Tools, Brains, & Bodies:

Projecting sensations into outer space

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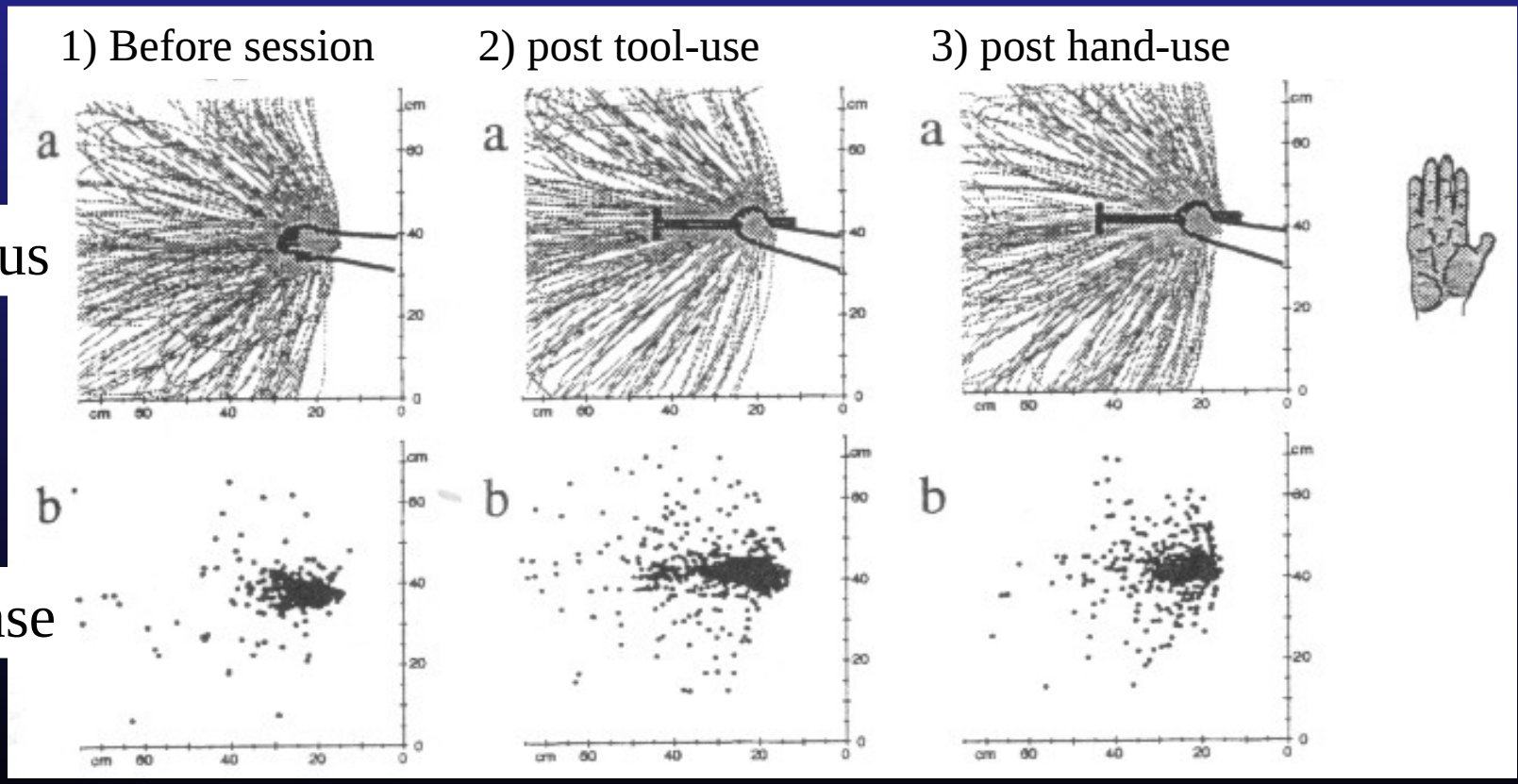
Supported by: The Wellcome Trust

Head & Holmes on Tool-Use

“… the existence of these "schemata" [allows] our recognition of posture, movement and locality [to project] beyond the limits of our own bodies to the end of some instrument held in the hand… Anything which participates in the conscious movement of our bodies is added to the model of ourselves and becomes part of these schemata: a woman's power of localization may extend to the feather in her hat.”

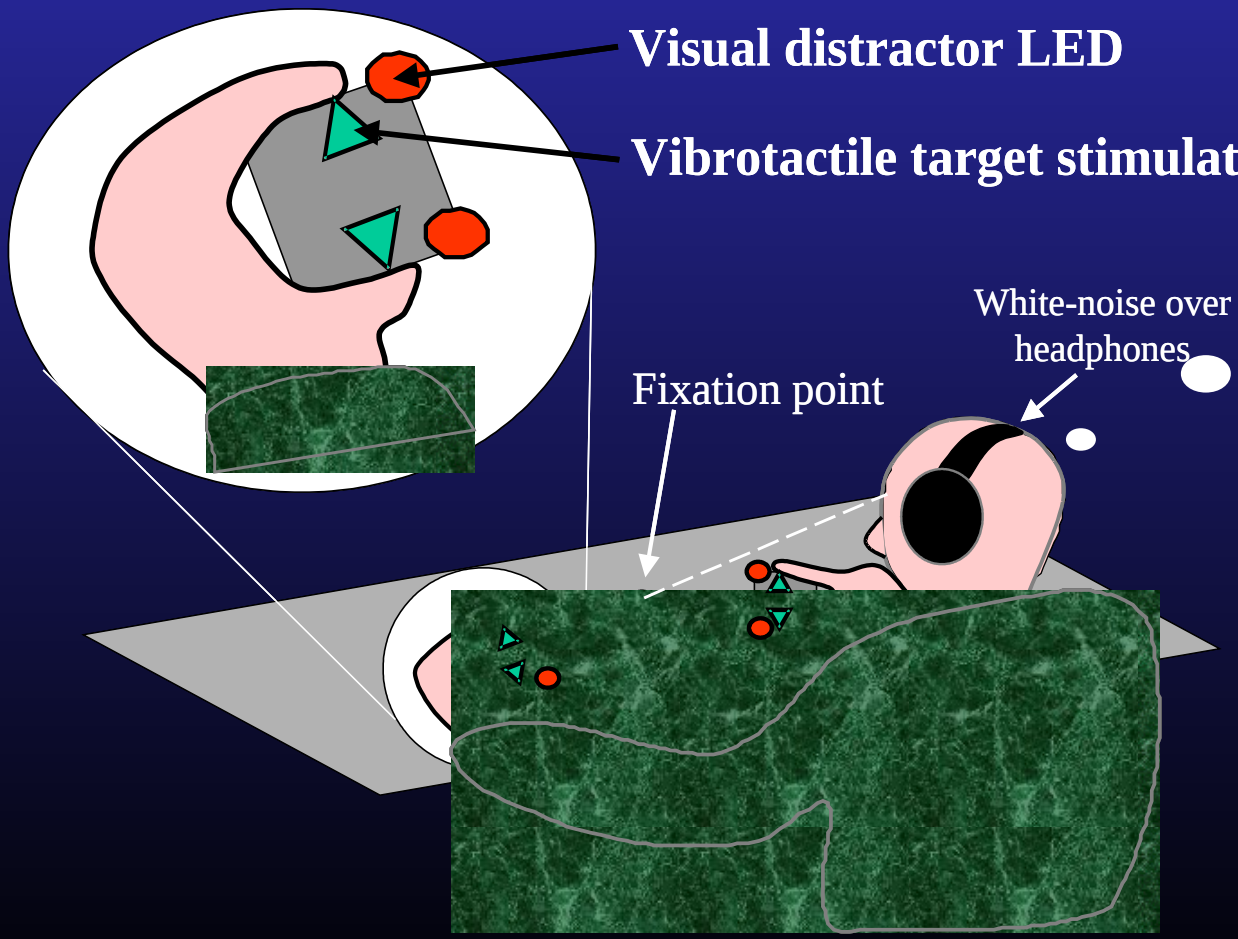
1911-1912, p.188

Do tools extend ‘peripersonal space’?

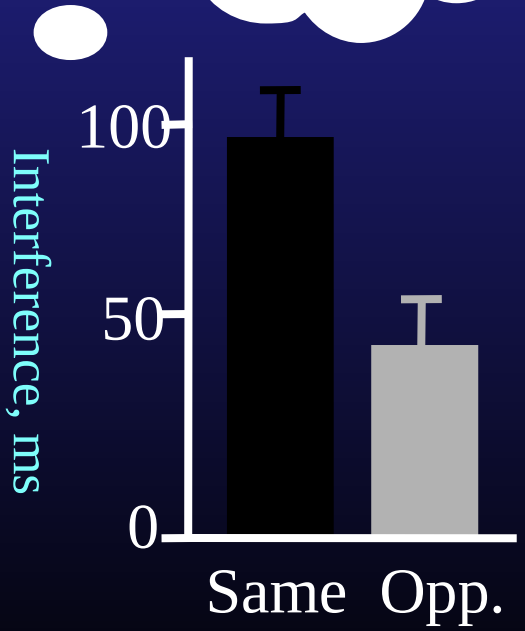


Iriki et al., 1996

‘Crossmodal Congruency’ Task

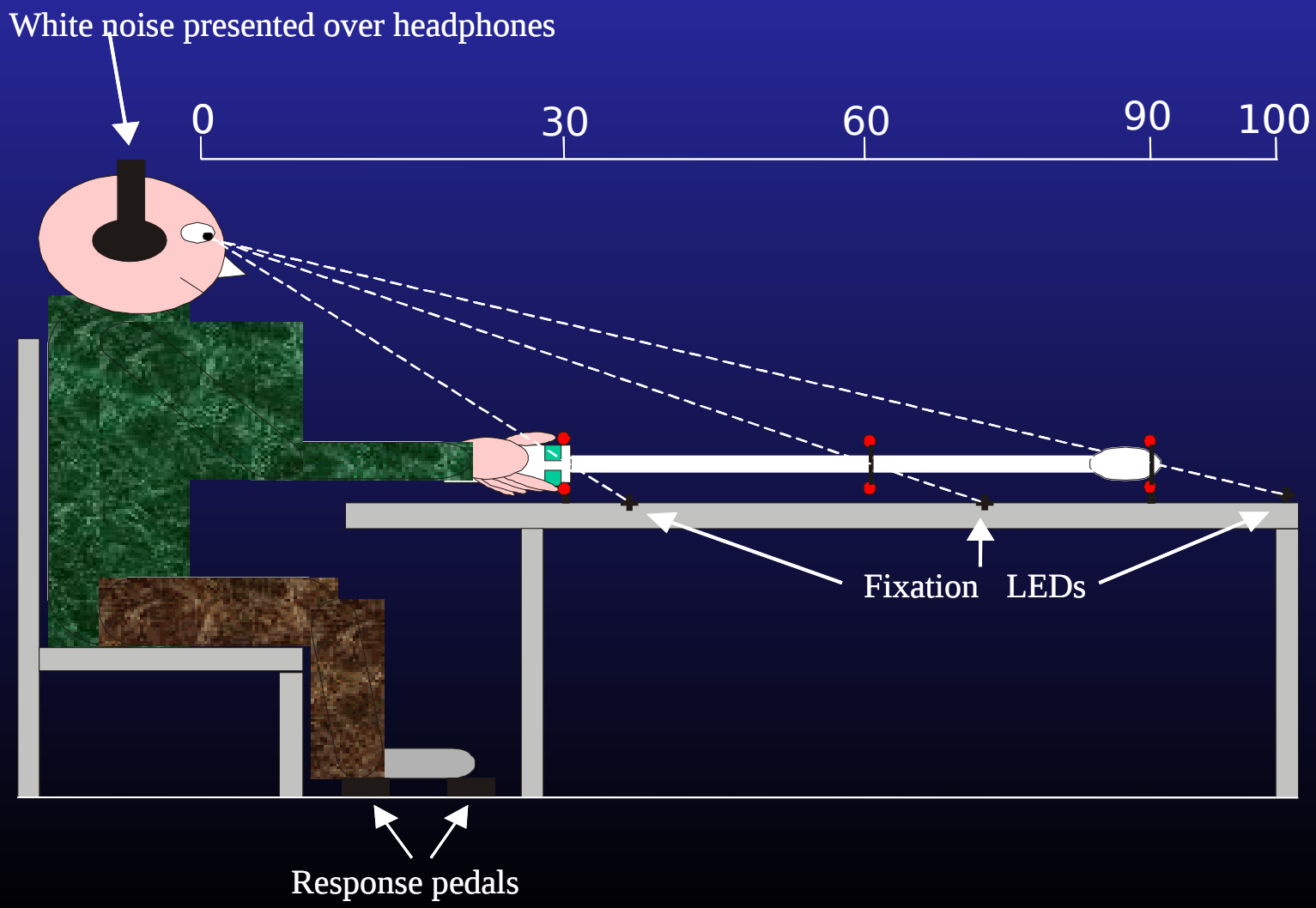


Upper Or Lower?

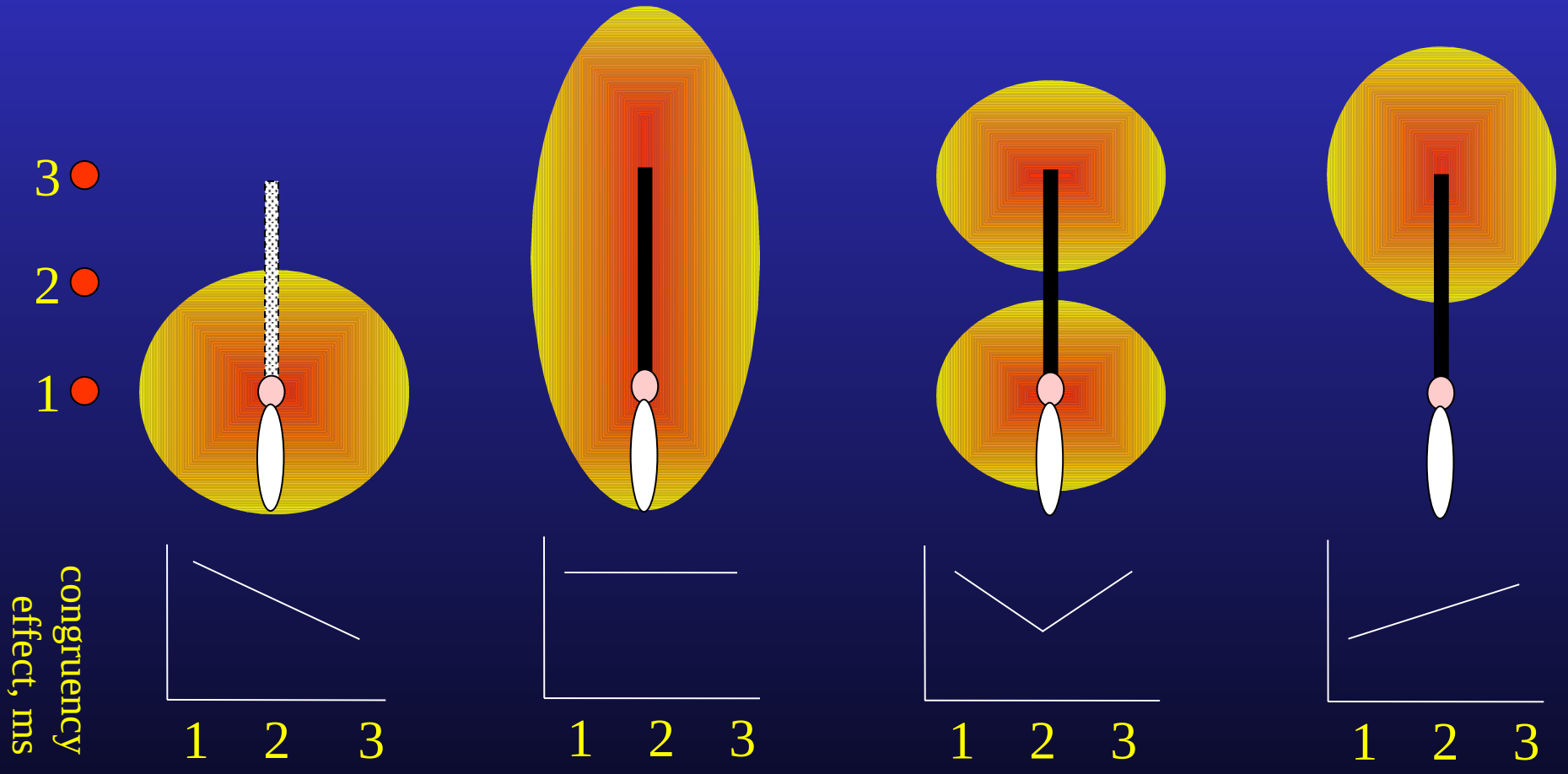


Visual distractor side

‘Extended’ Congruency Task



Predictions

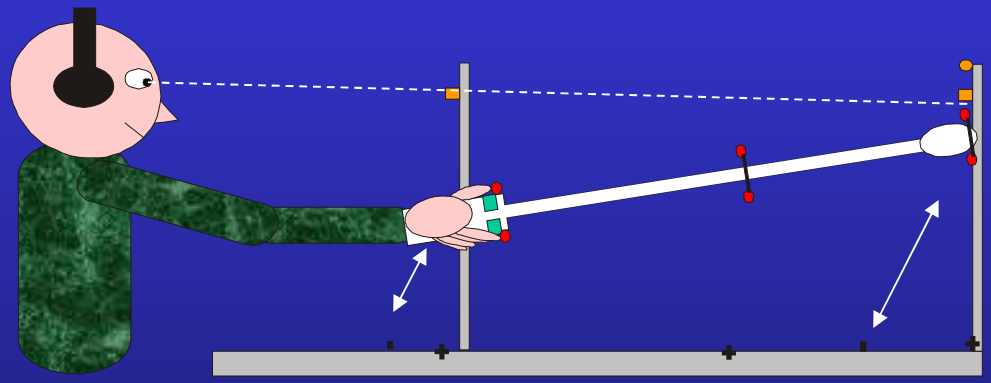


"no effect / declines with distance"

"extended peri-personal space"

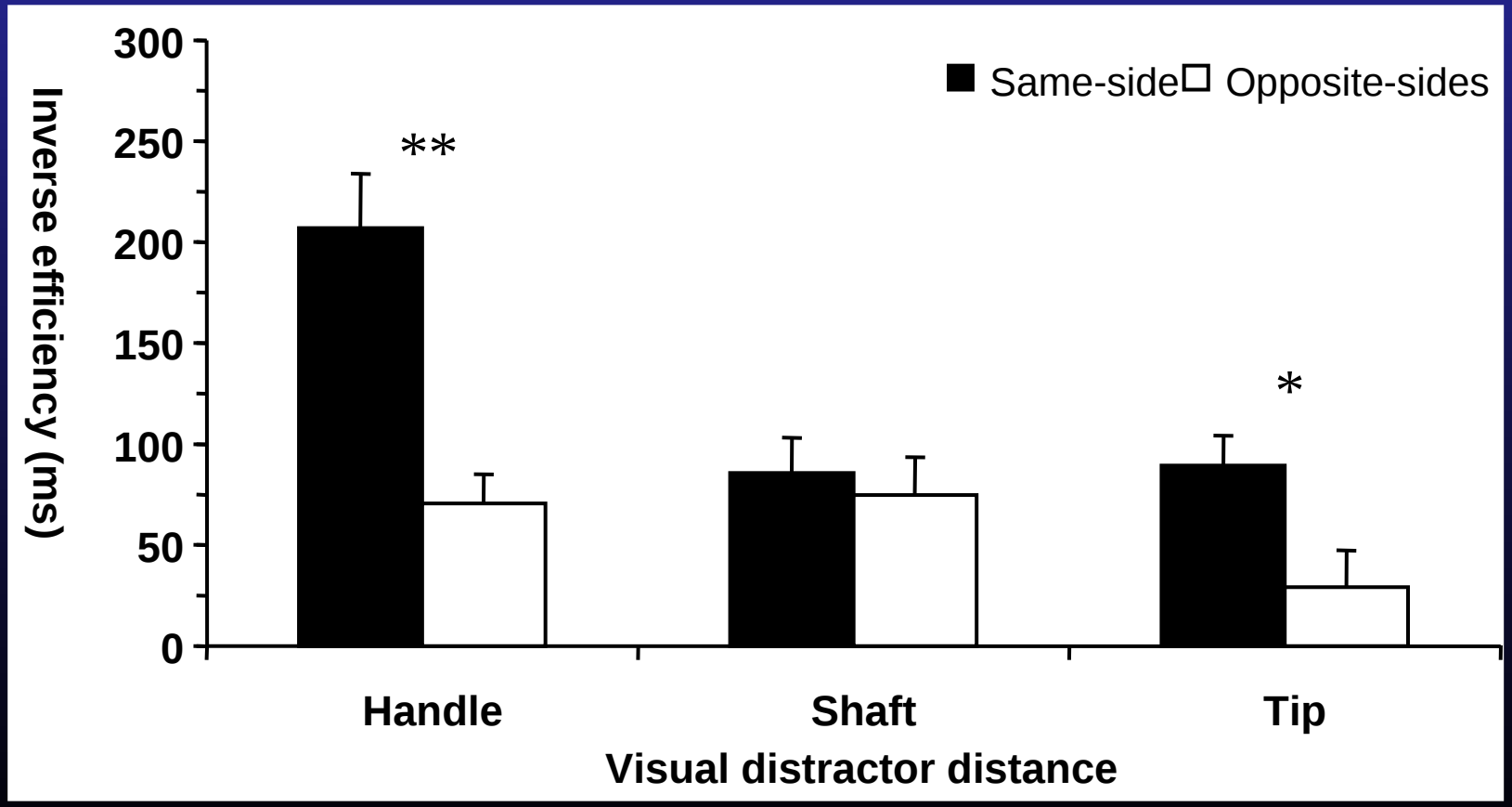
"visual capture of tool tip?"

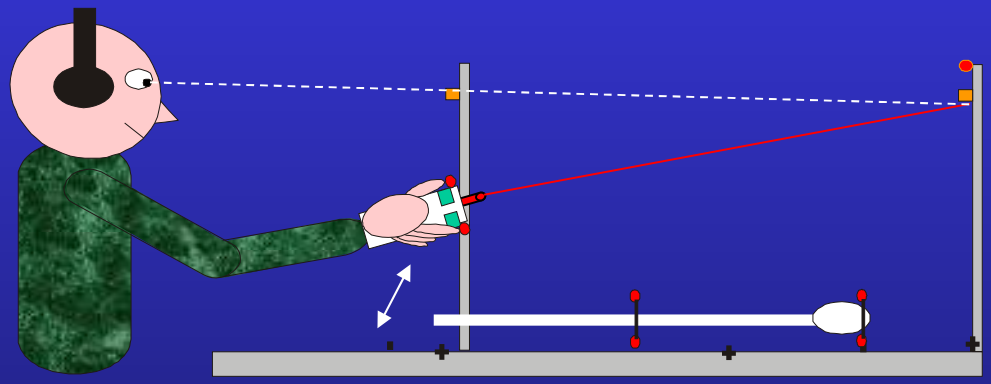
"displaced peri-personal space?"



E1: 'Tool-Tip

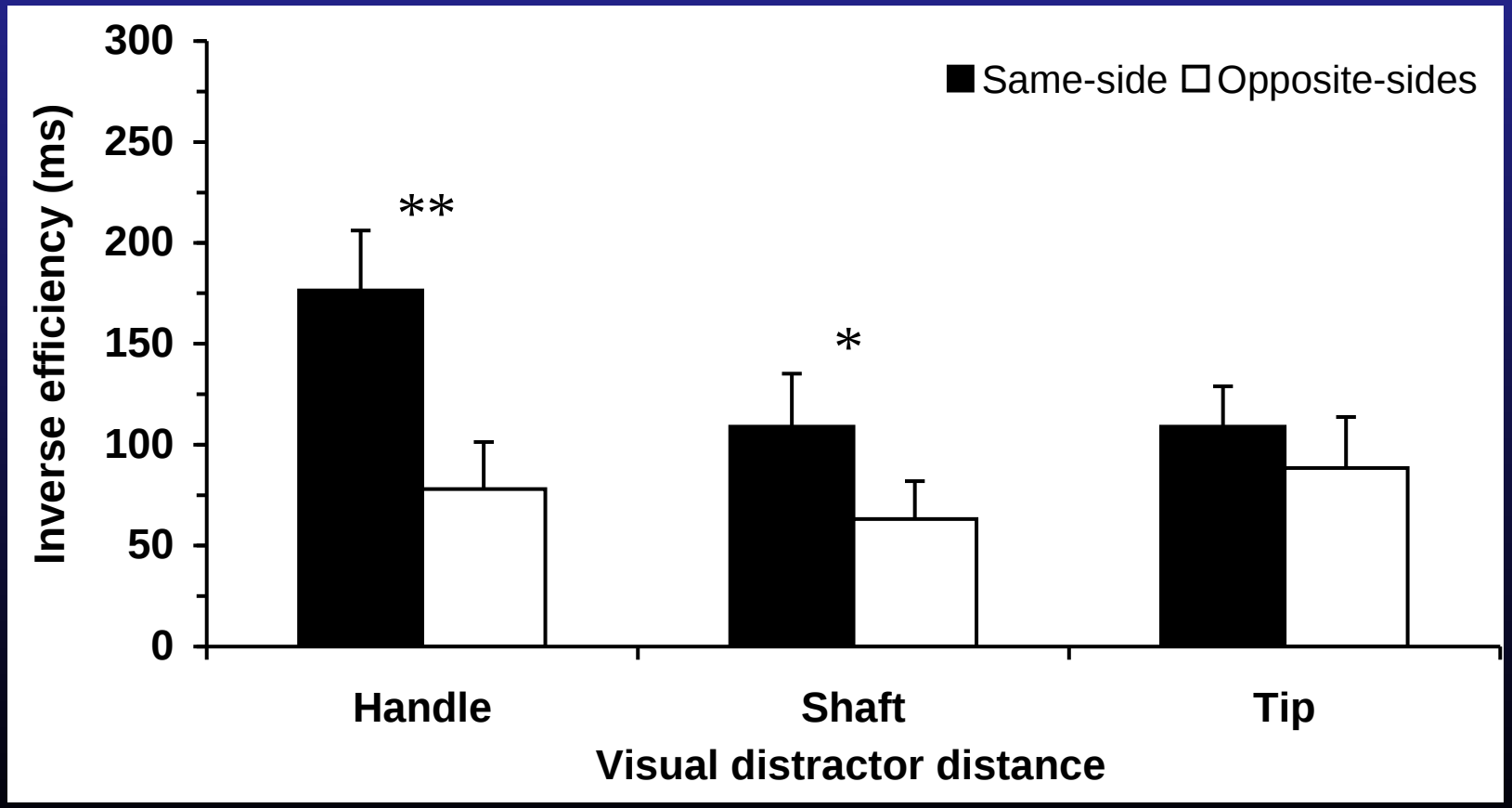
- the prototype task -

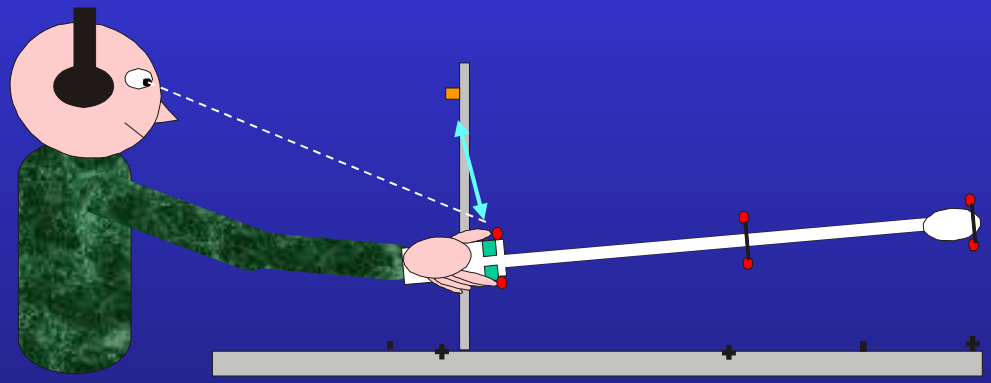




E2: ‘Laser’

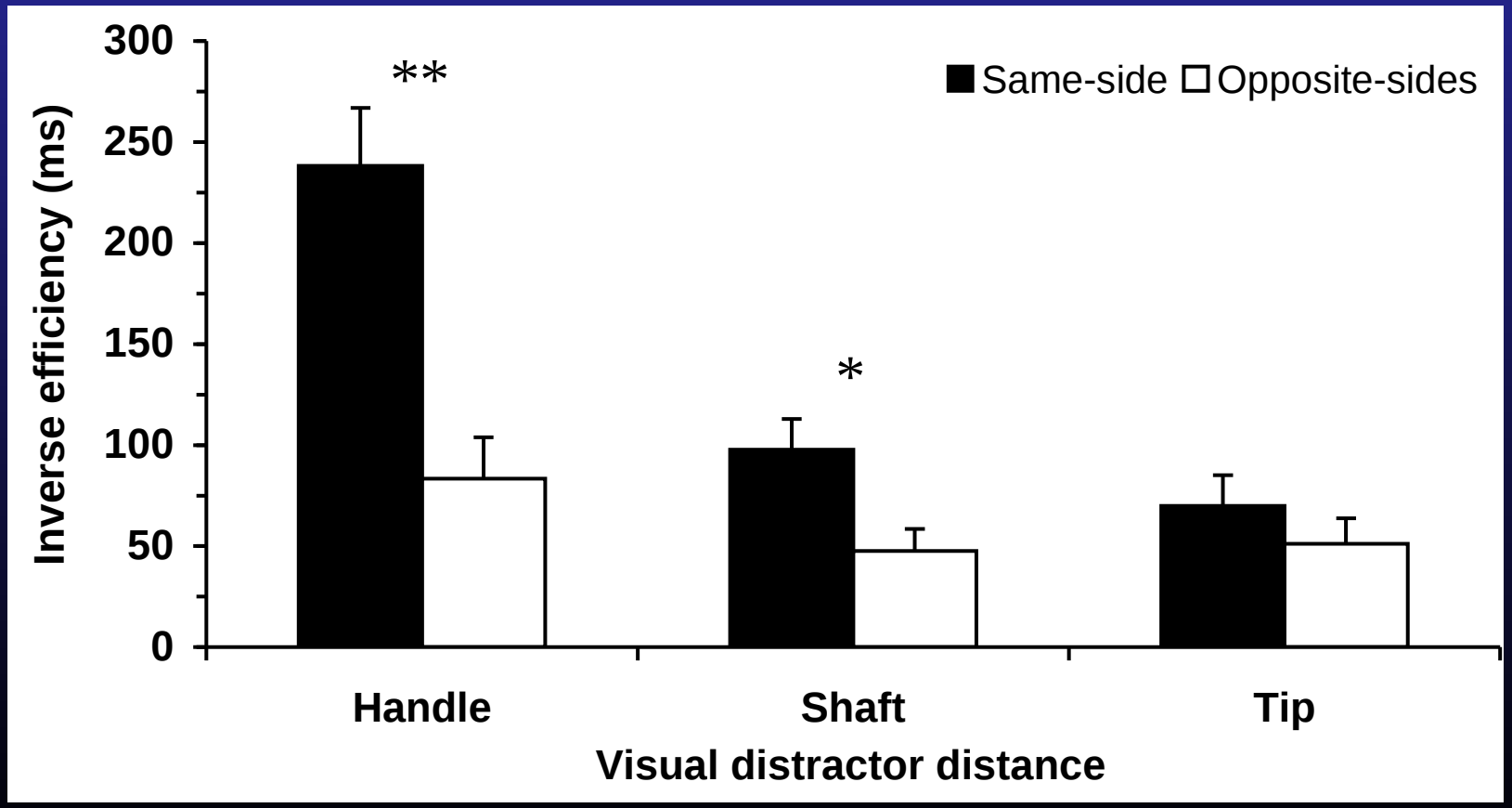
- is physical ‘extension’ or tactile feedback required?

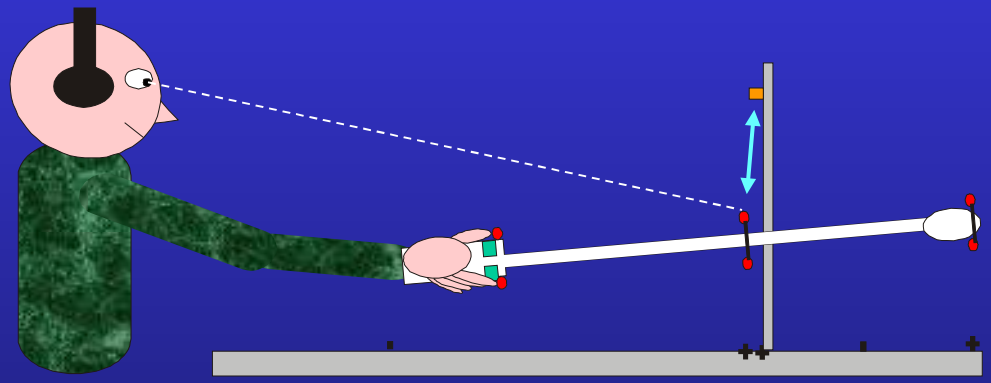




E3: ‘Tool-Handle’

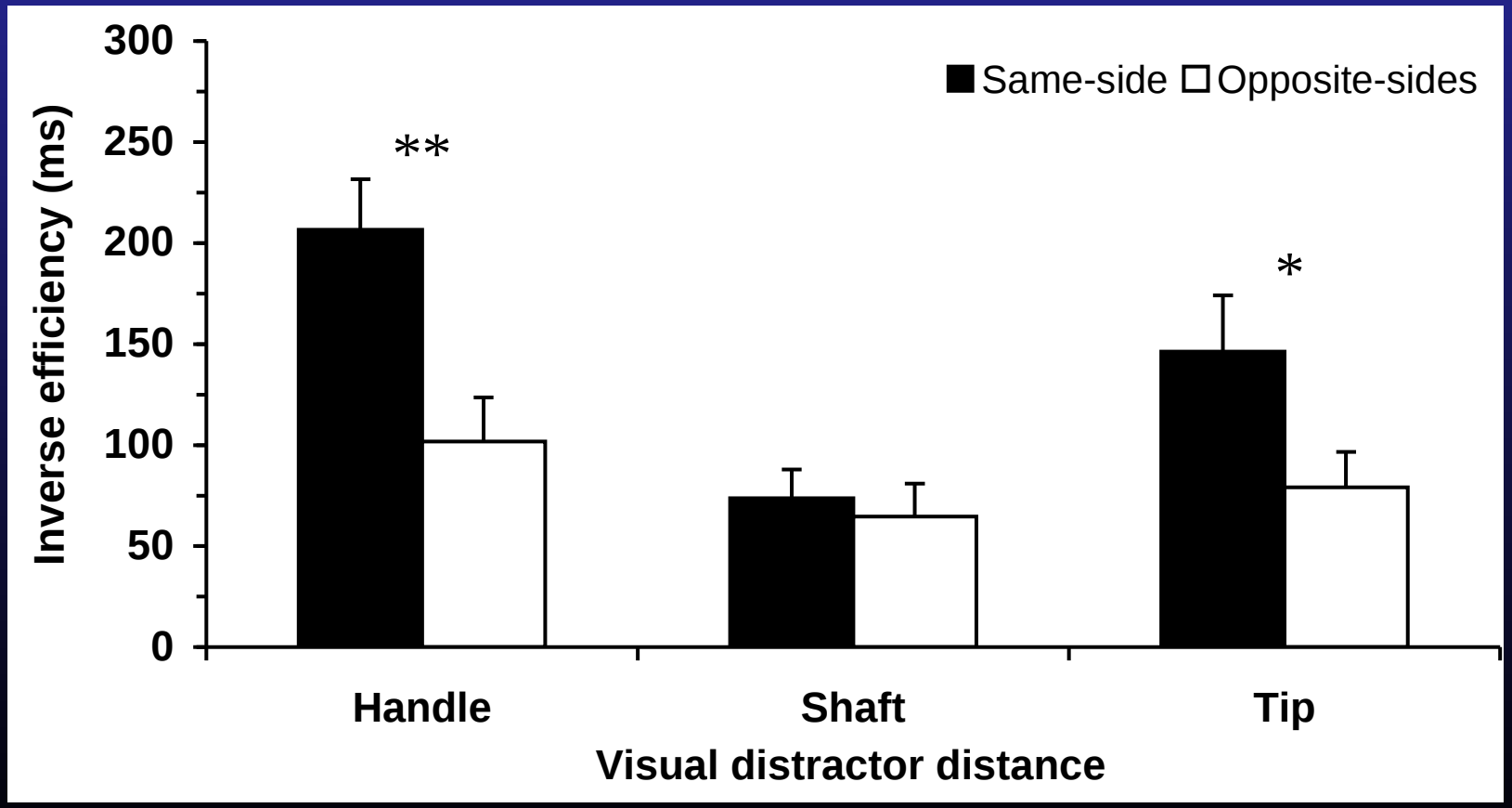
- does part of tool matter?

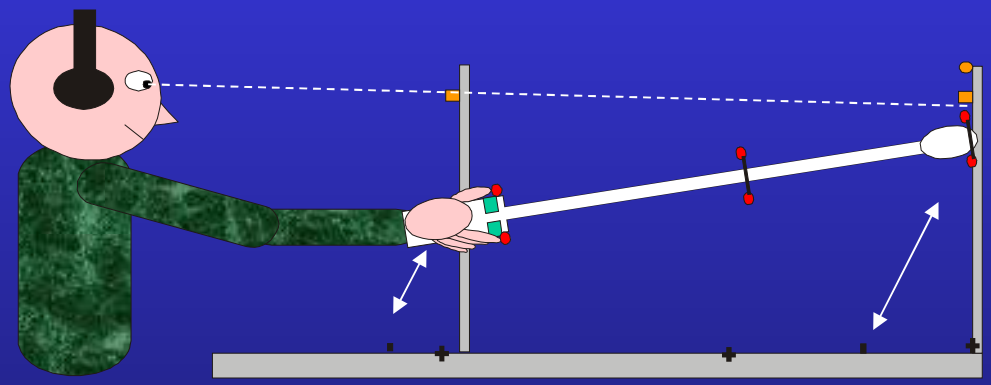




E4: ‘Tool-Shaft’

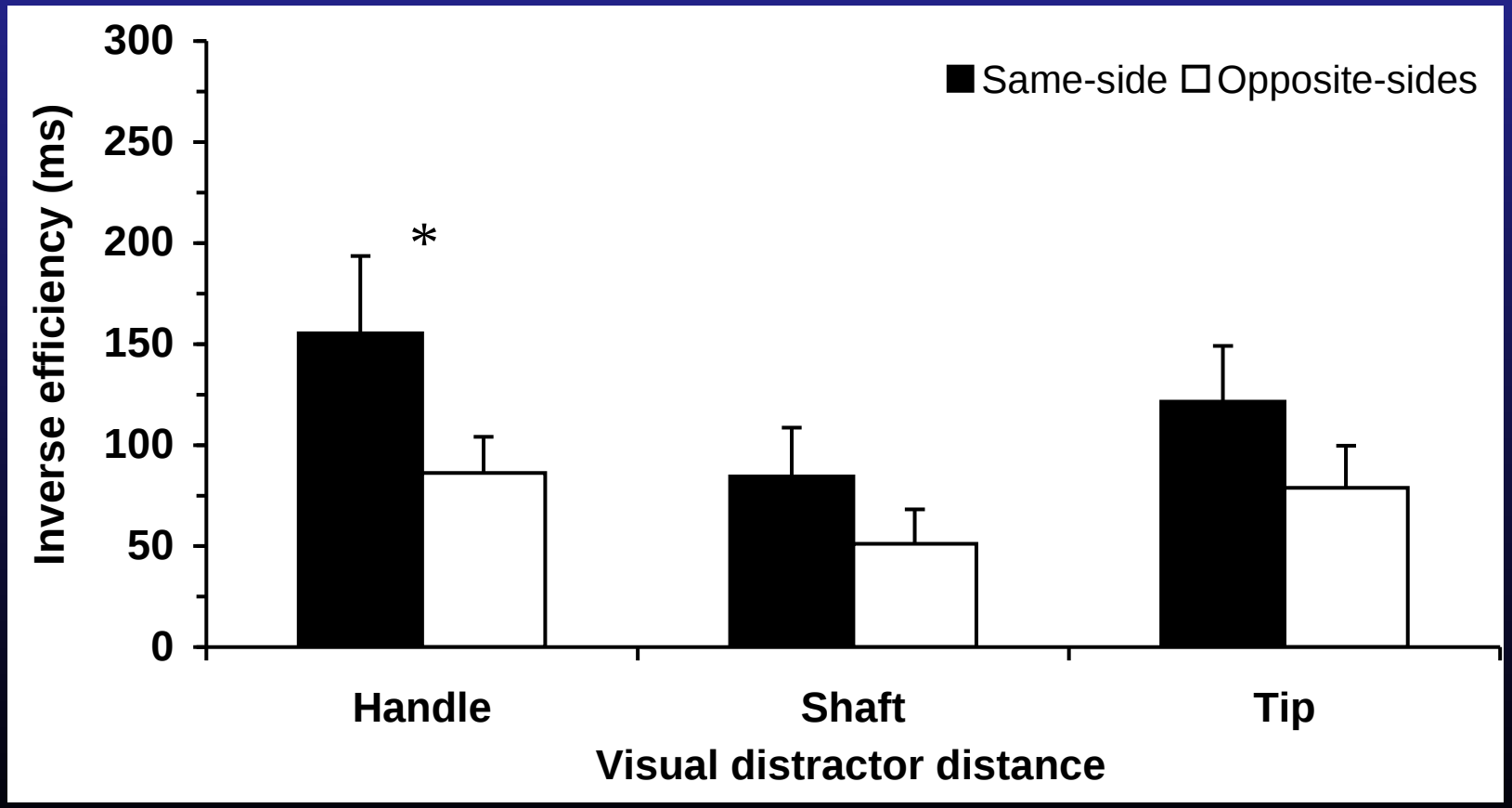
- does part of tool matter?



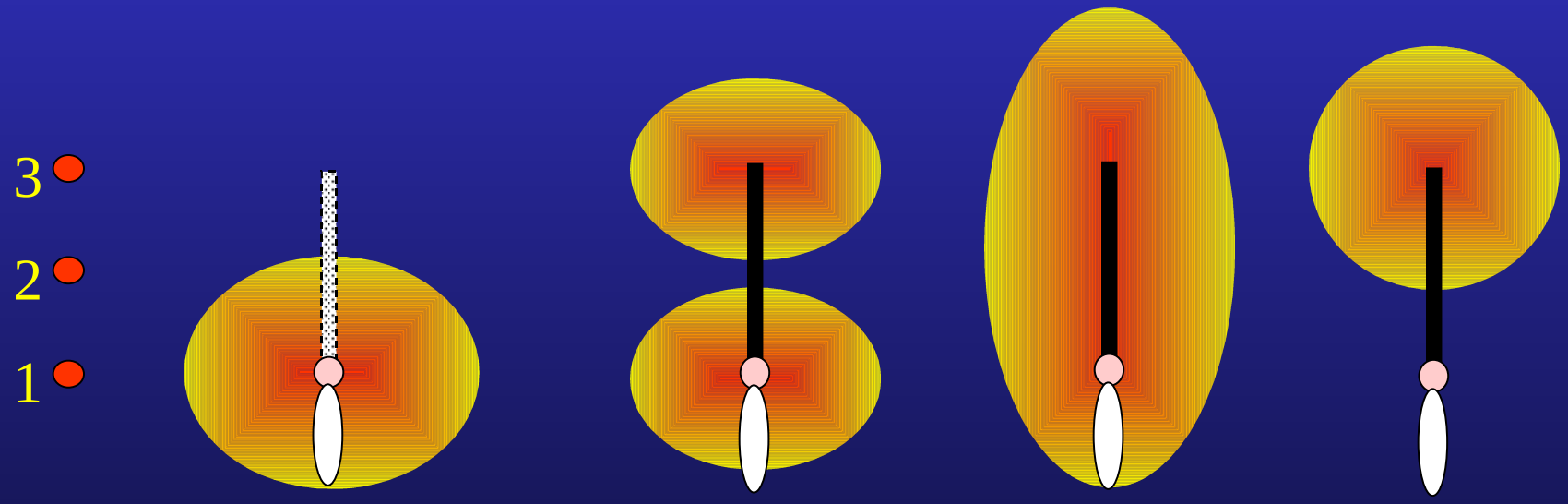


E5: ‘Random’

Tool-use at random time
and with random hand
(every 4 trials on average)



Conclusions



Laser task
Tool-Handle

Tool-Tip
Tool-Shaft

Tool-Tip
random?
(non-sig.)

So, tool-use does not simply extend peripersonal space…

Tactile sensations ‘projected’ into extrapersonal, ‘outer’ space!


The End