



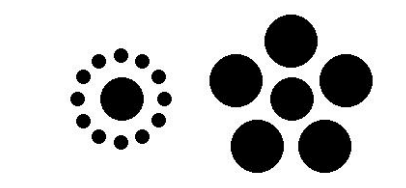
# EFFICIENCIES FOR PARTS AND WHOLE IN BIOLOGICAL MOTION PERCEPTION

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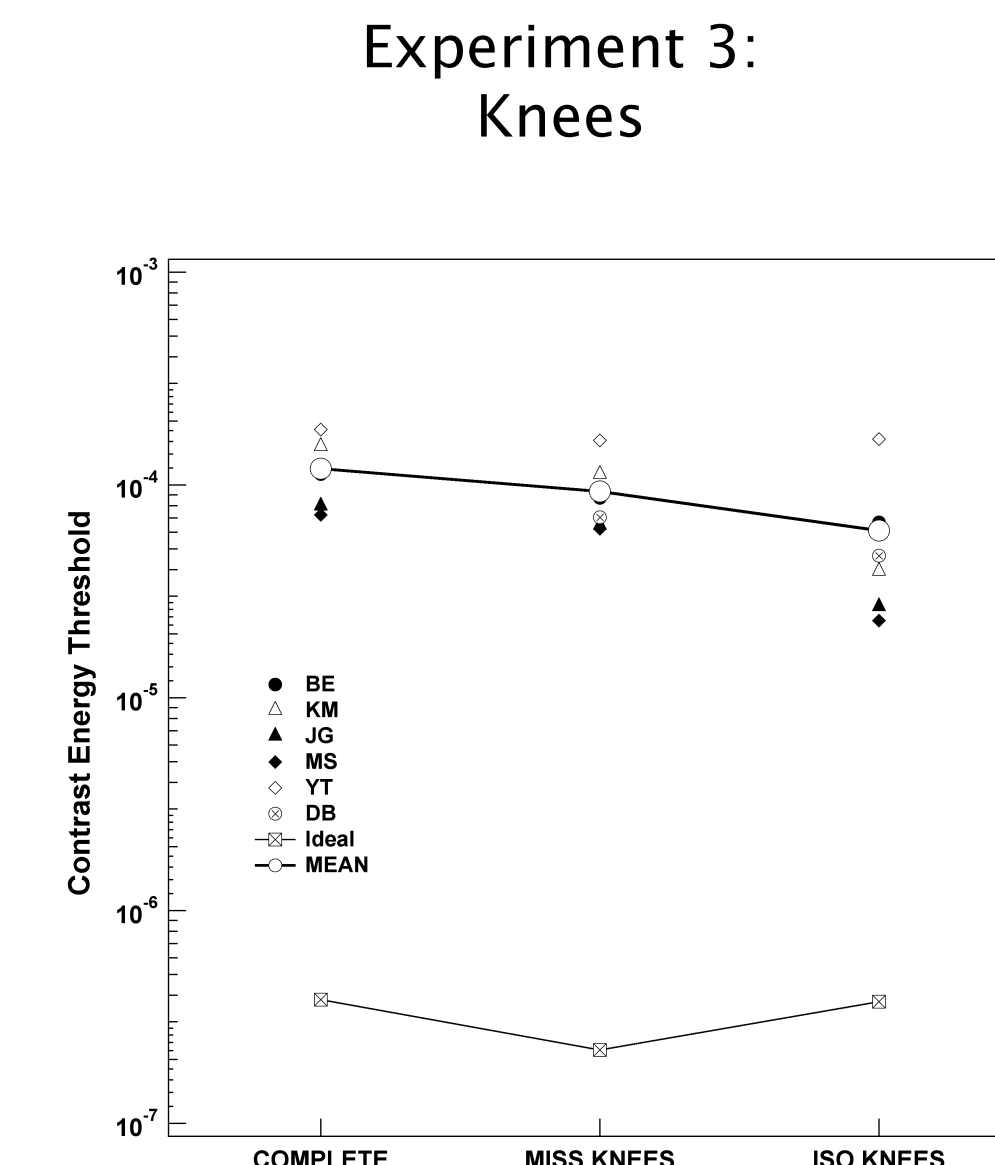
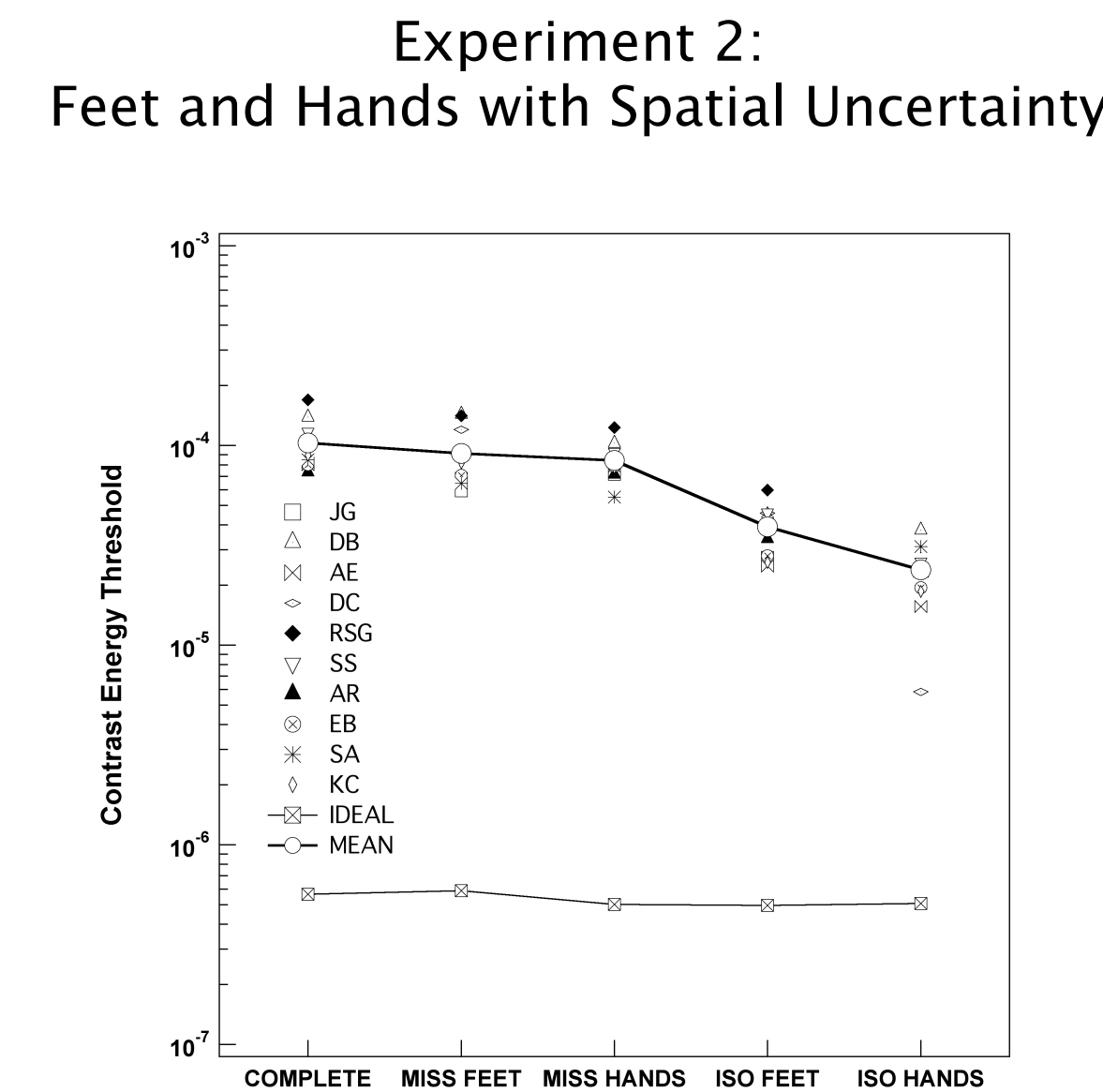
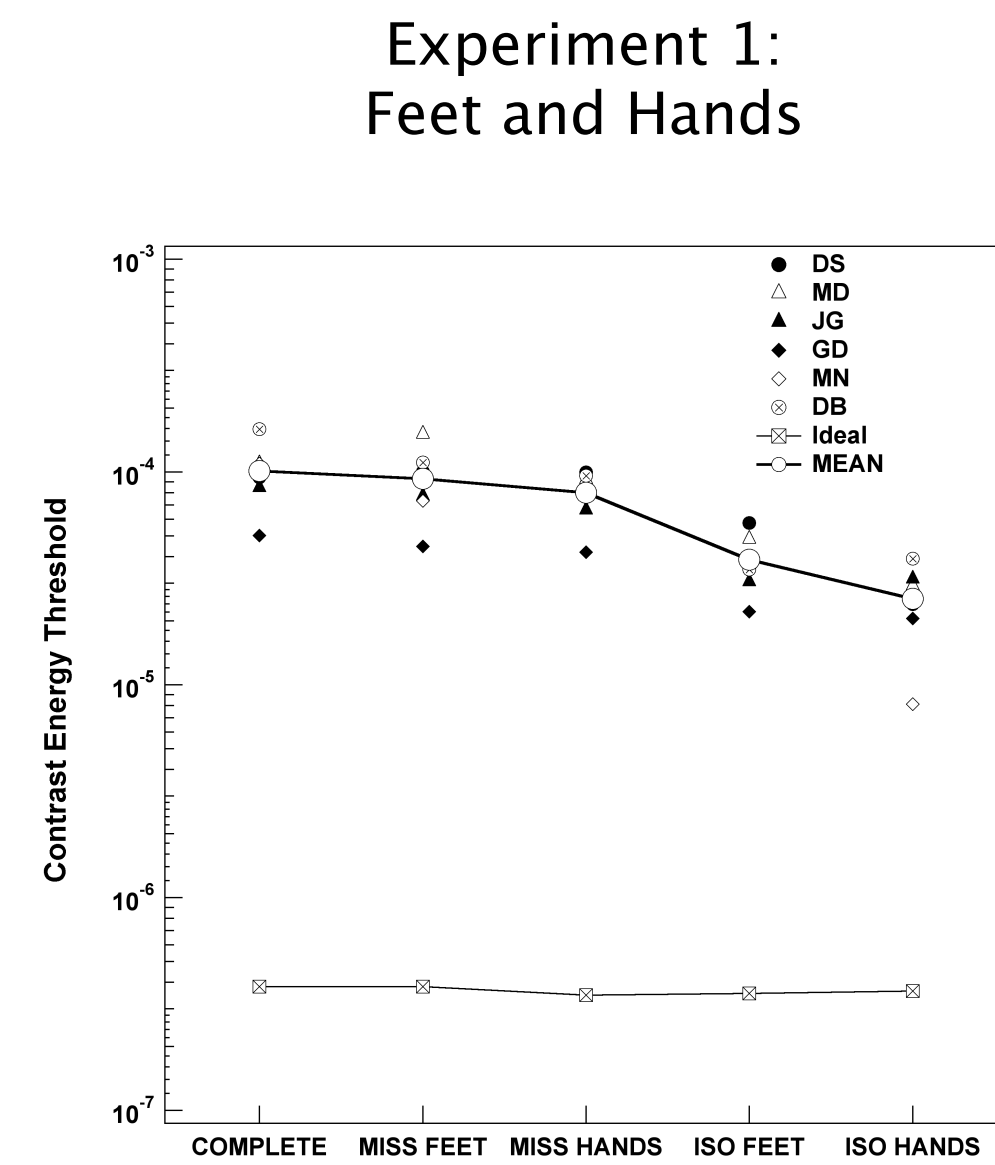
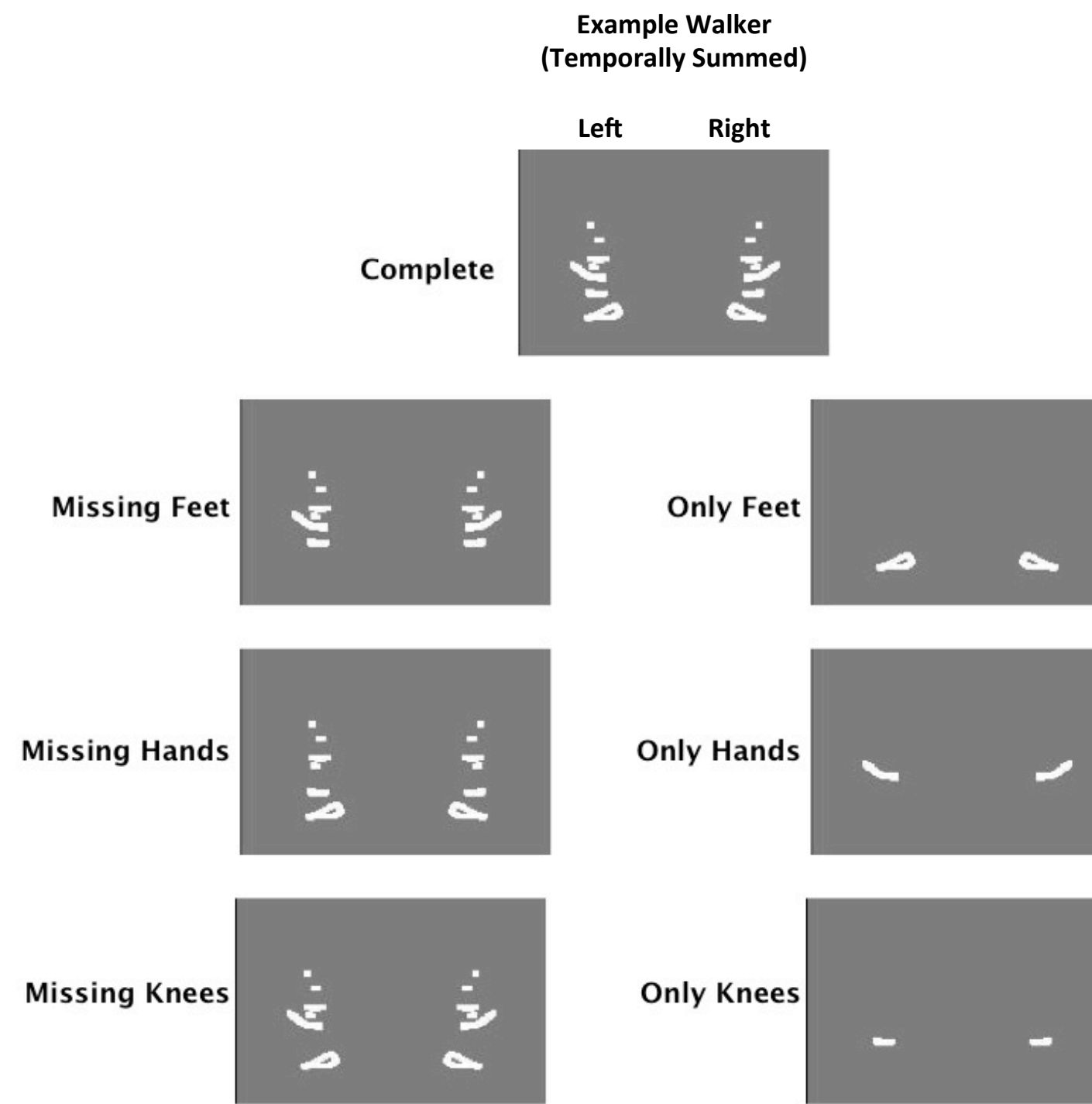
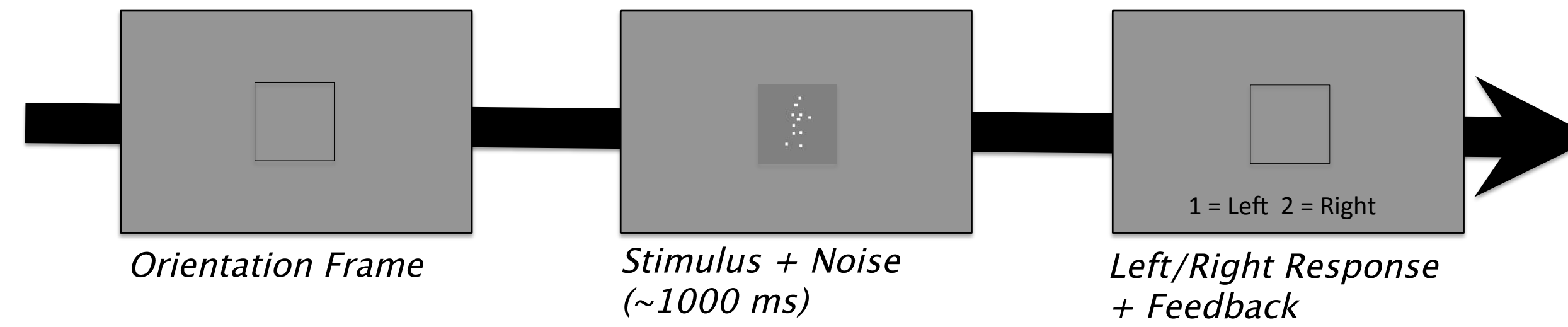
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Are humans more efficient with some parts of point-light walker (PLW) stimuli than others<sup>1,2</sup>?

## Task

Discriminate Left- vs. Right-facing Point-Light Walkers



## Results & Conclusions

Information content did not vary across conditions (except missing knees)

Spatial uncertainty improved efficiency, but did not change the pattern of results.

Complete and 'missing' conditions had approximately equal efficiencies.

Efficiencies were highest for isolated hands, feet, and knees.

Efficiency for isolated hands was significantly greater than for isolated feet.

## Questions for the future

Why are we most efficient with the hands?

How efficient are we with other sets of points?

## References

<sup>1</sup>Mather, G, Radford, K, & West, S. (1992). Low-level visual processing of biological motion. *Proceedings of the Royal Society: B*, 249, 149-155.

<sup>2</sup>Troje, NF & Westoff, C. (2006). The inversion effect in biological motion perception: Evidence for a "Life Detector"? *Current Biology*, 16, 821-824.

<sup>3</sup>Gold, JM, Tadin, D, Cook, SC, & Blake, R. (2008). The efficiency of biological motion perception. *Perception & Psychophysics*, 70, 88-95.

## Computing Efficiency:

- Measure contrast energy thresholds for humans in each part condition.
- Measure contrast energy thresholds for a Bayesian ideal observer in each condition<sup>3</sup>.

$$\text{Efficiency} = \frac{\text{Threshold}_{\text{ideal}}}{\text{Threshold}_{\text{human}}}$$

