Ergonomics by Nathan Jensen
Dean's Notes

Nathan is now tuning three to four pianos a day, and he know that if he doesn't change and adapt how his body works, he might not last. Because we use specific muscles while tuning pianos, we must consciously be aware of the other muscles around them so they can support those we use the most. Going to the gym on a regular basis makes Nathan feel more energetic, and things work better. Drinking water also makes a difference.

Nathan's first piano teacher stressed good posture. Poor body position can lead to carpal tunnel. Wrist position is important; think of all the connections associated with the wrist. Make sure your wrists are above the keys. Keep the elbow above the keyboard. The shoulders should be at or above the tuning pin.

With the Alexander Technique, things should be straight, symmetrical, and balanced. It's all about keeping a physical balance. Piano tuning requires an asymmetrical position and involves applying forces on one side of the body more than the other side.

When tuning, be mindful of what you are doing with your body. Instead of ignoring pain, do something different. Thinking about something different from a pain can refocus your motions. What else can be changed? Use a different tuning hammer, especially one with an extension handle. Neck aches can occur if the head position remains static.

Key thumpers are made of different materials. One is a hammer attached to a tennis ball. Fancy thumpers are made of wood with a rubber-tipped extension. Ray Chandler added cotton balls inside a rubber tip on the finger. Strike each key moderately hard. Strike as a piano player would. Keep your fingers on the keys or very close to the keys as you strike. Joe strikes with fingers three and four while using an impact hammer. With a loose wrist, the energy of the arm cannot go to the key. If your arm and wrist is tight, all the impact goes into your hand. There is less impact on the finger with a loose wrist like a spring.

Ibuprofen keeps you from building your muscles back up. If you are trying to get stronger, it mutes the response. Always take Ibuprofen with food. Glucosamine works for some people but not everyone. It takes about a month to kick in.

Massage is always helpful. Nathan passed around a massage gun with lots of useful tips. Some people lie on a lacrosse ball. There are arm rollers and other tools. Ali Tucker tunes with her shoes off; she feels more relaxed and calm. Nathan always removes his shoes when he enters any house. Keep in touch with how your weight is distributed on each foot. Being barefoot is grounding and relaxing.

A recent study showed people developing foot problems arose during Covid when people started walking around their houses in stocking feet on a regular basis. Dale is a dancer on his

feet a lot and always wears shoes. Roger adds arch supports in his shoes, which makes a big difference for his feet. Dean is a skier; special sensors can be placed inside a boot or shoe that will provide visual real-time feedback showing exactly where the weight is on the foot at any given moment. For body and wrist awareness, the GyroBall lights up when spinning and can give feedback on balance.

Joe demonstrated the Reyburn impact hammer. With this tool, it is hard to tell if the pin moves or not, unlike with a stationary hammer. Joe had a shoulder he couldn't lift. His physical therapist would warm it with an ultrasound, and showed Joe stretches for keeping it loose. To keep a shoulder from becoming sore, keep the arms as close to your body as you can. Keeping one arm up in the air over time is asymmetrical and becomes tiring. Joe also switches between hands, and has learned to tune left-handed as well as right-handed.

To tune with an impact hammer, rock it back and forth. Notes drift less with an impact hammer. If the pins are too tight, it is difficult to use. If they are too loose, the pins will move too much. There are different exchangeable weights for impact hammers. Jeannie might start at 10:00 or noon to let the weight go down with tight pins. Impact hammers are great for uprights. Jeannie has been using one for nearly twenty years. Let the weight tune tight pins and change to a lighter weight for looser pins. At the end of the tune, start slightly sharp and let the tension of the string pull the final note down.

Joe Goheen demonstrated how to set let-off using a jig. First he sets samples using a go-nogo gauge. Because the clamp will occupy the end hammers, set samples on either side of where the clamp will go. Using the gauge in the piano, the let-off should block against the thick part and clear the thin part. He assumes that the capstans and key dips are already adjusted, and the drop screws are low enough to allow room for movement. After all the samples have been adjusted, he removes the action and places it on a thick moving pad on top of the closed piano lid. In terms of ergonomics, instead of lifting a grand action from the ends, it is easier on the back to lift the action from the middle, grasping the underside of the hammer flange rail.

He connects the Spurlock jig to the action by setting it on the rest rail felt and fastening the Teflon clamps on the two end hammer shanks. Adjust the two supports down until it just clicks. Raise and lower the two clamps until the shanks at both ends of the gauge click. Go back and forth to get the sample clicking just right. Once these are set, using the let-off tool, adjust all the hammers between the samples so each one just clicks. The assumption is that the shanks and the tops of the hammers are all the same height. When all the adjustments have been completed using the gauge, remove the jig and replace the adjusted action back in the piano. Do a final check in the piano for each hammer with the gauge.

Anthony Willey's Notes

This from Susan Kline:
As for tuning, I have a lot of muscle and tendon problems (fibromyalgia), but I can tune without injury through a variety of habits I've built up over the years. I use a long extension hammer with a tip which can fit the tuning pins well enough that the hammer can stay on one without falling, and for an upright I use a lot of slapping (to go sharp) or nudging and jerking (to go flat) all done out at the tip. Slow pull is very tiring and usually not the best for stability. Any motion I make to move the hammer I do quickly, and then completely relax my hand and arm. A lot of the tapping or slapping is done with a quick motion of the wrist. I attempt to have a large variety of positions instead of doing the same thing over and over again.

Susan:
I agree. Nudging, slapping, impacting, jerking techniques combined with the occasional light steady pull/push as needed are less body harming techniques, but they still give you good tactile assessments of pin flex, pin stability, pin resistance in the block, string position, and sting segment balance/equilibrium.
- Richard West

Thanks, Richard. A tuning seminar put on by Jim Coleman, Sr. back when I first arrived in Oregon got me thinking about the tapping, later slapping and nudging idea. Not just easier on the body, but it also helps stability, since the pin has far less tendency to twist or flagpole. I'm really glad he made the trip up here. It was probably 1994 or so.