**INTRODUCTION**

Participants anticipate the effects of an elastic force field on the fingertips. Mechanically, this dynamics is only parameterized by its stiffness, ranging continuously from smooth forces to very high impact-like profiles.

Recently, we showed that the CNS does not attempt to predict the exact time course of the force profile after impact but instead, it applies a default strategy consisting in gripping harder about 60ms after impact. This strategy optimizes object stability by regulating mechanical parameters including stiffness and damping through grip force. Interestingly, grip force control in extreme elastic forces (smooth vs. impact) exhibits structurally different mechanisms which contrast with the underlying continuous dynamics.

We designed an experiment to show that participants switch from one control to another upon a threshold stiffness value.

**METHODS**

**Experimental procedure**

Six participants produced back-and-forth tapping movements to a visual target (red bar). Velocity to the target was normalized to 120, 150, 180, and 210 mm/s. Force onset varied non-linearly with trials.

**Methods**

**Materials**

A robot equipped with a grip force transducer was controlled in real time to generate elastic force fields. Feedback position was given as a green sphere on an LCD screen.

**Conclusions**

Optimal grip force latency + time of grip force peak - time of maximum elastic force

**REFERENCES AND ACKNOWLEDGMENTS**


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