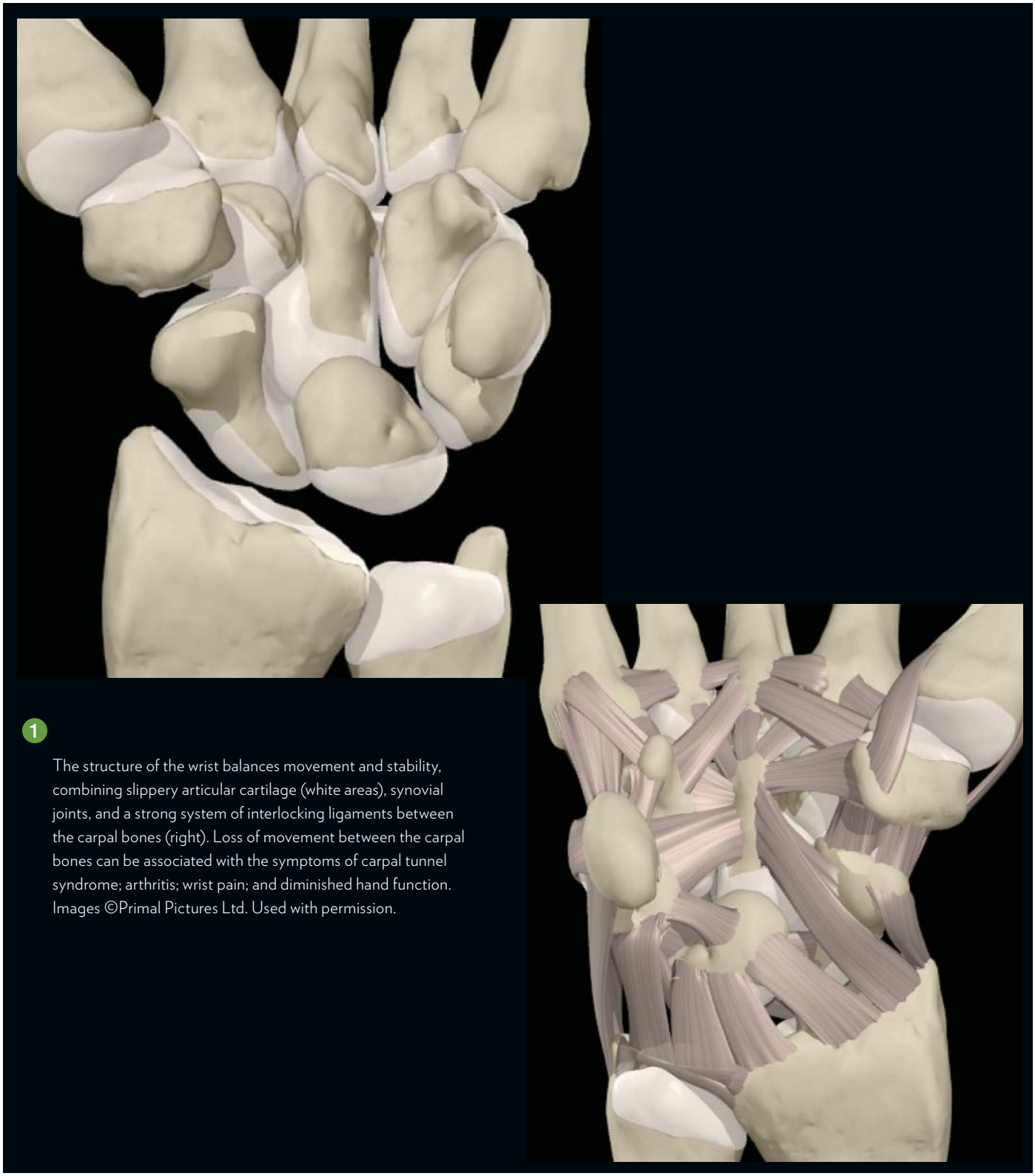
BY TIL LUCHAU



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The structure of the wrist balances movement and stability, combining slippery articular cartilage (white areas), synovial joints, and a strong system of interlocking ligaments between the carpal bones (right). Loss of movement between the carpal bones can be associated with the symptoms of carpal tunnel syndrome; arthritis; wrist pain; and diminished hand function. Images ©Primal Pictures Ltd. Used with permission.

WORKING WITH WRIST AND CARPAL BONES

Wrists are amazing structures. They mediate the relationship between our stable, larger-boned arms and the highly mobile, sensitive dexterity of our hands. Additionally, key structures pass through the wrists from arms to hands: tendons, nerves, and vessels. Here are two effective techniques for working with the wrist, both drawing on the myofascial work as taught in Advanced-Trainings.com's Advanced Myofascial Techniques workshop and DVD series.

Carpus is the name of the boney structure formed by the two rows of small carpal bones. Wherever these bones meet each other, they have slippery hyaline cartilage and fluid-filled synovial joints between them. They are also secured by a complex system of strong interlocking ligaments (Image 1). In other words, the carpal bones are built to both move against one another and to provide stability. By combining these two qualities, the integrated structure of the carpus provides a stable but adaptable base for the varied movements of the hand, fingers, and thumb.

Problems can occur when either mobility is lost (hypomobility) or when stability is lost (hypermobility). Hypomobility issues can arise from several causes, including past injuries that have self-splinted as they healed; surgeries; arthritic conditions; and/or adaptations to heavy or repetitive work. Generally speaking, hypermobility issues are usually the result of injury or congenital conditions. Typically, bodyworkers will see more clients with issues related to lack of mobility than clients with too much mobility, and so it is here that we will focus.[1]

Lost carpal mobility can play a large part in the numbness and pain of carpal tunnel compression symptoms. Together with the bowstring-like flexor retinaculum, the bowed arch of the carpus forms the carpal tunnel—the space through which the tendons, vessels, and nerves of the hand pass.

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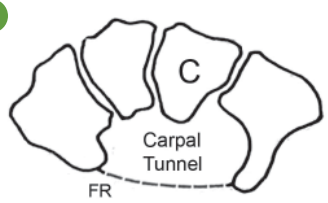

The distal row of the carpus and the carpal tunnel, in cross section. The flexor retinaculum, on the palm side, is labeled FR. The capitate bone (C) is prone to being fixed anteriorly (or volar, toward the palm) and so contributing to carpal tunnel narrowing.

Structurally, it is all too easy for the contents of this tunnel to become crowded and unhappy. Although there are many things that can contribute to carpal tunnel narrowing, an immobile capitate bone is often a prime factor (Image 2). If the capitate is unable to move dorsally with wrist extension, the carpal tunnel flattens and neurovascular compression symptoms of pain, weakness, and numbness can occur, especially in the median nerve distribution area of the thumb pad and the ends of fingers 2–3.[2]

When working with people who use their hands a lot, you'll often find one or two areas that are particularly immobile.

Use a firm "scrubbing" movement to check and release anterior/posterior (volar/dorsal) movement of each carpal articulation.

"SCRUBBING" TECHNIQUE

Our first step will be to check the mobility of the carpal bones. With a firm grip on the carpals as shown in Image 3, move the carpal bones against one another in an anterior/posterior (A/P) direction (in the hand, this is referred to as dorsal/volar motion). Firmly but gently, "scrub" all the carpal bones against one another, much like you would if you were scrubbing a stain in a piece of clothing. Be thorough, moving each of the carpal articulations in turn.

Feel specifically for the bones—instead of working only with soft tissue in this technique, we are feeling for the mobility of the carpal bones themselves. There isn't any kneading, petrissage, traction, or wrist stretching in this technique—focus instead on encouraging carpal movement in the A/P dimension. Be slow, full, and sensitive, but you can be quite firm (as long as it is comfortable for your client and he or she isn't recovering from an injury or instability issue). Lean into it and wait for a release at the end-range in each direction. Be sure to keep your own hands as soft and adaptable as possible.

When working with people who use their hands a lot, you'll often find one or two areas that are particularly immobile, as if two or three of the carpal bones had fixed themselves into a non-moving "coalition." Often these coalitions involve the central carpals (particularly the trapezoid, scaphoid, and/or the capitate). As mentioned, the capitate is in a position to be particularly troublesome to the carpal tunnel, so be sure it is as mobile as possible, especially in a posterior or dorsal direction (Image 2).

For a variation on this technique, you can passively flex, extend, and sidebend your client's wrist as you monitor his or her A/P carpal motion. Because the carpal tunnel tends to close with wrist extension, checking carpal mobility together with various movements can reveal restrictions that are easy to miss in a neutral wrist position.

Incidentally, the proximal row of carpal bones generally has more inter-carpal movement than the distal row, in order to allow the adaptability needed for movement between the hand and arm. The greater stability of the distal row plays a role in maintaining the carpal tunnel's space, but as a result, is more prone to being fixed and hypomobile.

Once you've thoroughly checked and released A/P carpal mobility, you can use the next technique to make sure the carpal tunnel itself is open.

TRANSVERSE ARCH TECHNIQUE

The Transverse Arch Technique is an effective way to both open up more space in a crowded carpal tunnel and educate your clients about how to maintain space there as they go about their daily activities.

We'll return to the image of the carpal bones forming a bow, with the flexor retinaculum as the bow's string (Image 4). Since problems come from the bow being too flat (and crowding its contents), the last thing we want to do is lengthen the bowstring. For this reason, avoid direct work right on the flexor retinaculum in clients with neurovascular compression symptoms. Instead, we'll look to widen or open up the "top" (the dorsum) of the arch by encouraging more space in the dorsal aspect of the inter-carpal joints.

CLIENT EDUCATION

This technique has two stages—an educational step that you'll guide your clients through and a hands-on manipulation technique.

Give your client a ball that he or she can wrap the hand around—a tennis ball is a good size for most adults. Ask him or her to see how much of the hand can be brought into contact with the ball. At this point, most people will squeeze tighter, which does indeed bring more of the hand in contact with the ball, but also tightens and closes the hand. We're looking for a deep transverse arch without tightness or closing, so ask your client to see if, instead of squeezing, he or she can relax the hand in order to bring more of its surface in contact with the ball. Take your time with this—if you help your client stay with it, he or she will notice more and more as it settles in.

An MRI cross section of the distal carpal bones, with the flexor retinaculum in green. Note the tightly packed arrangement of the tendons, nerves, and vessels squeezing through the carpal tunnel.

It can be helpful to draw your client's attention to the rest of the body's response to this exercise—when the hand relaxes around the ball, shoulders typically drop, the breath deepens, the jaw unclenches, etc. Try it yourself.

This is a useful exercise for anyone, but if your clients are dealing with carpal tunnel symptoms, you can explain that allowing their hands to stay rounded and relaxed in this way can help mitigate the wrist crowding that gives rise to the pain, weakness, and numbness of carpal tunnel symptoms.[3]

HANDS-ON MANIPULATION

In the hands-on stage of this technique, ask your client to hold the ball in the relaxed way that he or she learned above. Then, use your thumbs or fingers to mold his or her hand around the shape of the ball—you'll see or feel where the hand has a harder time relaxing into a concave transverse arch. Especially, feel for opening between the carpal bones on the posterior or dorsal side of the wrist—gently releasing the ligaments at the intercarpal joints will give you the most lasting changes (Image 5, page 129).

As in the Scrubbing or Carpal Mobility technique, you can do a variation of the Transverse Arch Technique by adding passive wrist motion (Image 6, page 129).

While doing the techniques as described, gently take your client's wrist into extension, feeling for the ability of the back of the wrist to stay wide; that is, for lateral release at the deep dorsal intercarpal joints. To encourage a full transverse arch, allow the middle carpals to move dorsally (posterior) on the radius, but encourage the outer edges of the carpus to wrap anteriorly around the ball. Feel also for flexion and extension at the midcarpal joint, which is between the proximal and distal rows

The Transverse Arch Technique uses a ball to maintain the concave shape of your client's hand, while you encourage lateral opening of the dorsal intercarpal joints with your thumb tips or fingers. Work in the direction of the arrows, but feel for ligament release, rather than simply sliding over the surface.

With the ball still in your client's hand, add passive wrist movement to the Transverse Arch Technique. This will help you make sure that the back of the wrist can stay wide in various positions. Check wrist flexion/extension (pictured), side-to-side deviation, and their combinations.

of carpal bones. The side-to-side "royal wave" of radial and ulnar deviation occurs mainly at the radiocarpal joint, and during these movements, you can feel a healthy carpus moving as an integrated unit. Check all these motions and their combinations, feeling for and releasing any soft-tissue restrictions that seem to be inhibiting the desired concave shape of the hand.

We've focused our discussion on bones and boney relationships. There are, of course, many factors in wrist issues and carpal tunnel syndrome, but together, the two techniques we've described here can help you get even better results with hand, wrist, and carpal tunnel issues. Don't put off receiving them yourself. **m&b**

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NOTES

1. *Even clients with hypermobile patterns will often have local areas of hypomobility. With these clients, you can help the overall balance of the wrist by applying these techniques to the areas where there is less motion. Referring to an orthopedist, physical therapist, occupational therapist, or other medical professional who specializes in hand issues is of course indicated for recent or unresolved injuries, or when your clients has symptoms you think might be related to overly-mobile wrist joints.*
2. *There are many good sources for more about carpal tunnel issues, diagnostic tests, and neurovascular compression symptoms. Two of our recommendations are: René Cailliet,* Soft Tissue Pain and Disability, *3rd edition (Philadelphia: F.A. Davis, 1996), 310–29; René Cailliet,* Hand Pain and Impairment, *4th Edition (Philadelphia: F.A. Davis, 1994), 176–86.*
3. *Thanks to Judith Aston and Siana Goodwin for their influences seen in the "ball" technique.*