

ALL THE ZING WITHOUT THE STING

Scientific research study proves that high-performance solid-core tennis racquets dramatically reduce harmful shock and vibrations that can lead to arm injuries

NEW YORK, UNITED STATES, April 25, 2014 /EINPresswire.com/ -- NEW YORK, April 25, 2014 -- High-performance multi-layered solid core tennis racquets won “hands-down” over conventional hollow racquets in a recently published scientific study that measured the effectiveness of the two designs in dampening shock and vibration and reducing the harmful energy transmitted on ball contact that can cause wrist, arm, elbow and shoulder injuries.

Three dual-core and two triple core frames that are exclusively designed and manufactured by the [Xenecore](#) and [Donnay](#) brands were tested against five hollow-core racquets from the leading manufacturers in the study published by Elsevier Ltd., a global academic publisher of medical and scientific literature.

“Overall, the dual and triple core designs demonstrated significantly lower shock forces and vibratory forces and dampened vibration quicker than the hollow designs,” reported the authors from OrthoKinetic Technologies. LLC of Southport NC, which conducted the test using an ISO17025 certified third-party independent test facility and a team of highly qualified mechanical and biomechanical engineers.

The dual and triple core designs successfully dampened the oscillations (the pendulum-like back-and-forth movement of the vibrations after impact) by at least 35% for the dual core and 50% for the triple core compared to the hollow frames, according to the study. The range of vibration dampening time in all models tested was from two-tenths of a second for a triple-core frame to .8 seconds for one of the hollow frames.

Additionally the authors reported that the amplitudes (the greater the amplitude the more energy it transmits) during oscillations following the initial shock impulse force for the core-handle design resulted in a reduction of shock force “by at least 65%” compared to 22% for the hollow frames.

It is well documented that the long-term repetitive impact on the upper extremities in tennis can increase the risk of tissue fatigue and injury, leading to inflammation of the tendons and soft tissue in the wrist, elbows and shoulders and small stress fractures and chronic degeneration of the surrounding soft tissues from small tears that were incompletely healed.

“The solid-core racquets help players avoid arm injuries because the tendons in their elbows, forearms and shoulders are seeing less stress,” said Dr. Joshua Dines, an orthopaedic surgeon specializing in Sports Medicine at New York’s Hospital for Special Surgery and former team doctor for the U.S. Davis Cup team.

“I think in addition to using proper technique and avoiding overuse, solid-core racquets provide a huge potential safety benefit for recreational players.”

The purpose behind the study is that there is little that has been written and documented about the effects of racquet frame design on the extremities compared to volumes on how poor player mechanics and even how tight and harsh string can result in increasing stress transfer and vibration

from the racquet to the player.

“Poor stroking technique is frequently accused, conveniently diverting scrutiny from racquet design, but, as the calculations on this site prove, risk factors for tennis elbow include: (1) light racquet weight and (2) head-heavy balance. Stiff frames are also bad,” according to RacquetResearch.com.

The International Tennis Federation (ITF), the global governing body of the sport, reported in the British Journal of Sports Medicine in 2006 that “the combination of the increased stiffness of modern rackets and the tendency for tennis balls to have become harder has led to an increased shock transmission from the racket to the player, which is probably a major contributor to tennis elbow.” The ITF also states that about half of recreational tennis players will suffer at least one bout with tennis elbow during their playing lifetimes.

This epidemic wasn’t the case when all tennis racquets were made from flexible solid-core wood. Vibration on ball contact disappeared quickly because it was dampened by the flexibility of the solid wood. But they weighed as much as 16 ounces, making them difficult to maneuver, especially for smaller and less accomplished recreational players.

However, with the advent of new carbon materials racquet manufacturers were able to reduce weight by making the frames hollow and compensate for the weight loss with much stiffer frames that were much more powerful than the flexible wood frames.

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