materials**

|                                      | Low compliance | Medium compliance | High compliance |
|--------------------------------------|----------------|-------------------|-----------------|
| Diameter of first size of hole [mm]  | 0.6            | 1.2               | 0.4             |
| Diameter of second size of hole [mm] | 0.5            | 0.65              | 1.8             |

Each column shows the diameter of holes of each material.

**Supplementary Table 2: Spearman's rank correlation coefficient between local motion speed/overall deformation magnitude and idiosyncratic motion features**

|                          | Local motion speed        | Overall deformation magnitude |
|--------------------------|---------------------------|-------------------------------|
| Absolute divergence.Mean | <b>0.954 (p&lt;0.001)</b> | -0.225 (p=0.052)              |
| Absolute divergence.SD   | <b>0.947 (p&lt;0.001)</b> | -0.200 (p=0.084)              |
| Gradient.Mean            | <b>0.940 (p&lt;0.001)</b> | -0.252 (p=0.029)              |
| Gradient.SD              | <b>0.940 (p&lt;0.001)</b> | -0.205 (p=0.077)              |
| Discrete laplacian.Mean  | <b>0.960 (p&lt;0.001)</b> | -0.212 (p=0.068)              |
| Discrete laplacian.SD    | <b>0.948 (p&lt;0.001)</b> | -0.201 (p=0.084)              |