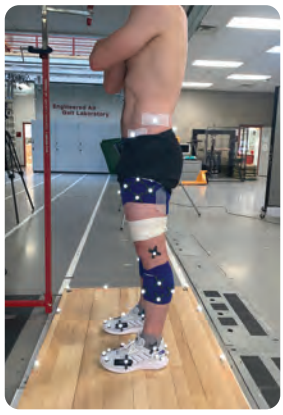
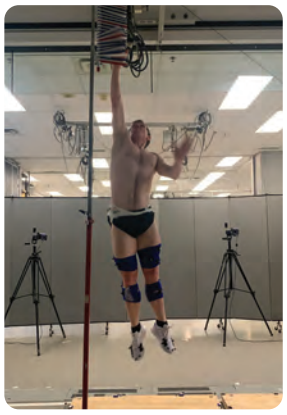
Study Proves MVP™ and UniMax100® Floors Reduce Athlete Fatigue and Potential for Injury

The MVP and UniMax100 sports flooring systems from Robbins Sports Surfaces are preferred by athletes for their comfort, safety and performance. That's why they're in use in so many NBA and NCAA basketball courts and practice facilities, along with K-12 athletic facilities in over 65 countries around the world.

There have been multiple studies in previous years to better understand the properties of these floors that make them the product of choice for prominent trainers and basketball programs. In 2019, the NBA sponsored a study conducted by the Human Performance Laboratory at the University of Calgary, which showed that Achilles tendon loading during jump landing is lower on the Robbins' MVP surface in comparison to more basic common sports flooring. An additional study also suggested that fatigue is decreased while jumping on the MVP floor, however the exact benefits were not well quantified or understood.





Therefore, to gain a better understanding of the benefits of MVP and UniMax100 premium floor systems, Robbins commissioned a 2024 study with the Human Performance Laboratory focusing on understanding how the mechanical properties of hardwood floors affect athletes' preference, performance, load management and resistance to injury. To truly be effective, the study would not only focus on testing of the floor itself. Rather, it would be a biomechanical study of real athletes as they interact with the floor.

STUDY DETAILS

The test involved fifteen athletes performing repetitive jumps on the Robbins MVP and UniMax100 premium floors, as well as a non-vibration control hardwood floor system. During jump landings, instruments attached to the athletes and the floor recorded the muscle activity and force exerted on athletes' lower extremities, as well as the force exerted, surface vibration and reactivity of the floor. Each athlete was asked to continue performing the jumps until they experienced fatigue (either by not maintaining 88% of their maximum jump height for three consecutive jumps, or by verbally indicating fatigue).

STUDY RESULTS

There was clear indication that athletes were able to perform 16% more jumps without fatigue on the MVP and UniMax100 surfaces.

The Real Insight Lies in Understanding the 'Why'

Decreased Muscle Load

When studying the muscle activity of participating athletes, researchers discovered that athletes experienced a general decrease in muscle activity with the tibialis anterior (the largest muscle in the front of the lower leg) showing a 28% reduction in activity when landing on the MVP and UniMax100 surfaces. This indicates that athletes jumping on traditional non-vibration control surfaces will encounter significantly greater muscle activity to stabilize themselves upon landing.

Vibration Frequency

Natural vibration frequencies of the lower leg soft tissues fall within a specific range. Previous studies have shown that muscle activity intensifies when exposed to external vibrations of similar frequency. This means that if an athlete's landing on a floor causes the surface to vibrate at a frequency similar to the athlete's natural muscle frequency, the athlete's muscles will be forced to work harder to counteract the excessive movement.

The study clearly shows that both the MVP and UniMax100 surfaces avoid this increased muscle activity by featuring landing vibration frequencies far higher than the natural frequencies of the lower leg soft tissues, ultimately conserving energy.

Surface Deformation and Damping

Absorbing landing impacts and eliminating surface vibrations quickly is an essential characteristic of a sports surface. By doing so, the floor helps athletes avoid receiving conflicting signals from vibrations happening within the floor around them.

Both the MVP and UniMax100 surfaces demonstrate superior vibration damping properties compared to traditional flooring options.

Subjective Assessments

Besides the instrument data collected, the study also involved subjective assessments of each athlete's individual experience jumping on the different floors. Specifically, athletes were asked to react to the surfaces' stability and traction, cushioning and stability comfort properties, jump performance and overall rating of each floor surface.

Participants rated the MVP and UniMax100 surfaces higher than the non-vibration control surface in practically every aspect, with significant differences in ratings for surface stability and jump performance.

Conclusion

Overall, the data collected by both instrument readings and athlete assessments is conclusive in proving that Robbins' premium MVP and UniMax100 surfaces provide a better floor that is more conducive to athletic performance.

Due to their superior performance characteristics, athletes prefer playing on MVP and UniMax100 floors. The surfaces' proven ability to reduce surface vibrations, muscle activity and jump fatigue give athletes a statistically better chance of playing longer without experiencing fatigue or that may lead to muscle injury.

This research focuses on the biomechanics of an athlete's musculoskeletal structure during activity, rather than examining how a floor responds to athletic movement through material-based tests.