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# 1. Modeled evidence of force reduction at the extensor carpi radialis brevis origin with the forearm support band

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## 2. Abstract

**Purpose:** Although the forearm support band has been hypothesized to reduce force and thus inflammation and degeneration at the extensor carpi radialis brevis (ECRB) origin, little evidence exists to support an actual effect. We present both a cadaveric and clinical model that show the effect and principles of the forearm support band.

**Method:** The cadaver model measured forces at the ECRB origin as various pressures were applied to the forearm support band and while the ECRB tendon was loaded distally. For clinical correlation support band pressure during rest and activity was measured in healthy individuals.

**Results:** Our results revealed an increased forearm support band effect with increased band pressure and a decreased relative effect with increased force applied distally. For clinical correlation the support band pressure during activity was measured in 21 healthy volunteers while controlling for the application pressure in 2 common support band designs. This resulted in activity pressures ranging from 43 to 192 mm Hg dependent on the starting pressure of application.

**Conclusions:** Although further clinical evaluation is necessary to determine the most appropriate clinical indications and application pressures for the forearm support band these combined results suggest that the forearm support band may be most effective when applied to 30 to 50 mm Hg at rest, resulting in up to 120 mm Hg pressure during activity. According to our model this would result in a force reduction at the ECRB origin of approximately 13% to 15% throughout a range of activity levels.

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