

# USBC begins research on bowling ball entry, exit angles

10/15/08

## USBC Equipment Specifications and Certification



*Study seeks to find out how modern bowling environment affects pin carry*

**When a heavy bowling ball** rolls down a lane, it hits the pins and knocks them over. That's all there is to it, right? The United States Bowling Congress knows there's more to it than that.

That's why the sport's national governing body has started a multi-phase study to expand on earlier research and gather data about how bowling pins - the 3-plus pound, 15-inch tall objects that stand at the far end of a lane - interact with bowling balls in today's bowling environment, which has changed dramatically over the years.

For 25 years, the USBC and its predecessor organizations have studied how the angles that bowling balls hit the pins affect a bowler's ability to strike. That alone, however, doesn't tell the whole story. USBC researchers now are venturing into new territory by examining what happens to pins when balls enter the pocket, roll through the pins and off the back of the pin deck.

The other part of USBC's expanded research is to study how the modern bowling environment plays a part in pin carry. The combination of recent advancements in lane oiling machines, lane conditioners and cleaners, bowling balls, lane surfaces and player skill allows today's bowlers to create steep angles of entry into the pins, resulting in higher strike percentages as balls roll through the pins after impact.

The aim of USBC's research is to find new ways to precisely measure how modern bowling balls rolled with different amounts of speed and hook enter and exit the pin deck and how those ball paths influence how pins fly upon impact.

"It's important that, in today's setting, USBC better understand what exactly happens when a bowling ball hits the pins from different positions and angles," said **USBC Technical**

**Director Steve Kloempken.** "We have never before studied a bowling ball's impact on the pins after it goes through and off the pin deck. In the big picture, this research is important because it impacts scoring levels in our sport."

The first part of the study was recently completed at the USBC Headquarters testing facility in suburban Milwaukee. To simulate real-world bowling conditions and cover a variety of ball angles into the pocket, bowlers of varying revolution rates and ball speeds rolled hundreds of shots down a test lane.

USBC research engineers used a high-speed camera (250 frames per second) to record the exact positioning of the balls as they entered the pocket and traveled through and off the back of the pin deck. Video clips were analyzed to conclude the study's first phase.

The next step will involve further analysis of the collected data and explore new testing methodologies to find precise measurements of entry angle (measurement of a bowling ball's angle as it enters the pocket) and exit angle (where balls roll off the pin deck after hitting the pins).

"The work in our department, such as this entry and exit angle study, is being done by top engineers with a strong passion and dedication to the sport of bowling," Kloempken said. "The USBC Equipment Specifications and Certification department is committed to being on the cutting edge of testing in our sport as it exists today and in the future."