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Research article

Electromyographic analysis on a windsurfing simulator

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ABSTRACT

Recent technical innovations in windsurfing have been concentrated on the evolution of the sails and the board. It is only recently that manufacturers have become interested in the wishbones which have evolved becoming thinner and lighter than in the past. A group of six experienced windsurfers participated in an experiment on a land based windsurfing simulator. The goal of the study was to analyze the muscular force used for different techniques for holding onto the wishbone. The test consisted in recording the global electromyographic activity of several muscles on the forearm using surface electrodes. There were two different wind force conditions possible with the simulator: medium (15 kg) and strong (25 kg). Three different wishbone diameters were tested (28, 30 and 32 mm). Four different hand positions on the wishbone were analyzed: leading hand and/or following hand in pronation and/or supination. The electrical muscular activity obtained varied significantly ($p < 0.05$) depending on the type of grip and according to the diameter of the wishbone. The position with the two hands in supination on a wishbone of 28 mm in diameter was the most economical in muscular terms, notably the flexions of the forearm. The confirmation of the results should lead windsurfers to reconsider the positioning of the wishbone and the adapted posture to waste the least amount of energy possible.

Key words: Forearm, performance, windsurf.

Key Points

- Female athletes landed with increased knee valgus and VGRF which may predispose them to ACL injury.
- Fatigue elicited a similar response in male and female athletes.
- The effectiveness of sports injury prevention programs may improve by focusing on teaching females to land softer and with less knee valgus.

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