Physical Considerations for Teaching Beginner Flutists

By Karen Lonsdale (2009)
“Through the generations, in attempting to help students, teachers have developed a mass of exercises without any investigation into the anatomic correctness of the movements involved...our profession lacks a body of knowledge, of researched, tested, and proven material such as exists in many other fields of learning.

Ours is a hearsay tradition carried through the generations by word of mouth from teacher to student. Scientific study in our profession has been minimal, and even that little bit has all too frequently been overlooked.

The treatment of injuries to musicians is becoming better understood, and the incidence of successful treatment is increasing. However, if after medical treatment a symptom persists, one must look to the technique of the player for answers.”

Comparison of UNT and Flute Health Survey (Spence 2001) – examples of some results only

<table>
<thead>
<tr>
<th>UNT n=329</th>
<th>FHS n=40</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Right Wrist 38.6%</td>
<td>• Right Wrist 35%</td>
</tr>
<tr>
<td>• Left Wrist 36.2%</td>
<td>• Left Wrist 27.5%</td>
</tr>
<tr>
<td>• Right Shoulder 29.5%</td>
<td>• Right Shoulder 35%</td>
</tr>
<tr>
<td>• Left Shoulder 27.1%</td>
<td>• Left Shoulder 37.5%</td>
</tr>
<tr>
<td>• Right Upper Back 24.6%</td>
<td>• Right Upper Back 32.5%</td>
</tr>
<tr>
<td>• Left Upper Back 24.6%</td>
<td>• Left Upper Back 32.5%</td>
</tr>
<tr>
<td>• Right Neck 24%</td>
<td>• Right Neck 37.5%</td>
</tr>
<tr>
<td>• Left Neck 27.1%</td>
<td>• Left Neck 37.5%</td>
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</tbody>
</table>

(Both surveys had 16 sites altogether.)
• “...medical problems do exist among flautists to a degree that warrants further attention and study. With additional studies, several performance techniques, including posture, may be found to influence risk of injury. The identification and correction of such factors could help to decrease rates of occurrence for these problems in this population.” Spence (2001) conclusion (comparing UNT and 1999 NFA surveys)

• “Physical problems can and do occur in young musicians...Several published studies have documented the incidence of overuse difficulties in students, even those as young as seven or eight years of age – long before they might have any clue or insight into the cause of their problem or what to do about it.” (Dawson, 2008, p.24)
Previous studies

- Wu (2007) reported “musculoskeletal disorders present a significant health problem to musicians. The reported prevalence of playing-related musculoskeletal disorders in musicians ranges from 39 – 87%, which is consistent with the prevalence of work related musculoskeletal disorders for other workers.”
- Nemoto (2007) found that players of flute, oboe and clarinet reported more hand and upper extremities problems than players of other wind and brass instruments in military bands. Of 20 flute players studied, 7 reported a stiff neck, 3 had wrist pain and 3, jaw joint pain.
International Survey on Injury Prevention and Management

Lonsdale, 2007
Have you ever experienced flute playing related discomfort or pain that was severe enough to distract you while performing?

- Yes: 49.74% (192)
- No: 48.96% (189)
- Not applicable: 1.30% (5)
Have you ever had to take an extended period of time off flute playing because of flute playing related discomfort/pain?

- Yes: 25.78% (99)
- No: 73.18% (281)
- Not applicable: 1.04% (4)
Are you currently suffering from flute playing related discomfort or pain?

- Yes: 26.68% (103)
- No: 72.02% (278)
- Not applicable: 1.30% (5)
Which of the following medications, if any, have you ever used to alleviate flute playing related pain, tension or injury? Tick/check any that apply. If you have never used any, please choose 'None of the above'.

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Frequency</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over the counter pain killers (Aspirin/Paracetamol/Ibuprofen etc)</td>
<td>46.2%</td>
<td>168</td>
</tr>
<tr>
<td>Non steroidal anti-inflammatory (such as Voltaren, Naproxen, COX-2 inhibitors)</td>
<td>19.5%</td>
<td>71</td>
</tr>
<tr>
<td>Muscle Relaxant Drug (such as Valium)</td>
<td>4.1%</td>
<td>15</td>
</tr>
<tr>
<td>Oral Steroid (such as Prednisone)</td>
<td>2.7%</td>
<td>10</td>
</tr>
<tr>
<td>Steroid Injection (such as Cortisone)</td>
<td>5.5%</td>
<td>20</td>
</tr>
<tr>
<td>None of the above</td>
<td>48.6%</td>
<td>177</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td></td>
<td>17</td>
</tr>
</tbody>
</table>

answered question: 364

skipped question: 44
Aching/Stiffness in Mid/Up Back

- Constant During: 9 (2.35%)
- Constant After: 7 (1.83%)
- Intermittent During: 16 (4.18%)
- Intermittent After: 17 (4.44%)
- Constant During and After: 30 (7.83%)
- Intermittent During and After: 41 (10.70%)
- N/A: 263 (68.67%)

Count
Skeletal Muscle

- The main characteristic of muscle is that it has the ability to contract, or shorten.
- Skeletal muscles pull on bones, not push.
- In order for one muscle to contract, another has to submit to this movement and lengthen.
- Some muscles are in a constant state of contraction to maintain posture.
- When a muscle contracts, it shortens, pulling upon both of the bones to which it is attached, moving bones towards each other.
- We need to understand the importance of not allowing ourselves to overuse one muscle at the expense of opposing muscles.
Electromyography

“the recording of electrical changes occurring in muscles during contraction” (Karpovic h & Sinning, 1971, p 14)
Left and Right Pectoralis

![Graph showing activity of left and right pectoralis muscles over time.]
Nature of the flute playing position

- Instrument is held against gravity
- Uni-lateral
- Essentially very static so may lead to excessive internal rotation of the shoulders. This in turn can lead to tight chest muscles and weak upper backs.
Workplace Health and Safety for musicians is not just about tripping....
Ergonomic Principles

• “people have certain recognizable characteristics and it is always possible to design the task, equipment, and the environment to be compatible with those characteristics”
• “providing a good match between people and their environment can result in better human performance, as well as in the enhancement of health and safety”
• the focus in design is on the human being (in this case, the flute player!)

Neutrality

Neutral alignment

- In neutral position, the muscles and ligaments which span the joints are stretched to the least possible extent, so subject to less stress.
- Examples of non-neutral position: raised arms, bent wrists, bent neck, turned head, bent and twisted trunk
- (Dul & Weerdmeester, 2001, p. 6)
Left Wrist Flexors: Professional vs Tertiary Student in the opening of the Chaminade Concertino
Take account of differences in body size

- Young musicians should use appropriate instruments for their size.
- Smaller adult players may consider closed holes, thumbport, bo pep, curved flutes, offset G key.
Thumbport

**Why?**

- Assists placement of right thumb
- May be useful for smaller hands

http://www.thumbport.com/analysis.html
With and without Thumbport

Photos courtesy of Suzanne Cowan, Wollongong, NSW
Bo Pep

**Finger Saddle**
May help “open” the grip and improve comfort levels..

**Thumb Guide**
Keep the work close to the body

- Avoid moving flute too far away from the body
- Avoid bending forwards when playing flute
- Small beginner flute players, as well as alto/bass flute players may consider curved head joints
- Keep elbows and arms close to the body, not up like chicken wings!
Yamaha Fife and Jupiter Prodigy

Which of the following have you ever recommended to your students, for the specific purpose of avoiding or managing injury? (Lonsdale 2007)

- Curved head joint: 28%
- Fife: 8.6%
- Prodigy: 9.1%
A twisted trunk strains the back

- When rehearsing in ensembles, allow enough space between players, so they do not have to twist
- Angle chair to see conductor without having to twist
- One player per stand
Limit the duration of any continuous muscular effort/prevent muscular exhaustion

• Take breaks!
• Keep practice times reasonable and consider size of player and their instrument.
• If the performer plays beyond fatigue, he or she eventually alters his or her normal performance techniques and begins to use recruited, less efficient muscle combinations. This is a frequent cause of injury.” (Johnson, 1997, p.302)
More frequent short breaks are better than a single long one.

- Learn to schedule regular breaks into your practice time.
- ‘Listen’ to your body and don’t play through pain. Use breaks to stretch.
Alternate postures as well as movements

• Alternate Flute/theory/games
• Alternate standing and sitting for practice sessions.
• Encourage stretching from an early age
• So, time now to take a break!!