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## *Supplementary Material*

**Table 1 | Resume of the parameters extracted and their signification**

<b>Input level: central system</b>	
<b><math>t_0</math></b>	It is the time that takes the brain to perceive the stimulus and emit the command to the musculoskeletal system. It refers to the moment when a population of neurons sends a motor command, it occurs after the audible stimulus is perceived and the motor command prepared.
<b><math>\Delta(t_0)</math></b>	It reflects the rhythmicity of an input command. It represents the time elapsed between two successive $t_0$ and is used in the oscillations only.
<b>D</b>	It corresponds to the distance covered by the resulting lognormal.
<b><math>\theta_s</math></b>	It is the starting angle of the lognormal.
<b><math>\theta_e</math></b>	It is the ending angle of the lognormal.
<b>Timing properties of the neuromuscular system: peripheral system</b>	
<b><math>\mu</math></b>	Also known as the logtime delay, it represents the time taken to reach half of the distance movement on a logarithmic scale. It corresponds to the rapidity of a reaction to a command by a system.
<b><math>\sigma</math></b>	Also known as the logresponse time, it represents the time taken from the neuromuscular system to respond to a command on a logarithmic scale. It is also linked to the movement duration and is a measure of the asymmetry of the lognormal.
<b>Global state of the neuromotor system</b>	
<b>Nblog</b>	It is the number of lognormals required to reconstruct the velocity profile of the movement.
<b>SNR</b>	It is the measure of the quality of the movement reconstruction.
<b>SNR/Nblog</b>	It is a performance criterion and represents the motor control fluency of a gesture. The lognormality principle predicts that the ideal movement converges toward a lognormal profile. When the SNR/Nblog is higher, the movement is more similar to the ideal one, as postulated by the lognormal behavior.

<b>Motor program execution</b> ( $\Delta(t_0)$ is used instead of $t_0$ for the calculus in the oscillations)		
<b>Mode</b>	It is the time at which the maximum value of the lognormal impulse response is reached.	$M = t_0 + e^{\mu - \sigma^2}$
<b>Median</b>	It corresponds to the time at which the half value of the integral under the lognormal curve (50% of the covered distance) is reached.	$m = t_0 + e^{\mu}$
<b>Time delay</b>	It represents the rapidity of a neuromuscular system to respond to a command.	$\bar{t} = t_0 + e^{\mu + 0.5\sigma^2}$
<b>Response time</b>	It is a measure of the spread of the impulse response.	$s = (\bar{t} - t_0) \sqrt{(e^{\sigma^2} - 1)}$
<b>Asymmetry</b>	It characterizes the shape of the lognormal.	$A_c = 1 - e^{-\sigma^2}$
<b>Other parameters</b>		
<b>Reaction time</b>	It is the time needed to start the movement after a stimulus. In the present study, it was computed as the time required to reach 10% of the maximal velocity during the test	
<b>Command propagation</b>	It is the duration of the command propagation	$CP = RT - t_0$