

## Stuttering

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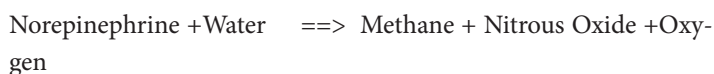
Stuttering; Adrenaline; AT Math

### 1. Abstract

This paper provides some simple calculations from AT Math and Physics on how stuttering may occur. We see that adrenaline affects the frequency of the human mind resulting in a nerve signal velocity that is too slow for the tongue muscle to respond, thus no clear speech.

### 2. Introduction

In this paper, we consider the mathematics and physics behind stuttering. We have observed that stutters do worse under stress, yet, when not under stress, their speech is lucid. I hypothesize that it is adrenaline (norepinephrine) that leads to a worsening circumstance for stuttering to occur. We begin with the chemistry of adrenaline. Familiarity of AT Math is assumed.



$$12.0107 \times 9 = 108.0963$$

$$14.0067 \times 1 = 14.067$$

$$15.999 \times 10 = 159.98$$

$$1.0008 \times 36 = 36.288$$

$$\Sigma 318.43 \times 6.023 = 1917.9 \text{ g}$$

$$318.43 \sim \text{frequency of the human mind} = 1/\pi$$

$$\text{Freq} = 1/T = 1/((1/t))$$

$$E = 1/t = 3.141 \sim \pi$$

$$TE = M [0.15915]$$

$$3.141 = M(0.15915)$$

$$M = -1.9736$$

<http://acmcasereports.com/>

$$M = \ln t$$

$$t = \exp(1.9736)$$

$$= 1.0199 \sim 102$$

$$t = KE = 1/2 Mv^2$$

$$1.02 = 1/2 (1.9736) v^2$$

$$v^2 = 1.03357$$

$$v = 10.166 < 11.027$$

$$\Delta v = 0.861$$

It takes 1/5 sec to utter a word.

$$v = d/t$$

$$0.861 = d/(1/5)$$

$$d = 1.722$$

$$1.722/\sqrt{3} = 0.994 = \rho_{\text{blood}}$$

$$t = KE = 1/2 \rho v^2$$

$$s = t = d$$

$$1.722 = 1/2 (0.994) (v^2)$$

$$v = 1.861$$

$$GMP E = -1.248 \sim -1.25$$

The nerve signal is too slow for the tongue to respond with flight or fight adrenaline in the speaker's system.

### 3. Conclusion

We see that perhaps it is adrenaline that worsens stutters speech.

### References

1. Cusack PTE. Stuttering Mechanism. J of Psychiatry and Neuro Science. SAR. 2020.