THE OPTIMIZING PIANISM NEWSLETTER ©

TOPIC: MECHANICAL

Don't fight against physics, you'll fail.

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"The faster you play, the lighter you play."[1]

— attributed to Sergei Rachmaninoff

You practice lots, thinking that'll build up speed – which it will... to a point. Your cognition speed (see last week's newsletter) will be a big limiting factor, but you must also check that it isn't your Mechanics. A car with a flat tyre will only go so fast. A gymnast who doesn't put their body into the right positions at the right time will fail to land their somersaults. And a pianist who doesn't move their fingers and hands in the right way at the right time will not land their "somersaults" either – they'll be slow, or fatigue, or get injured. Wondered why the Chopin Etudes are such a challenge? Because they require exactly the right mechanics to be playable, at all: good mechanics, playable; bad mechanics, unplayable. That's quite a difference in outcomes.

Where speed and agility is required, you must solve the inertia problem of your movements. As per Newton's second law (F = m × a): the heavier the thing, the more force needed to change its speed. In piano playing, muscles do most of their work starting and stopping movements.[2] If a finger weighs about 0.1 kg, a hand 0.5 kg, a forearm 1.5 kg, the arm 2 kg,[3] think: what combinations might make playing *this* passage easier? Moving small masses fast or big masses slowly? Most piano problems can be solved with a combination of a bit of finger, a bit of hand and a bit of forearm (up-down or rotation). It's not more complicated. Read the Mechanics chapter of the book if you want to learn more.

MAKE YOUR PIANISM BETTER

DON'T "force-practice." Stretching, straining and strengthening should not be words that you use at the piano. They hinder virtuosity. And don't confuse the idea that a "difficult sounding" passage needs to have "difficult movements." This is a common error.

DO use a combination of finger, hand and forearm movements to optimize the mechanics of your movements. Find the best combos to solve the mechanical requirements of the passage you are playing.

At speed, getting the mechanics right will matter. Watch Sokolov (watch it in slow motion too) show us how fast playing is simply slow, correct mechanics (Mechanical optimization) sped up (cognitive skill). All learnable.

One step forwards... one step ~~backwards~~ forwards...

Cameron

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Next issue: what is 15 minutes of Hanon actually worth?

How much of you moves to play one note?

The Book — Chapter 6, "Inertia and The Inertia Problem," works through the physics, and Textbox 6.7 shows why both camps of touch pedagogy are half right, and half wrong. **Read ›**

- **3M Self-Assessment** — which M is carrying the load? (free)
- **Newsletter Archive** — every issue so far

REFERENCES

1. Roberts, C. *Optimizing Pianism – Evidence-Based Perspectives*, Ch. 6 ("Inertia and The Inertia Problem"). Quotation attributed to Rachmaninoff.
2. Roberts, C. *Optimizing Pianism – Evidence-Based Perspectives*, Ch. 6 ("Inertia and The Inertia Problem").
3. Plagenhoef, S., Evans, F. G. & Abdelnour, T. "Anatomical Data for Analyzing Human Motion." *Research Quarterly for Exercise and Sport* 54(2), 1983: 169–78; de Leva, P. "Adjustments to Zatsiorsky-Seluyanov's Segment Inertia Parameters." *Journal of Biomechanics* 29(9), 1996: 1223–30.

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