



THE MYTH OF CARRYDOWN

HOW LANES *REALLY* TRANSITION

During any tournament or league, you are likely to hear bowlers discussing carrydown. They often bemoan their lack of carry as their bowling ball begins to increasingly deflect as more and more frames and games are completed. Yet, is carrydown a reality in today's game? Or, is oil depletion really the reason a bowling ball is losing back end reaction as frames and games are completed?

Unless you come to a bowling center after hours of open play or a birthday party, your change of ball motion is not a result of carrydown. Rather, oil absorption has significantly changed how lanes break down. With today's covers, oil absorption plays a significant role in ball motion. In fact, the oil absorption rate of coverstocks was one of the top five factors in ball motions as found in the recently completed USBC study on ball motion. As the ball travels down the lane, the cover absorbs oil, taking oil off of the lane. Depletion, not carrydown, is the cause of ball reaction reduction.

For this month's installment of Slowinski at-large, I share with readers a detailed breakdown of the 2007 medium Junior Gold pattern, a 40 foot sport pattern. The

goal is to share data and graphics that refute the often-articulated myth of carrydown. After reading this month's installment, you will realize that carrydown doesn't really exist in today's game. Rather, readers will see that oil depletion is the culprit for change in ball motion.

A real-time experiment in lane transition

At the Kegel Training Center, the world leader in bowling education, we strive to educate bowlers. One of our curriculum teachings is how to best play lanes on the fresh pattern, as well as how to deal proactively with transitioning lanes. With this goal, during our first advanced summer camp in July, we attempted a unique and ambitious lane play transition real-time project to contribute to transition research.

As part of the project, the 36 camp participants bowled on the 2007 Junior Gold short, medium and long patterns. This pattern has a total volume of 22.04 mls (40 feet forward with 9.32 mls and 32 feet reverse with 12.72 mls). To collect extensive data, and to illustrate lane transition to participants, we took 8 tapes on each lane at

Joe Slowinski, ABD, M.Ed. is a full-time coach at the Kegel Training Center. He is the former Director of Coaching and Coach Certification for the National Sports Council of Malaysia. This Portland, Maine native was named a Top 100 Coach for 2005, 2006, & 2007 by Bowlers Journal International. Slowinski can be reached at joseph.slowinski@kegel.net Visit his coaching site at www.bowlingknowledge.info



5, 10, 15, 22, 25, 30 and 38 feet as well as past the end of the pattern at 44 feet. The goal of taking so many tapes on each lane was to show real-time transition in great detail. Tapes were taken five times:

- On the fresh before bowling
- After 15 minutes of practice
- After 1 game
- After 2 games
- After 3 games

Five bowlers were on each lane and moved pairs after each game. The bowlers took a short break as the tapes were taken.

Previous to bowling, camp bowlers were taught an advanced targeting process as a way to best play the Junior Gold sport patterns. And, they were asked to use this targeting method during their lining-up and adjustment. This included using an exit point (pattern length 40–31) on each pattern. Accordingly, using this research-based method, the bowlers played the lane to get the ball through board 9 at 40 feet. Various angles were played depending upon rev rate and ball speed, but bowlers played to the same exit point at the end of the pattern.

Transition over time

To help readers develop a better understanding of how patterns transition, here are the composite graphs

showing the Junior Gold medium pattern transitioning over time at various lengths (10, 25, 30 and 38 feet). This will give readers a rarely seen, in-depth insight into transition. Each image shows the pattern at a specific distance on the fresh, after practice, after game 1, after game 2 and after game 3.

Depletion: From fresh to after practice

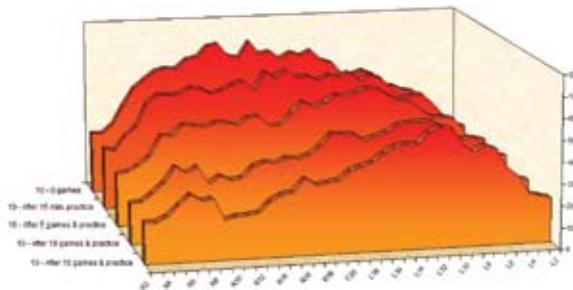
How much oil could actually be depleted in a 15-minute period of practice? After 15 minutes of practice, some parts of the pattern were depleted as much as 20 percent. In other words, some boards had lost one-fifth of the oil before game one actually began.

So, the pattern starting in game 1 is not the same as that which bowlers began warming up on at the start of practice.

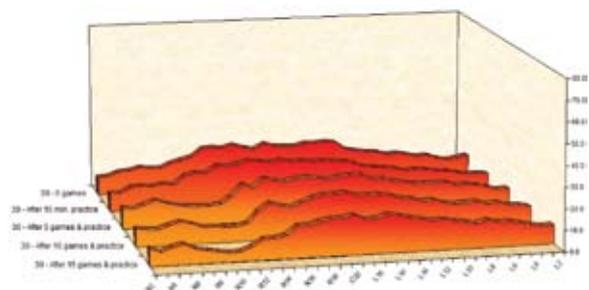
Total depletion after game 1

Here are the depletion values after game 1, for boards 7 through 20, at the various distances that our Kegel team took tapes. From the fresh, the pattern on many boards had been depleted by more than 40 percent from the original volume.

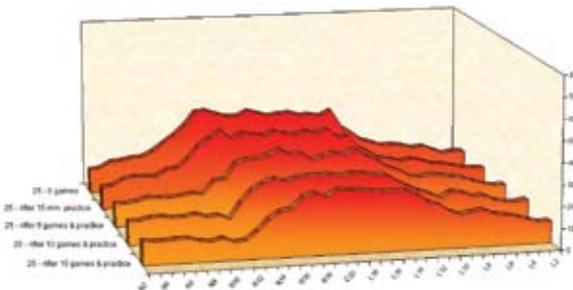
10 feet



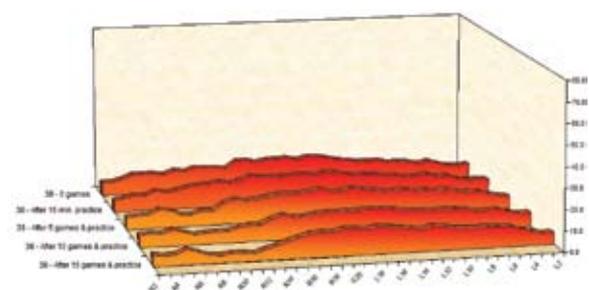
30 feet



25 feet



38 feet



DISTANCE BOARD	5 FEET	10 FEET	15 FEET	22 FEET	25 FEET	30 FEET	38 FEET
20	-26%	-16%	-12%	1%	-22%	-1%	3%
19	-16%	-16%	-23%	5%	-9%	2%	-2%
18	-17%	-23%	-26%	2%	-14%	-7%	-6%
17	-12%	-37%	-21%	2%	-11%	-1%	1%
16	-11%	-31%	-29%	-4%	-11%	-2%	-9%
15	-24%	-24%	-37%	-20%	-16%	-4%	-15%
14	-24%	-31%	-32%	-15%	-20%	-19%	5%
13	-16%	-35%	-44%	-31%	-27%	-11%	-5%
12	-18%	-28%	-40%	-30%	-46%	-36%	3%
11	-24%	-26%	-38%	-37%	-37%	-41%	-11%
10	-12%	-24%	-29%	-34%	-49%	-41%	-34%
9	-24%	-23%	-31%	-32%	-38%	-36%	-35%
8	-17%	-20%	-16%	-33%	-31%	-21%	-38%
7	-13%	-23%	-6%	-23%	-24%	-17%	-41%

Total depletion after game 2

Board 11 at 25 feet had depleted by nearly 70 percent at the end of game 2. Boards 10 through 12 from 22 feet to 30 feet had depleted by more than 50 percent.

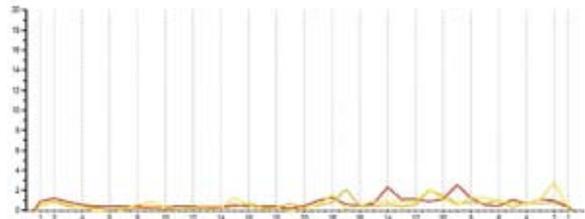
DISTANCE BOARD	5 FEET	10 FEET	15 FEET	22 FEET	25 FEET	30 FEET	38 FEET
20	-30%	-24%	-9%	-4%	-18%	3%	-18%
19	-25%	-37%	-22%	-4%	-16%	1%	-14%
18	-18%	-41%	-21%	-19%	-20%	-11%	-17%
17	-19%	-49%	-27%	-11%	-25%	-9%	-17%
16	-17%	-42%	-40%	-15%	-23%	-25%	-25%
15	-30%	-46%	-46%	-30%	-20%	-26%	-18%
14	-34%	-50%	-50%	-38%	-28%	-13%	-3%
13	-32%	-51%	-47%	-51%	-39%	-33%	-30%
12	-32%	-56%	-48%	-51%	-54%	-58%	-33%
11	-37%	-56%	-43%	-54%	-68%	-57%	-39%
10	-26%	-49%	-45%	-58%	-55%	-53%	-44%
9	-30%	-56%	-43%	-48%	-51%	-38%	-28%
8	-18%	-40%	-36%	-38%	-31%	-34%	-40%
7	-11%	-41%	-18%	-30%	-27%	-19%	-50%

Total depletion after game 3

At the end of three games and practice, the boards in which most bowlers played had depleted from 50 to 80 percent, yet there was still plenty of oil on the heads.

DISTANCE BOARD	5 FEET	10 FEET	15 FEET	22 FEET	25 FEET	30 FEET	38 FEET
20	-21%	-39%	-13%	-12%	-15%	-5%	-13%
19	-16%	-49%	-34%	-16%	-12%	-12%	-8%
18	-21%	-49%	-34%	-27%	-25%	-20%	-18%
17	-20%	-55%	-30%	-22%	-23%	-12%	-10%
16	-24%	-44%	-38%	-40%	-21%	-24%	-18%
15	-29%	-55%	-44%	-40%	-36%	-31%	-29%
14	-44%	-60%	-48%	-47%	-42%	-46%	-18%
13	-56%	-63%	-60%	-52%	-53%	-53%	-40%
12	-54%	-68%	-50%	-66%	-66%	-52%	-53%
11	-44%	-69%	-57%	-68%	-72%	-60%	-68%
10	-38%	-67%	-62%	-71%	-69%	-70%	-40%
9	-38%	-70%	-55%	-66%	-55%	-70%	-62%
8	-22%	-52%	-50%	-62%	-53%	-55%	-61%
7	-6%	-49%	-26%	-35%	-42%	-50%	-59%

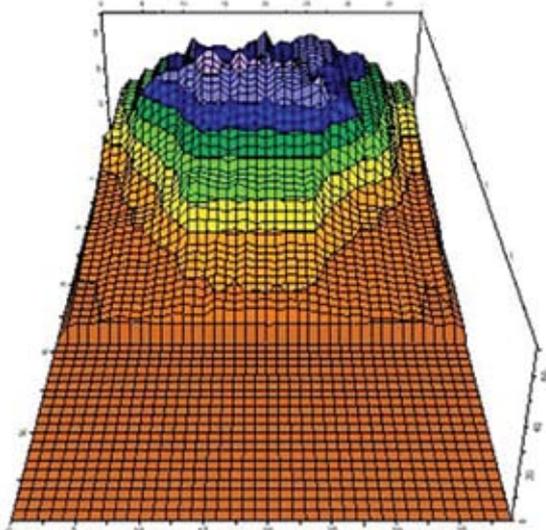
Discussion



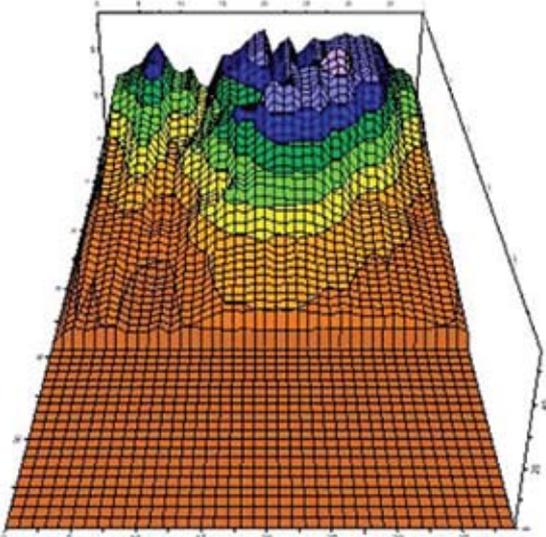
As illustrated in the graph above, at 44 feet there is little to no carrydown in today's game. In fact, there was less than 2 units of oil past the end of the pattern after 15 games and practice. This is not enough oil to alter ball motion with today's covers.

Rather, oil depletion is the culprit for ball motion change. As oil is depleted, more friction is encountered. This additional friction causes the ball to hook earlier. In other words, the core stands up sooner. This reduces the axis rotation sooner, weakening the back end reaction. To see this better, here are the front views of the fresh pattern and the same pattern after 15 games and practice.

Fresh



After 15 games + practice



This would be looking at the pattern from above at the pins, back toward the foul line.

Through this visual comparison, you can clearly see the high level of oil depletion that resulted from 15 games and practice. Lane transition provides benefits for those with keen observation skills. The sport pattern now resembles a house shot, with a large amount of oil inside and dry boards outside. When a track develops due to oil depletion, a large area down the lane emerges. On this pattern, due to the exit point at board 9, this spot acts like a bumper and was six boards wide and eight feet long, as illustrated by the composite graphs as well as the final front-view graph.

This is not surprising, because the pattern forward distance was 40 feet and the reverse 32 feet. Once this develops, bowlers should migrate to the inside, focusing on

playing to the same area down the lane. This will increase your margin of error as the lane will play wide open. And, due to this added friction, a bowler could actually ball-up to a ball that will be stronger on the back end.

But, a bowler who remains in the same area too long would experience a gradually reduced back end reaction as the ball rolled over increased friction, causing the ball to hook sooner. Earlier hook, caused by oil depletion and additional traction, will reduce back end reaction. This is not carrydown. As the oil pattern breaks down, a ball will lose axis rotation due to earlier and more friction overall.

How to deal with transition

Begin training yourself to observe your ball as it leaves the end of the pin deck. An ideal strike will roll off the pin deck between the 8 and 9 pins. As the pattern breaks down, the ball will lose ball reaction. By watching the end of the pin deck, you can be proactive. The ball will begin deflecting more to the 9-pin for the righthander. When this happens, it is time to move. Staying in the same area will lead to more deflection due to increasing amounts of friction encountered,...a result of oil depletion. Or, more importantly, don't wait. Move before this happens. If you move proactively, you will avoid this deflection.

In addition, watch the ball motion down the lane, in front of the end of the pattern. As the image above illustrated, the large depletion area developed into a great asset that can greatly open the lane, increasing scores. In fact, this large "bumper" was well formed after game 2, as shown in the composite graph images at 30 and 38 feet.

Closing note

Many thanks go out to my dedicated colleagues at Kegel including John Janawicz, Mike Purdy and Don Agent, who helped make this project a reality. These guys are the tape masters. And, a special thank you goes out to Ted Thompson for help with depletion data analysis. On a closing note, there was only one lefthander at the camp. So, the graphs represent only one game on the left side. 