


# Ball Motion

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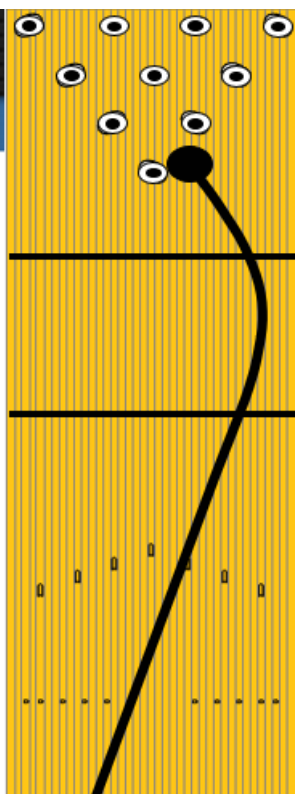
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INTERNATIONAL BOWLING PRO SHOP & INSTRUCTORS ASSOCIATION  
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## 3 Phases

- The 3 phases of BALL MOTION!  
**SKID – HOOK – ROLL**
- The correct manipulation of these phases will optimize the bowlers performance and their chance of success.
- This will not replace physical skill.



The diagram shows a vertical cross-section of a bowling lane. A black line represents the ball's path, starting from the bottom left, moving diagonally up and right (Skid), then curving sharply to the left (Hook), and finally moving diagonally up and left towards the pins (Roll). The lane is divided into three horizontal sections by two black lines, corresponding to the three phases of ball motion.

-Phase 1 of the lane is the front part, which goes from the foul line to 30 feet.

-Phase 2 is the mid-lane area, which ranges from 25 to 45 feet.

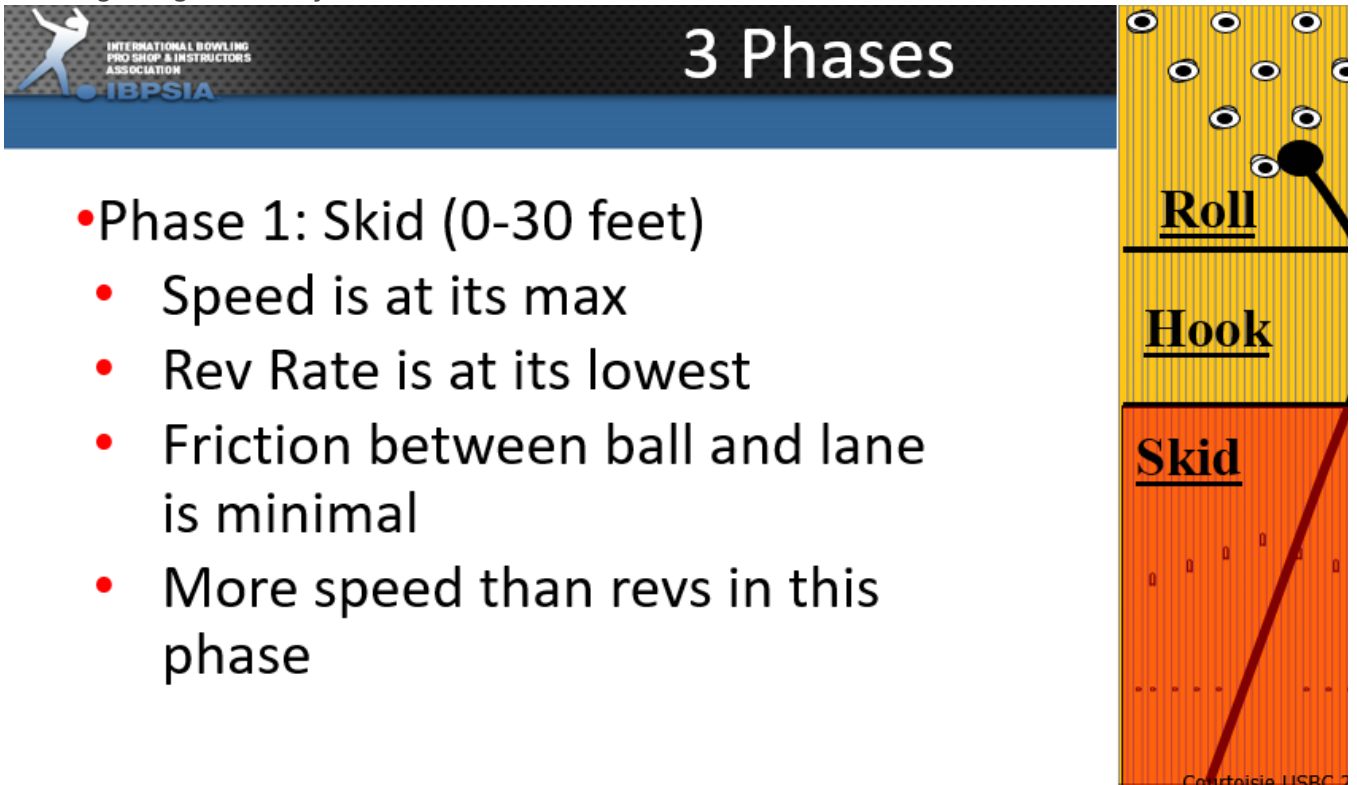
-Phase 3 is the back end of the lane, from 45 feet to the end of the pin deck.

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# Phase 1 - Skid Phase

During this initial phase, the bowling ball is primarily sliding down the lane.

- The ball's **speed is at its maximum**, especially **right at the release**.
- Its **revolutions (rotation)** are at their lowest.
- The **ball's speed is always more dominant than its revolutions** at this stage.
- Additionally, the **friction contact point with the lane is at its minimum**, meaning the ball is gliding with very little traction.



The diagram illustrates the three phases of a bowling ball's motion. It is divided into three horizontal sections: 'Roll' (yellow background), 'Hook' (yellow background), and 'Skid' (orange background). The 'Roll' section shows a bowling ball with a black dot representing the contact point. The 'Hook' section shows a bowling ball with a black dot representing the contact point. The 'Skid' section shows a bowling ball with a black dot representing the contact point. The text '3 Phases' is written in white on a black background at the top. The text 'Roll', 'Hook', and 'Skid' are written in black on their respective backgrounds. The text 'International Bowling Pro Shop & Instructors Association' and 'IBPSIA' are written in white on a black background at the top left. The text 'Courtesy USBC' is written in small black font at the bottom right.

- Phase 1: Skid (0-30 feet)
  - Speed is at its max
  - Rev Rate is at its lowest
  - Friction between ball and lane is minimal
  - More speed than revs in this phase

# Phase 2 - Hook Phase

In this phase, the ball begins to hook.

- It needs to **slow down in order to change direction**.
- The **revolutions (rotation)** of the ball **increase as it starts to turn**.
- The **friction contact point with the lane increases** during the hook, allowing the ball to grip the surface more effectively.
- However, **the ball still continues to slide slightly** during this phase — it hasn't fully transitioned into rolling yet.

- Phase 2: Hook (25-45 feet)
  - Speed decelerates
  - Revs increase
  - Friction between and lane increases
  - Ball starts to change direction
  - In this phase, the ball is changing direction but it is still skidding slightly.



## . Phase 3 - Roll Phase

In this final phase, the ball transitions into a full rolling motion.

- The ball is now at its **lowest speed**.
- The **friction contact point with the lane is at its highest**, and its **revolutions (rotation)** are at their maximum.
- This is the phase where the ball must **transfer all its stored energy into the pins**, maintaining its trajectory through impact.
- Ideally, the ball continues through the pin deck and **finishes in the middle**, maximizing pin carry and scoring potential.

# 3 Phases

- Phase 3: Roll (45-60 feet)
  - Speed is at its lowest
  - Rev rate is at its highest
  - Friction between the ball and the lane is at its highest
  - When the ball gets to this phase, it is in its strongest state and will transmit the most energy into the pins, which in turn leads to a higher strike percentage.



# 3 Phases of Ball Motion

