

THE SAFEST WAY TO WIND SPRINGS

Revolutionary clinical testing yields first-ever muscle data for winding springs

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FULL HOUSE: Overhead Door of South Bend created a special setup for the testing process.



Dr. Anthony Harris

The task of spring winding is at the core of every garage door business. Yet the activity can cause serious injuries to workers, reducing their long-term livelihood and sparking enormous medical bills.

In December, we visited Overhead Door of South Bend, Ind., to witness the data collection phase of a first-ever clinical-based analysis of winding springs. The study was led by Dr. Anthony Harris, a board-certified doctor in occupational and environmental medicine who has developed some innovative and high-tech ways of measuring muscle activity when winding garage door springs.

We believe the data from this study show potential to help anyone who winds springs. We thank Martin Madden, Rich Love, and their team at Overhead Door of South Bend for sharing the fruits of their research with all of us in the industry.

What motivated you to pursue this elaborate testing?

Martin: We've had three shoulder surgeries over the past few years, and we have a fourth shoulder injury headed that way. We hope that by spending extra money

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on prevention, we can avoid all shoulder problems in the future.

Plus, we wanted to use this testing method to evaluate the Surewinder spring-winding tool. The tool has some of its own ergonomic challenges that we wanted to evaluate.

What was your objective in running this test?

Martin: Ultimately, we wanted to develop highly defined job instructions for winding springs in the most ergonomic way possible. I thought that this data could be a huge service to the industry.

Can you describe the testing procedure?

Martin: The guys wind springs while wearing an Iron Man-type bodysuit, like those used for high-performance athletes. Inside the suit are sensors that measure and capture the amount of muscle activity in key areas of the body.

This entire analysis took several months, right?

Martin: It did. We first did a test run back in August of 2017. This helped Dr. Harris determine the best way to proceed. Then, in early December, we had three guys with different body types wear the suits while

winding springs. They wound and unwound the springs in two ways: first, manually with winding bars, and then with the Surewinder and a power drill.

Dr. Harris then took all the data back to his office for analysis. At the end of January, he sent us his report.

What is unique about this testing methodology?

Dr. Harris: Our approach, for the first time, measures the level of muscle burden on specific muscles of the body *while workers are doing their job*. This approach eliminates the need to estimate muscle burden.

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DOCUMENTING HISTORY: Every action of the technician was recorded on video and simultaneously matched to readings from the bodysuit.



SENSOR SUIT: These three photos show (1) the sensors inside the bodysuit and (2) the exterior front and (3) exterior back.



WINDING BY DRILL: Tyler Firestone demonstrates how to wind springs with the Surewinder and a drill.

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The technology has been available for a few years, but we're bringing it to the worksite for the first time. We believe that our approach will become the new standard for measuring the risk of muscle injury from repetitive motions.

What were the most notable results from the test?

Dr. Harris: The most notable result of this test is that we have measured and proved the decreased muscle burden between using winding bars and the Surewinder. Using winding bars creates a 40 percent increase in muscle burden as compared with using the Surewinder tool.

Martin: There are several practical results.
 (1) Without a doubt, using a winding tool like Surewinder makes the most ergonomic sense for saving shoulders and wrists over the course of a career. This long-term safety makes winding tools a no-brainer compared to using winding bars. We also like that the Surewinder is secured to the spring, unlike bars that can slip or kick back and cause serious injury.

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WINDING RIGHT: When using winding bars, grip the bar with your palm facing out and away from your head, not with your palm facing in. Pictured: Dustin Stone.

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- (2) Using a drill (with Surewinder) with the elbow tucked into your side may be less comfortable, but it is better for the shoulder than holding the elbow out at a 90-degree angle.
- (3) When using winding bars, grip the bar and pull it down with your palm facing out and away from you, not with your palm facing in toward you.

Rich: One other interesting point was that there is more muscle burden associated with unwinding than winding. I wouldn't have thought that originally.

Is Surewinder any faster than winding bars?

Martin: We really weren't concerned about measuring speed. Any time difference between the two is minimal. The winding bars may be faster on springs with lower IPPT, but there is elevated risk with winding bars slipping if the technician is going for speed.

We tell our guys to slow down and perform tasks in a consistent and steady fashion. The tortoise always wins the race against the hare! The few seconds gained with winding bars are nothing compared to an injury. ■

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SUREWINDER: The 7-lb. Surewinder tool can wind 10 turns in 60 seconds with a 1,000-RPM drill on springs up to 4.5 inches in diameter. A larger tool, the Brutewinder, is currently in development for springs up to 7.5 inches in diameter.



LIKE THIS: It's better to operate a drill with your elbow tucked into your side and holding the drill vertically. Pictured: Tom Young.



NOT LIKE THIS: Don't move your elbow away from your side or hold the drill horizontally.