

Detection and correction enters the bowler into the realm of problem solver. The efficiency to which a bowler can identify and correct the root source of a problem with their approach and delivery breeds consistency, reliability and ultimately confidence.

1. As the problem solving begins the first task is to identify whether the problem in execution is caused due to a *physical* problem which has developed simply because of a breakdown of the physical skills executing a shot.
2. *mental problem* (not focusing, distractibility, negative mindset, or irrational self talk) or simply
3. *environmental* problem (lane condition)

1. Physical Skills of Execution

The physical skills of execution traverse from the rudimentary basics of a 3 step or 4 step approach and delivery, up to gaining an understanding and proficiency in identifying the various malfunctions of the approach and delivery when it is breaking down.. Within the Physical Skills there are two main areas and subsets within each of those;

- € Components of the Follow Through
 - Leg
 - Arm
 - Torso
- € Approach and Delivery
 - Speed
 - Lift
 - Rotation

The Follow Through

For many understanding of the follow through is a simplistic one, consisting of simply making sure your arm finishes pointing to its target. But there is much more. A dependable follow through consists of the aforementioned (legs, arm, and body). More particularly each of those component parts has an 'ideal' finishing position. The more one's follow through deviates from the 'ideal' the more variant is the success at consistently influencing the scoring potential of the ball.

The legs

The combined action of a knee bend and slide helps smoothly disperse the energy of the approach and delivery momentum and...provide stability. The interior angle of the sliding leg knee bend is approximately 135 degrees.

Knee bend entering slide

- € Provides a low release point so that the bounce at release is minimized. Yes everyone bounces the ball. Due to the nature of ball hitting lane, the ball will bounce up from the lane when ball contact with the lane has been made. Getting lower will minimize the effect of bounce.
- € Acts as a stabilizer
 - A deeper rather than upright knee bend helps the torso support the follow through.
 - Without a knee bend the torso cannot be stabilized. Thus potentially leading to a wobbly side ways tilting body action, or a quick over extension of the follow through.
- € Acts like a spring mechanism when at release the body comes up into its final follow through

position.

€ The Trailing Leg

- A key element to the effective use of your legs is in maintaining the trailing leg as an anchor. The trailing leg ideally trails straight behind your approach, maintaining contact with the approach surface after delivery
- The trailing leg that stays well back and straight, keeps the body square (straight) to the target. Over extending occurs when the trailing leg moves forward toward the sliding leg during release and after release. This weakens the support the body can give to the follow through.

Slide

€ Provides for an easy transition of momentum through to release and final follow through position.

€ A smooth slide relies on a slide not a step action.

€ Please note...if a slide is difficult for an individual to create it may be that their slider or heel prevents a slide from being smooth and/or long. For a sticky slide consider the following:

1. Tape the heel of the shoe (masking or packing tape will do)
2. Scrape the slider portion (there may be something sticky on the slider)
3. Two more dramatic alterations include;
 - Wet the slider and then vigorously rub it on rug to create a smoother surface. This will also dry the shoe slider.
 - Pull a sock over the slider shoe, this provides a consistent slide for any lane condition – however...the sock is prone to picking up debris so check it regularly. The slide created by a sock will be slightly less than that achieved with a Teflon slider.

The Torso

€ The job of the torso at release is to extend body and arm towards target.

€ The body torso position at release should be at an angle much like an airplane taking off from a runway.

€ With the benefit of the momentum gained from the approach and delivery, the back (torso) extends as if reaching to the pins.

Avoid

€ Over extension is a matter of becoming too upright. Over extending can be identified by the position of the trailing leg after release. If the trailing leg has eased its way forward to be closer to the sliding leg than over extension has occurred. Over extension brings the body (torso) position too upright. A familiar adage for the follow through is to STAY DOWN, this applies directly to the position of the torso.

€ Avoid bending forward with your body too far, (i.e.) becoming what is referred to as 'top heavy'. Essentially your center of gravity has shifted to a degree that holding your follow thru becomes difficult. Consider a simple test. IF you find that your follow through arm wants to fall back down to your side, rather than being held out reaching and extending to your target, you are likely top heavy. Holding the follow through (arm) is very difficult when 'top heavy' Another test, take a still picture or...movie of your approach and delivery from the side. Ideally the interior angle of your torso position (waist to shoulders) is approximately 45 degrees, Bending forward 30 degrees is most likely too far.

2. Mental

Rule #1 – Look for successes before you look for flaws.

Rule #2 – Adopt a business plan approach.

Maintain objectivity. Eliminate your emotion in the decision making.

- € Collect the data
- € Analyze the data
- € Apply your decision

Rule #3 – Trust what you have decided

Commit fully to applying your decision without hesitation, doubt, or tentativeness.

3. Environmental (lane condition)

- € Keep it simple. Adjusting should only occur once your;
 - timing is in-sync
 - you can validate that you are hitting your point of aim (arrow/board)
 - Holding your follow through without falling off balance. (if off balance the first key should be physical – SLOW DOWN.
- € Generally speaking the geometric adjustment (moving the **P**oint **O**f **A**im, or Stance Position) is the easier adjustments that can be made. The rule for the geometric angle is as follows.
 - IF...missing the intended pin to the right, move your stance to the right. For all but the very proficient I recommend the move be equivalent to 2 boards. Move to the left if missing to the left. In both cases keep your original point of aim (arrow/board)
 - IF...you prefer....keep your original stance position and move your POINT OF AIM. For example...if you are missing the pin to the right move your Point of Aim to the left. IF missing the pin to the left move the P.O.A. to the right.
- € Adjustments of speed, lift and rotation can be made to adapt to a change in lane conditions. If you dabble with these adjustments first use them one at a time, avoiding combinations unless very competent in doing so. Key idea would be to practice these adjustments at your home center. (i.e.).Explore how speed lift and rotation influence the scoring of your ball once delivered.
 - Speed...please keep in mind the real tendency of influencing rotation when changing speed. For some an increase in speed leads the athlete to also increase the rotation given to the ball. For others the athlete may decrease the rotation given the ball upon release.
 - The very proficient player is capable of consistently maintaining the same rotation regardless changes to speed. This...is a real skill that takes time to perfect.