

# Assessing and treating pain in musicians

Michael Ingle provides an introduction to assessing and managing musculoskeletal problems in instrumental musicians, particularly those playing Western classical music.

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Performing arts healthcare is a niche field that has been an active research topic in journals and at conferences since at least the 1980s. Studies show that musicians, especially orchestral musicians, self-report high levels of musculoskeletal pain. The most common regions of pain are in the neck, shoulders and low back (Cruder et al 2018). A study of Australian orchestral musicians reported that 28 per cent had taken at least one day off work in the preceding 18 months because of pain or injury (Ackermann et al 2012).

Musicians rely on their bodies to produce music and pain can have a significant impact. A large survey of Australian orchestral musicians revealed that only 40 per cent felt they had recovered from past playing-related pain problems (Ackermann et al 2017). An inability to play and perform can result in loss of identity, depression and financial stress (de Kock et al 2023).

Despite being elite performers, many musicians describe feeling uneducated when it comes to minimising and/or managing the pain associated with their playing. Musicians also frequently report a lack of understanding from health professionals about the demands of their jobs (de Kock et al 2023). While not all pain and discomfort can be avoided all of the time, building self-management skills and self-awareness regarding contributing factors will help musicians build resilience and healthy, sustainable careers.

Unhelpful approaches to managing pain typically involve either ignoring and playing through pain or excessive rest. The former strategy usually ends in the latter as the pain becomes more severe and absolute rest becomes a necessity. Excessive rest often leads to deconditioning and repeated cycles of pain and associated psychosocial distress when contributing factors are not addressed.

### Contributing factors

Musculoskeletal load can play a significant role in contributing to pain. Many professional musicians play six to seven hours per day, which means engaging in repetitious movement in a static sitting or standing position. The weight of the instrument is frequently held in one position by one or both arms. Rapid increases in practice/playing volume, having to carry or manoeuvre a heavy instrument, ergonomic issues (excessive muscle tension) and external sources of musculoskeletal strain (eg, computer use) further compound their load. Interestingly, musicians have a somewhat unique sensitivity to pain; even pain-free musicians have been shown to have global increased touch and heat sensitivity compared to non-musicians (Zamorano et al 2015).

Stress is another major factor. Common sources of stress are financial pressures, an expectation to perform at a high level consistently or the strain of working in cramped conditions (ie, uncomfortable chairs).

Lifestyle factors also need to be considered. Musicians may have irregular schedules, with late performances that disrupt their sleep, and the effects can be exacerbated by smoking and alcohol. Musicians in orchestras often sit next to the same people for decades

and relationship breakdowns can cause stress, poor sleep, anxiety and depression. Lack of awareness of pain vulnerability and attitudes to injury are other important social factors to take into account.

### The language of music

Understanding basic vocabulary and terms used by musicians will help build a therapeutic alliance and an understanding of the presenting issue. Examples include:

- the piece (the music being played)
- the names of specific instruments (eg, violin, viola, piccolo, oboe)
- practice sessions (not 'training')
- bow arm versus left hand (string players hold a bow in the right hand and finger the notes with the left hand)
- embouchure (the setting of the lips and facial muscles to facilitate vibration and sound in brass and wind instruments)
- chin and shoulder rests (the contact points of a violin/viola)
- rehearsal (group/ensemble practice sessions).

Physiotherapists regularly working with musicians could also consider developing instrument-specific vocabulary and knowledge (eg, understanding string pitches or the difference between a French bow and a German bow hold for bass players).

### Physical assessment of musicians

Assessment of the musician can be approached from two perspectives: intrinsic factors (ie, the musician themselves) and the interaction between the player and their instrument.

There will also be non-modifiable factors—for example, whether an instrument is played symmetrically or asymmetrically.

The physiotherapist should ask the musician to bring their instrument with them and take three to four minutes to observe them playing two contrasting pieces (eg, fast versus slow playing) from different angles.

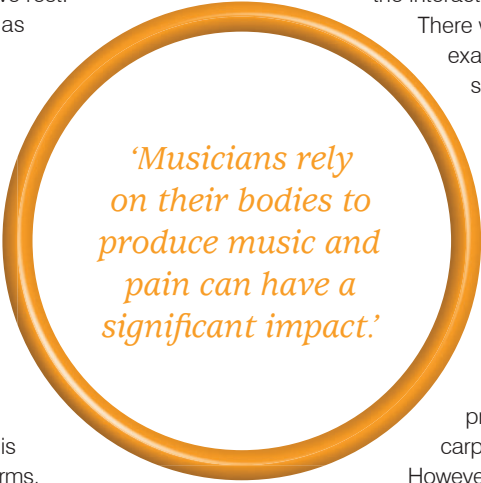
During assessment, clinicians should consider whether a specific pathology is present, eg, De Quervain's tenosynovitis, carpal tunnel syndrome or radial tunnel syndrome. However, most presentations will be non-specific.

Physiotherapists also need to examine a number of intrinsic factors:

- upper body strength and endurance levels, especially in muscles involved in supporting the instrument and body (eg, the upper trapezius, cervical flexors, cervical extensors, rotator cuff and grip strength)
- range of motion and muscle length, noting that asymmetries may be normal
- signs of hypermobility throughout the body
- neural tissue sensitivity and tissue response to palpation/load.

### Interaction with the instrument

Excessive muscle tension is a very common factor in musicians. While it is not possible to be completely relaxed when playing, muscles should be able to have periods of work and rest. Table 1 shows examples of muscle tension issues as they relate to specific instruments.



*'Musicians rely on their bodies to produce music and pain can have a significant impact.'*

**Table 1. Common muscle tension issues for musicians according to instrument.**

| Instrument             | Common muscle tension issues                                                                                                                                                                                                                                                                                             |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Violin/viola           | Clamping the chin down onto the violin<br>Hitching the left shoulder if the shoulder rest is too short<br>Incorrect bow holds that increase right hand tension<br>Adducting the thumb/gripping the neck of the instrument                                                                                                |
| Brass/wind instruments | Overblowing and excessive abdominal muscle use, which often results in a Valsalva manoeuvre response (ie, closure of the epiglottis) and excessive lip muscle tension. This can lead to hernias (abdominal, hiatal) or embouchure muscle dysfunction<br>Elevated scapula position with minimal use of shoulder abduction |
| Guitar                 | Excessive force used to depress strings                                                                                                                                                                                                                                                                                  |
| Piano                  | Metacarpophalangeal joints held in sustained extension (lack of finger relaxation)                                                                                                                                                                                                                                       |
| All instruments        | Excessively tense and upright thoracolumbar posture (especially during performance), with an inability to relax into spinal flexion                                                                                                                                                                                      |

When watching a musician play their instrument, look for inefficient or suboptimal joint positions and for excessive wrist, finger or thumb extension/flexion or deviation. For example, pianists may repetitively engage in end range ulnar deviation instead of allowing the shoulder to abduct and placing the hand in a more favourable position.

Carrying and manoeuvring an instrument in its case can also contribute to musculoskeletal load. Some instruments, such as the double bass or tuba, weigh over 20 kilograms in their cases. Musicians need whole body conditioning if this is a regular feature of their schedule.

### Managing pain and symptoms

Management of playing-related problems falls into three phases.

#### Reduction of symptoms

Reduction of playing volume can be a helpful short-term strategy where excessive musculoskeletal load is a significant contributing factor. More severe pain presentations may need a period of complete rest from playing; however, this should be minimised. Musicians should be encouraged to ‘cross-train’ through cardiovascular exercise and to maintain musical and social contact through strategies such as mental practice, theory training, scanning parts of upcoming gigs, business/work administration and staying in touch with work colleagues.

Splinting can be useful for conditions such as hand or wrist tendinopathies. An off-the-shelf splint can be used but a thermoplastic splint made by a hand therapist is ideal. Other ways to reduce symptoms include body relaxation, medication, manual therapy, cortisone (as a second-line intervention after a period of physiotherapy) and, as a last resort, surgery.

#### Addressing contributing factors

Addressing the contributing factors identified in the interview and physical exam can take several forms. For example, if significant symptoms of depression are identified or inflexible perfectionist tendencies are observed, referral to a psychologist may be needed.

When instituting technique changes, it may be necessary to liaise with the musician’s teacher or workplace. However, make sure to gain the patient’s consent for this.

Video feedback can also be useful. Have the musician play in front of a mirror and tape their performance to provide proprioceptive feedback and address technique factors.

#### Return to full playing load and prevention

Returning to playing should be done in a graded manner. Similar to an athlete returning to running, musicians benefit from direct instructions about playing and rest periods, with a structured increase in volume and intensity. They may need to begin at a minimal baseline—such as five minutes of playing, followed by an hour of rest—and increase from there.

On return to play, establishing healthy practice habits is critical. Musicians should take regular breaks, intersperse technically demanding passages with lighter playing and apply goals and structure to their practice.



**Figure 1. Standard clarinet thumb rest.**



**Figure 2. The Ton Kooiman Etude 3 thumb rest, which provides a shorter lever arm on the thumb.**

The use of instrumental straps or supports can be helpful, especially for people with hypermobile hands. Examples include the Guitarlift for the guitar, ERGObone for the trombone and the Ton Kooiman Etude 3 thumb rest for the oboe and clarinet (see Figure 2). With a standard clarinet thumb rest, the weight of the instrument rests mostly on the tip of the right thumb (see Figure 1). The Ton Kooiman Etude 3 rest reduced the lever arm.

Self-care is also critical for musicians. Proper exercise, stress management and sleep are essential. Musicians should be encouraged to flag occurrences of significant pain rather than ignoring them.

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Michael Ingle MACP is an APA Titled Musculoskeletal Physiotherapist and professional musician. He holds a Master of Music degree from the Sydney Conservatorium of Music and completed a thesis on pain in elite student musicians. He studied at the Hochschule für Musik Freiburg in Germany and has performed with most of Australia's professional orchestras. In 2023, Michael founded Australia's only dedicated physiotherapy clinic for musicians, The Musician Physio. He is the current lead physiotherapist for the Queensland Symphony Orchestra.

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