

SPORT COURT TENNIS

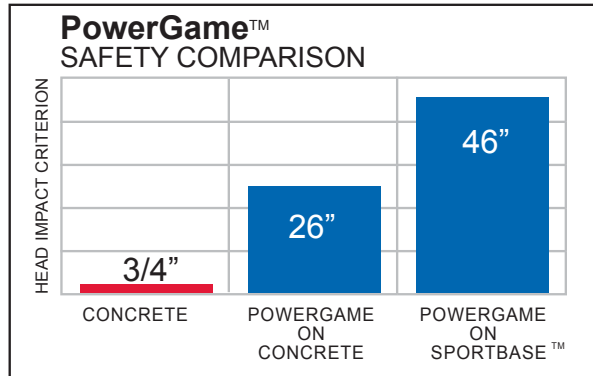
The Safest Court in the World®

POWERGAME™ – OUTDOOR SUSPENDED™ SURFACE – PROVEN SAFE

CONCUSSION DISCUSSION

PowerGame™ by Sport Court®

PowerGame Suspended Surface reduces the likelihood of a head injury from impact according to testing based on the Head Injury Criterion (HIC), a nationally standardized test. On a concrete surface, the likelihood of a head injury can occur from a fall at less than 1.0". PowerGame Suspended Surface placed on top of concrete helps reduce the likelihood of head injury by increasing the distance to 26.0". When PowerGame is placed on top of SportBase the distance is increased to 46.0".



POWERGAME™ – INDEPENDENT TESTING – PROVEN SAFE

TESTING SUMMARY: The research team at The Orthopedic Specialty Hospital (TOSH)* Sport Science tested Sport Court's PowerGame product to explore how humans attenuate or dampen shock during landing.

GOAL: The goal of this project was to explore the effect that playing surfaces have on the loads experienced by the body.

DATA COLLECTION: Six males (ages 16-32) performed maneuvers and drop landings from 18" on each of the PowerGame surfaces and on the bare force platform (similar in stiffness to concrete)

IMPACT ON THE BODY

FIGURE 1

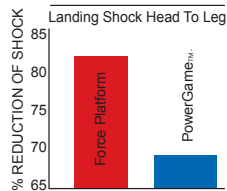


FIGURE 2

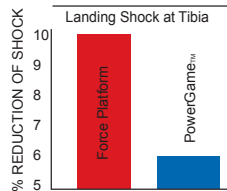


FIGURE 3

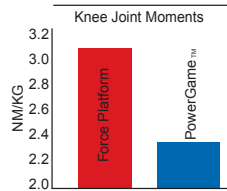
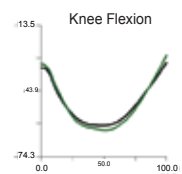
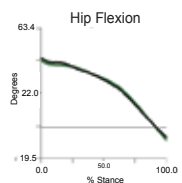


FIGURE 4



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SHOCK ATTENUATION: How impact shock is attenuated (dampen impact shock) through the body

Was there less shock on the body between the PowerGame surface and the platform?

The more shock that must be attenuated during athletic movements, the more likely that repeated exposure to higher levels of shock may cause harm to the musculoskeletal system—namely overuse injuries.

- Figure 1 summarizes the differences in shock attenuation between the head to the leg.
- There was significantly less shock on PowerGame surfaces when compared to the bare force platform in the drop landing condition.
- Figure 2 summarizes the acceleration signals at the tibia.
- PowerGame resulted in a significant reduction in the peak accelerations measured at the leg during landings.



Key test result:

- All subjects attenuated significantly less shock when landing from jumps on each of the PowerGame surfaces compared to the bare force platform.
- PowerGame requires less effort to dampen the impact shock associated with landing from a jump.
- Less shock attenuated during impact puts less stress on key structures such as joint surfaces, tendons, and muscles during impact activities.

KNEE JOINT MOMENTS: The torques (moments) at the knee affected by changing surface

Was there less shock on the joints when landing on the PowerGame surface vs. the bare force platform?

Net joint moment (or torque) is produced at each joint in the body in order to cause movement.

The peak knee flexion moment was higher for the bare force plate condition. The subjects had to generate less torque about the knee to dampen the shock of the landing on the PowerGame versus the bare force platform.

Key test result:

- All subjects generated less net knee extensor torque on the PowerGame surfaces vs. the base force platform.
- Less force had to be generated by key muscles of the lower extremity to attenuate the added shock associated with landing from a jump on the PowerGame surface.



LOWER EXTREMITY KINEMATICS: Lower extremity movements between surfaces

Was there any difference in stability between the PowerGame surface and the bare force platform?

The effect that changing the surface may have on the movements exhibited by athletes during landings and cutting maneuvers is an important aspect to consider when evaluating athletes.

Changes in movement patterns help us explain differences in shock attenuation and knee joint moments and evaluates if the limbs (particularly the knee), are getting into positions that are known to be "high risk"

Figure 4 presents the average joint kinematics for the lower extremity in two key planes of motion—sagittal and frontal during both the landing and 45-degree right cutting maneuver. It can be seen that there were no significant differences between any of the movement patterns.

Key test result:

- The joint movements of the subjects were not different for either of the movements between any of the surfaces.
- The PowerGame surface proved to be as stable as the bare force platform (similar to concrete) with all of the safety benefits of shock absorption.

* TOSH—The Orthopedic Specialty Hospital is one of the country's premier facilities for orthopedic surgical care, rehabilitation and physical therapy, sports performance training, and nutrition counseling.