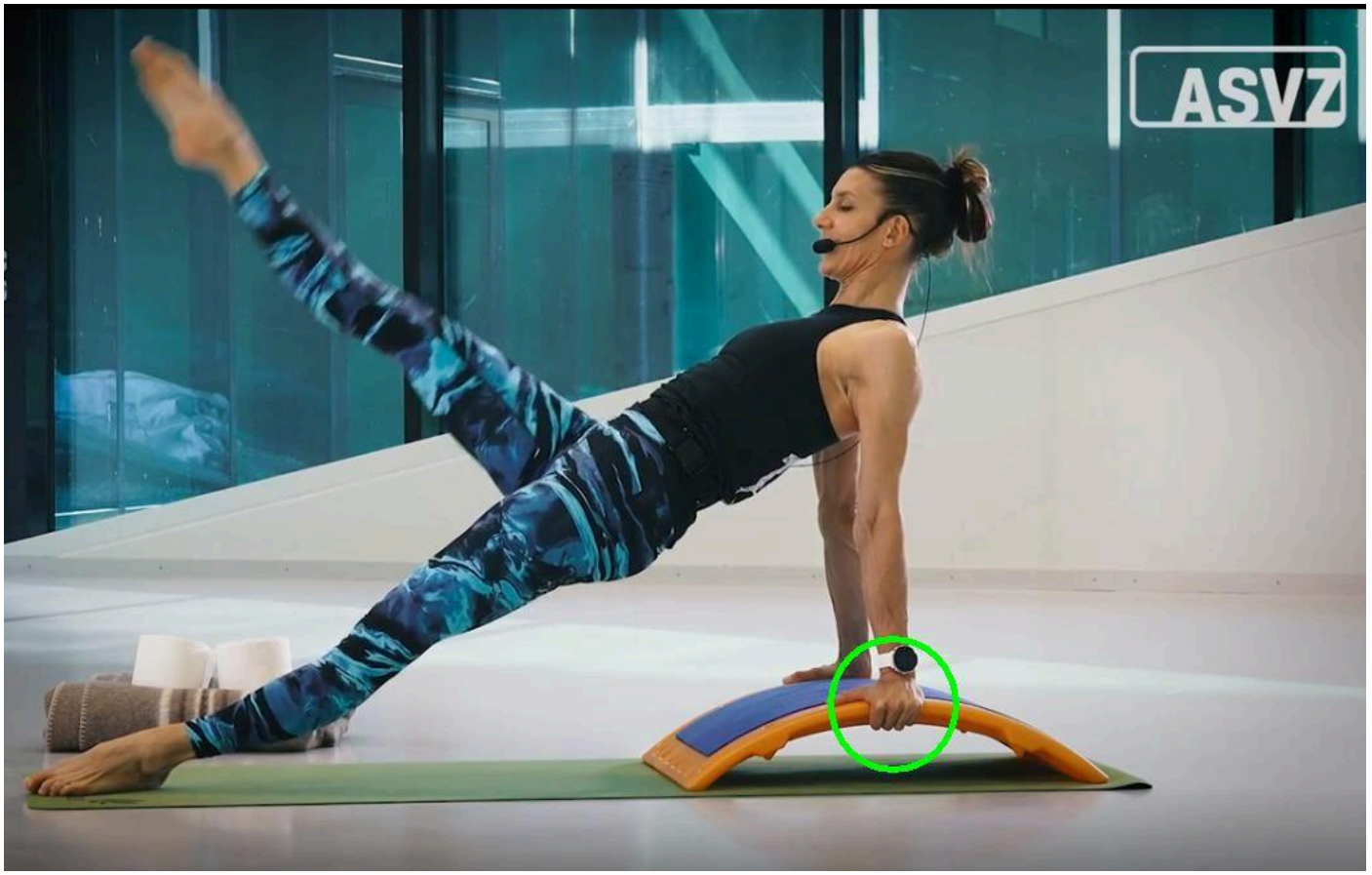
SWISS T-BOW® T-Bow Fit International

Physiotherapy



Protect your wrist using the T-BOW®

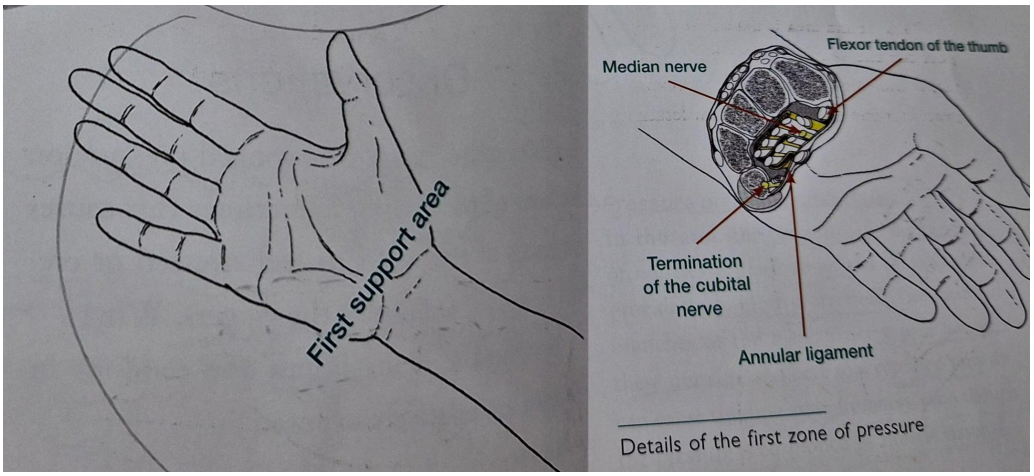
Based on the analysis by physiotherapist Blandine Calais-Germain (2010) regarding wrist pressure and hyperextension, and in our experiences in artistic gymnastics and Yoga, we propose its optimization to effectively protect your wrist using the T-BOW®.

Anatomical Landmarks of the Wrist

- The wrist is an articular region that joints fifteen very different bones (radius and ulna, eight carpal bones arranged in two rows and the five metacarpals).

- When we put pressure on the wrist, there are two support areas that are able to support the body's weight for short periods of time.

  First Support Area - Close to the Forearm

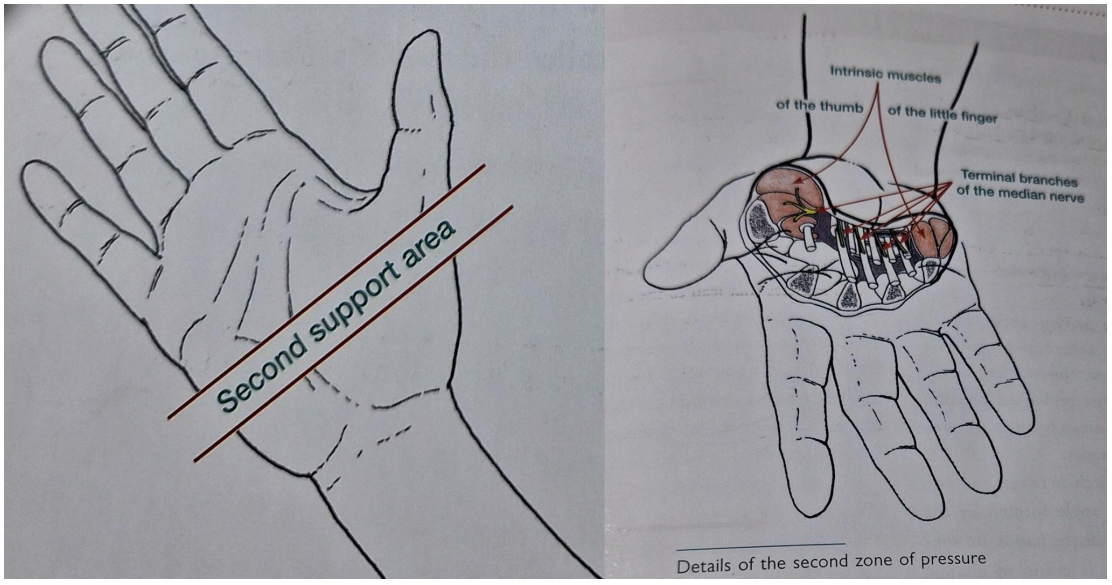
- 

We are on the second row of carpal bones, at the carpal tunnel, where nine tendons and the median nerve pass through this grooved area, held together by the anterior annular ligament.

Generally, the carpal tunnel does not provide very good support for the body's weight.

This area is delicated because it's made up of many small bones (and varied components) and its skin is thin.

Second Support Area - the Border of the Palm



The second support area is right where the palm starts, where the bodies of the metacarpals start.

Here, the hand is a bit broader and fleshier, tendons are less grouped (have begun to separate toward their respective fingers), are the branched endings of the median nerve which serve the hand, and there is the medial palmar aponeurosis.

This second area is a more suitable support for the weight of the body, because the greater muscle mass of the palm lessens the impact of pressure on the structures below.

However, neither area is able to support the body's weight for very long

without creating problems.

- The wrist is relatively weak, as well as vulnerable to injury.
    - Absence of muscle mass. The wrist lacks strength because no muscle crosses the joint (it is crossed by tendons).
    - An area very dense with tendons which mobilize the hand and wrist (crossing the front for flexion and the back for extension, and both for lateral inclination), can easily become irritated and painful.
    - The position of the wrist that best facilitates the positioning of the fingers for action is slight extension (about 30º).
    - Functional grip position: extend the wrist and incline it a bit internally.
    - The wrist in Hyperextension (angle increases to 60º - 80º) is a very extreme position.

Pressure Consequences

- **Positioning the Pressure**

  We can shift the pressure to the inside, middle or outside, finding anatomical elements that make the additional pressure more or less acceptable.

- **The Carpal Area (Three Regions of the First Zone)**
  - ***Pressure on the Little Finger Side***

    The hamate and/or pisiform bones are sensitive.

    The cubital nerve terminates here and repeated pressure on it can cause tingling in the little finger.
  - ***Pressure in the Middle of the Carpal Tunnel***

    Prolonged pressure can cause compression of the tendons of four fingers and in the fluid of their common sheath.

    Compression of the median nerve can result in tingling or pain in the palm and the last four fingers.
  - ***Pressure on the Thumb Side***

    Pressure on the trapezium bone may not be desirable (sensitive, annular ligament and intrinsec muscles of the thumb attached to it, flexor tendon of the thumb is close, repeated pressure can compress the median nerve).

- **The Base of the Palm (Three Regions of the Second Zone)**

  In general, **the areas of this second zone** are somewhat stronger than those of the first zone and **are better able to withstand the body's pressure**.
  - ***Pressure on the Little Finger Side***

    Pressure falls on the three small muscles that lead to the little finger (the bone is not directly under the skin).
  - Pressure over time can irritate the cubital nerve, causing tingling and numbness in certain fingers.
  - ***Pressure in the Middle***

    Repeated pressure can cause tingling and numbness of the muscles of the

fingers. However, this area is more protected because of the thick fascia which surrounds the muscles of the little finger and thumb.

- ***Pressure on the Thumb Side***
  Pressure falls on the mass of muscles at the base of the thumb, providing a level of protection.
  Repeated pressure on the median nerve can cause tingling and numbness.

Hyperextension Consequences

- **Bone Compression**

The posterior regions of the carpal bones in both rows experience compression, particularly during hyperextension and when subjected to greater weight, creating pain in the joint.

- **Stretching of the Anterior Components of the Wrist**
  Repeated compression and stretching of the wrist over a period of time can cause tingling, itching or a burning sensation in the hand.
- **Weakness of the Wrist and Shoulder-Girdle Instability**
  A lack of strength in the wrist offer goes with a lack of muscle engagement in the entire upper limb.

Solutions and Prevention

- **Shift the Body Weight Around**
  - Alternate pressure between Zones One and Two
  - Switch Pressure among the Inner, Middle and Outer Sections of Each Zone
  - Alternate between Pressure and No Pressure
- **Actively Orient the Forearms to Find the Best Place to Put Pressure**
- **Reinforce the Wrist Join**
  Flexion, Extension and Lateral Inclination.
- **Strengthen the Elbow, Wrist and Hand Simultaneously**

- **Release-Stretch the Muscles of the Entire Arm**
- **Find the Optimal Angle for the Wrist**
- **Stabilize the Shoulder Blades and Guide the Wrist from the Shoulder**
- **Redistribute the Body Weight**

  Changing the center of gravity can also change the pressure on the wrist.
- **Relax the Wrist in Flexion**

  Between exercises, let the wrists go into passive flexion.
- **Optimize the Coordination and Balance of the Hand-Forearm-Arm-Shoulder**

  Coordination and balance exercises that focus on the intra- and inter-segmental variability of the hand, forearm, arm, and shoulder can be incorporated between exercises or as part of targeted training, serving as a highly beneficial adjuvant for optimizing wrist function.

Protect your Wrist effectively Using the T-BOW®

Weight-bearing movements performed with the hands on the T-BOW® are gentler on the wrists compared to those done on a flat surface or a very soft surface or tool, thanks to its unique features:

1. **Curved Surface and Lateral Edges**: The design supports the wrist at an angle that prevents hyperextension, whether the hands are placed in the middle of the arch or gripped along the sides. Utilizing the middle holes of the T-BOW® can provide an additional advantage.
2. **Reactive Tool**: The T-BOW® is a highly responsive tool, and its mat is comfortable yet firm, offering fine tactile-kinaesthetic feedback. This enables quick and precise adjustments to the hand-wrist position and pressure, unlike other softer surfaces.
3. **Accessible Balance Situations and Rapidly Changing**: It offers balance exercises that are manageable for most individuals, featuring a single axis of imbalance that promotes swift and accurate changes in wrist and overall body position—effectively reducing pressure on the wrists.
4. **Relief of Tension in the Tendons of the Fingers**: The design also allows users to position their hands with fingers flexed rather than extended, relieving excessive tension in the finger tendons.

by Team T-Bow Fit International

Made in Switzerland

T-BOW®

www.t-bow.net