PREVENTING INJURIES IN GUITARISTS
ERGONOMICS, STRENGTHENING AND SURGERY
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MUSCULAR TENSION AND STRETCHING EXERCISES
Muscular tension in a guitarist may be due to over activity of a muscle, and this can result in distinct referral patterns of pain. Treatments for muscular tension can include soft tissue massage, trigger point therapy, stretching, icing, acupuncture, home acupressure and activity modification (e.g., altering the way we carry items and sleeping and playing positions).

Stretches can be useful self-treatment for most musicians. However, if the individual is hypermobile in their elbows and wrists they must not go into their hypermobile range, but rather keep the elbow slightly flexed when performing the exercise. In Fig. 1 there are two examples of stretches that may be useful as a warm-up and cool down before and after playing. These exercises are done away from the instrument, and can be a great way of preventing build-up of muscular tension.

STRENGTHENING AND STABILITY EXERCISES
The small muscles of the hand and the muscles in the forearm are frequently stressed while playing the guitar and can also be stressed in an attempt to compensate for joint instability. Strengthening exercises utilizing therapeutic putty can be a useful technique when treating patients who use their hands to perform extremely rapid and repetitive movements. These exercises can also assist patients with hypermobile hands by increasing muscular strength, which in turn increases joint stability.

Treatment for hypermobile patients must focus on increasing stability and strength. They need to be aware of where their joints are when they are playing and performing daily living tasks (proprioception). Patients may benefit from the use of temporary splints or supports to assist in retraining positioning or limiting movement. Education regarding good practice habits and healthy joint use is also important.

Exercises must only start when the patient’s pain is ‘under control’. They should continue until enough muscle strength has been gained and a straight or neutral joint position can be maintained when playing their instrument and performing other functional activities.

It is important that the guitarist knows which muscles are weak and therefore which ones require strengthening. At London Hand Therapy, manual muscle testing techniques are used in order to grade different muscles, set short and long term goals and map improvements. Particular exercises using therapeutic putty can be very useful in increasing strength in specific muscles. There are many therapeutic putty exercises and Fig. 2 shows an example of an exercise that can assist in increasing strength of one particular group of muscles that are within the hand.

Another way of strengthening the muscles of the forearm and in turn increasing stability of the elbow, wrist and fingers, is by exercising against resistance. Isometric exercises as outlined in the box above, are frequently taught to guitarists and other instrumentalists to not only increase strength of the forearm and stability of the wrist but also to increase proprioceptive levels. These isometric exercises are done away from the instrument and are to be done in a pain-free exor stretch.

Fig. 1 (A) Forearm flexor stretch. With the elbow straight, and palm facing upwards, gently take your wrist backwards using your own muscle strength, until you feel a stretch. Then, with the other hand gently pull the wrist further backwards by placing light pressure in the palm. Hold this stretch for 10 seconds.

Fig. 1 (B) Forearm extensor stretch. With the elbow straight and palm facing downwards, gently bring the wrist and fingers in towards yourself using your own muscle strength until you feel a stretch. Then, with the other hand, lightly push on the back of your wrist, bringing it further towards yourself. Hold this stretch for 10 seconds.

Figure 2. Therapeutic putty exercises. Exercising the small muscles within the hand, different finger pairs can be used to increase strength in the hand. The putty is looped around two fingers (A) and then the fingers are actively spread apart in a side to side ways movement (B).
Musical instruments can be modified or adapted to increase the comfort and ease of playing for individuals with minimal dexterity of right hand or left hand. For example, the greater the problem, the larger the body size of the instrument. Lascio has developed a small, beveled edge for the classical guitar, where the right forearm crosses the instrument. Norris has further developed the idea to a further instrument, creating a physical obstacle to effectively resolve any problem with the right forearm crossing the body of the instrument.

These exercises do not involve any movement but are static and resisted. You must support the length of your forearm on a table or other similar surface. The table should be at a height that is comfortable for you. You may need to wear wrist supports or wraps to improve and splints or wraps to help with the activity of the exercises. When treating musicians, exercises can be progressed in a graded and weight-bearing manner, with the support initially, and as tolerated increase this gently and in a graded manner, up to a maximum of 50%. Hold each position for 5-10 seconds and in time as tolerated gently increase the time that the position is held so that a 30 second hold is achieved.

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Impairments, sip and puff controls can be adapted to the computer and used in conjunction with one of a number of musical software packages to allow composition and playback.

Guitarists with left hand or shoulder problems can place a capo on the third fret, thus decreasing the amount of combined wrist, forearm and shoulder rotation when playing on the first three frets. Because the distance between the frets decreases as one goes higher up the neck, the finger spread required for chords or intervals is also decreased.6

SURGERY

Surgery on musicians must be entered into cautiously. Winspur7 reports that of the musicians presenting with recognisable orthopaedic or rheumatologic conditions in the upper limb 4-6% will be candidates for surgery. Non-surgical treatment should always be tried first and it should not be forgotten that in some situations adjustment or modification of the instrument or playing technique (the interface) may solve the problem rather than surgery.

The implications of surgery are great for a musician, whose hands are their livelihood. Thus respect for their hand and career must be paramount. Accurate diagnosis, analysis of need and disability, and precision in planning are needed to ensure optimum outcome of surgery. In the area of acute trauma, techniques that will permit early return to function (such as rigid fixation of fractures and early rehabilitation) are often advantageous. Electrodiagnostically documented carpal/cubital tunnel syndrome and ligamentous injuries leading to instability that have not responded to activity modification or nonoperative therapy can be considered appropriate surgical conditions in the musician’s hand.4

Winspur8 states that there are four areas that must be identified and specifically addressed when planning surgery on a musician’s hand.

1. The exact location of incisions avoiding critical tactile areas (Fig 4A)
2. Anatomic repair and reconstruction
3. Adjustment of any anticipated anatomic compromise to the musician’s specific musical needs
4. The need for an early return to limited playing. (Fig. 4B).

A large series of professional musicians operated on by a single surgeon are presented by Butler and Winspur.11 Of the total number of musicians undergoing hand surgery 12.3% were guitarists, this is a lot lower than piano/organ players (35.7%) and string players (34.6%), however, the frequency of piano and string players represents the popularity of these instruments rather than a vulnerability of the players. Of the 130 patients, 127 (97.7%) returned to full time professional work or were able to complete their final year music college examinations. The period of ‘time off the instrument’ following surgery is kept to a minimum and then there is a graded return to play programme that is initiated as soon as possible.

SUMMARY

The musicians hand is intricate and beautiful. What a guitarist is required to do with their whole body is complex, and it is paramount that the musician, music teacher, educational facilities, health professionals and instrument makers all work together to prevent and decrease the possibility of injuries developing. Simple warm up, cool down and strengthening exercises, a careful analysis of the playing position and an ergonomic approach to the instrument can assist the musician in decreasing the possibility of an acquired injury and facilitate a more enjoyable performance experience.

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References