The Ultimate Bowling Guide

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I. Introduction

HISTORY

Movies such as “Kingpin” and the “Big Lebowski” poked fun at bowling. In fact, bowling is a legitimate sport and is considered one of the oldest sports in history. Bowling is one of the most popular ways to have fun: this game is practiced by more than 100 million people in more than 90 countries around the world. According to these numbers, its origins hide some amazing facts that might surprise even the most devoted fans, from royalty to common people. Yes, bowling has once been the game of the kings!

The first to discover some evidence of a game similar to bowling was British anthropologist Sir Flinders Petrie. Back in the 1930’s, in a child’s grave located in Egypt, Sir Flinders Petrie found ancient objects that might have been used in a very early form of the game. These objects dated back to 3200 BC, so we could say that bowling is about 5,000 years old. Even though some experts claim that the origins of bowling are actually much closer to the modern times (according to William Pehle, this game was initiated in Germany in 300 AD), it has survived the centuries and set into the modern bowling lanes that we all appreciate so much today.

But how does bowling relate to kings? The first written mention of a game similar to the bowling we know today traces back to 1366. Allegedly, England’s King Edward III banned this game because his troops were not focused enough on their archery practice. What we know for sure is that this game was very much in vogue and legal during the reign of King Henry VIII. As any other early stage of a sport, bowling has its variations, most of them coming from Europe: the Italian bocce, the French pétanque, and even the British lawn bowling.

So far we have discovered the European variations of this game, but who introduced bowling to the United States? Some early versions of the game were introduced to the New World by the English, Dutch and German settlers. One version of American bowling is mentioned in a quote from Rip Van Winkle, when old Rip wakes up to the sounds of ninepins. The origin of the tenpin game is still a mystery, but we know that by the late 1800’s, it became very popular in New York, Ohio, and Illinois.

Bowling became a legitimate game on September 9, 1895, when the rules were first established and standardized at Beethoven Hall in New York City. This day marks the creation of the American Bowling Congress and the beginning of major national competitions. In 1917, the Women’s
International Congress was created under Dennis Sweeney's encouragement. The Women's National Bowling Association was later established to include women in competitive bowling tournaments.

The Brunswick Corporation introduced the first Mineralite ball in 1914 and in 1952 came the first installation of a machine designed to set the pins. As a result the “pin boys” became unnecessary. During the 1950’s bowling’s popularity increased as NBC started broadcasting the “Championship Bowling”. Shows such as “Make that Spare,” “Bowling for Dollars” and “Celebrity Bowling” put bowling in the Americans’ homes and hearts forever. In 1961, the Pro Bowlers tour became extremely popular on ABC Sports Broadcasting. Bowling has been hugely popular game, and is often described as the “most pleasant” American past time.
II. Equipment

ACCESSORIES

Once you decide to play the game, you can choose from a variety of bowling products that could help you and assist your game.

1. What you first need is special bowling shoes. You have to make sure they are truly comfortable and that they fit well, so you can slide easily.

2. You should always have the wrist braces on you. They can be very helpful if you can’t keep your wrist firm throughout your swing. A wrist brace keeps a stable position and this could improve your game.

3. If you have knee or elbow problems, there are special braces that help you prevent any unnecessary injury.

4. Are you one of those people who can’t keep their hand dry because of the sweat? Rosin bags can be very helpful in this situation and they can help to grip the ball well. You can use the rosin bags with the air blower to keep your hands dry.

5. For a tighter or looser fit, you can use “bowlers tape” in your thumbhole. Make sure the size of the hole is close enough to provide you with little resistance when you release the ball.

There are a number of bowling accessories available on the market. Some of them can really help you, but some turn out to be not so effective. To find out which of these bowling accessories will help your game, don’t hesitate to go to your local pro shop and ask for further details!
THE BALL

The market offers hundreds of bowling balls so your options are almost countless. There are three common types of balls.

**Plastic balls.** These balls are usually used by beginners in a “straight shot.” The plastic surface creates very little friction with the bowling lane, which makes the slide increase. What you get is a straighter shot, but not much of what is called “pin action.”

**Urethane balls.** These are made from polyurethane, which is a form of plastic. The friction by the polyurethane varies, depending on the ball. Players who like to throw a hook use this type of balls.

**Reactive resin.** This is a new material, so its design is still evolving. Just like urethane balls, reactive resin balls are used in curve shots and hook shots. When hitting the rack these balls seem to explode so they have become very popular among the experienced players.

CHOOSE YOUR WEAPON

**Selecting a house ball**

Bowling establishments often provide house balls for players who don’t have a ball of their own. The balls are kept in ball racks, in order of their weight (from 6 to 16 pounds). As the total ball weight increases, so do the hole sizes and spans.

**How to select the proper ball fit**

A proper ball fit is a lot more comfortable, it lowers the fatigue level of your hand and arm, and decreases the possibility that you be hurt through pulled muscles, tendonitis, or deep calluses. Here are some tips to remember to see if a ball could fit your hand.

**Thumbhole size:** Insert your thumb into the thumbhole, then, as you lightly press one side of the thumb to one side of the hole, slide the thumb in and out. The thumbhole size is correct if the other side of the thumb barely reaches its side. Try another ball if the thumbhole is too loose or tight.

**Correctness of span:** Once you have selected a thumbhole that fits you must choose a ball with the proper span, according to the descriptions of the conventional ball.
How to select the proper ball weight

Pay attention to your physical condition when you choose the weight of the ball. Could you effectively place a very heavy ball in your swing? Well, try doing that and you'll see what happens! Your hand will not be able to hold the ball as it’s falling into the downswing. Also, when you use a ball that is too light, the weight of the ball is not enough to tell you to let it swing by its own weight. Typically, adult male beginner players tend to choose balls from 14 to 16 pounds while adult female beginner players choose balls from 10 to 14 pounds. Young bowlers should choose balls in the 6 to 14 pound range.

How to select a customized ball

Let's say you bowl more than a couple of times per month and you want to improve your game. You need a better ball fit and good footing, so you may want to consider buying your own ball and special shoes. You can ask some of the best bowlers you know for the name of a skillful ball drillers.

You might consider these hints:

- Since the shoes are essential in providing stability for good leverage to be imparted for the ball, you should buy the ball, bag and shoes together. A serious bowler should have shoes of his own instead of renting them every time. With all the bowling accessories, you definitely need a bag, too!

- Make sure that for at least two hours before the game you don't put your hands in water, otherwise there is a chance that the grip holes will be too large.

- You don't want your span be fitted too short! To avoid this, exercise your hand before having the ball fitted: relax your hand, stretching your grip to what it will be after some practice shots. This may give you a more correct span measurement.

- If your hands are often in contact with slippery or drying solvents or if you suffer from arthritis, tell it to the pro shop operator so that the fit and the ball weight should be changed according to your needs.

How to select a used bowling ball

Used bowling balls are much cheaper than new ones and there are plenty of used bowling balls available on the market. Even pro-shop operators and BPA and LBP members offer used balls for sale, while teammates often trade balls. Used balls are typically much better than new ones. Be careful when you buy bowling balls from pawn shops or garage sales because many balls offered for sale there are often damaged due to improper storage.
If you decide to buy a used ball, make sure the surface is in good shape: look for deep cracks or scratches. The cover of the ball should be solidly bonded to the core. Don’t choose a ball that has a damaged cover or sounds hollow or non-uniform when tapped with a blunt object. However, if you find a good used ball, take it to a pro shop operator for a correct fit. The driller will almost always plug and redrill the holes with your own grip.
LANE

Lane Length
A regulation lane measures 62 feet 10 3/16ths inches from the foul line to the pit, excepting the tail plank. The distance between the foul line and the center of the no. 1 pin spot must be 60 feet, with a ½ inch tolerance. The distance between the center of the no. 1 pin spot and the pit must be 2 feet 10 3/16 inches, excepting the tail plank.

Lane Width
The lane width must measure between 41 and 42 inches. The lane and the gutters must be at least 60 inches and no more than 60 ¼ inches wide.

Lane Surface
The lane surface must not have continuous grooves. Levelness and depth depression is allowed within 40/1000th inch.

Lane Approach
A clear level approach of at least 15 feet in length must extend from the foul line. Depth depression of grooves allows a maximum tolerance of ¼ inch.

The Pin Deck
The width of the tail plank must be of no more than 2 inches. The back line of pins is 3 inches further on. The distance between the pins in any direction is 12 inches, measured from the center of each pin. As you may imagine, the pins are arranged in an equilateral triangle with the head pin standing at 34 and 3/16ths inches from the tailboard.
PINS

Pin Composition
The pins are carved in Maple wood coated with a layer of plastic 3/32 inches thick.

Pin Weight
The pins’ weight varies from 3 lb 6 oz to 3 lb 10 oz.

Pin Positions
The pin numbers are indicated in this diagram:

1  2  3
  4  5  6
    7  8  9
      10

BALL

Bowling Ball Material Regulations
An appropriate bowling ball must be made of a non-metallic composition material and must comply to the specifications regarding weight, size and balance. If you want to decorate the ball with reflective particles or flakes, make sure these flakes or particles are part of the ball at the time of manufacture, that they are evenly distributed in a uniform pattern under a transparent shell that is at least ¼” beneath the surface of the ball. This is required so that they don’t affect the balance. The total amount of such adjacent material should not overpass ½ ounce per ball. The surface hardness should be at least 72 Durometers “D”.

Bowling Ball Weight, Size, Markings and Holes
A bowling ball should measure no more than 27.002 inches in circumference and at least 26.704 inches. There is no minimum weight, but the ball should not exceed 16lbs.
The Ball Must Have a Constant Diameter

No grooves or any type of depressions should be found on the surface of the ball. The only exception are the holes and indentations that are used for gripping the ball, identification letters and numbers and accidental chipping or marring due to heavy wear.

Other Requirements

The only movable device allowed in a ball is the one designed for changing the finger span or the size of the finger. Thumb holes may be inserted, but only if they are locked into position during delivery. They must not be removed from the ball without being destroyed. It’s not advisable to incorporate metal or any other substance that is not the same to the original material used in making the ball.

The plugs may only be inserted when redrilling the bowling ball. A ball may have designs applied on its surface as indicators or for observation or identification purposes, on the condition that these designs are flush with the outer surface of the bowling ball.

The interior of the ball must not have any voids. The plugs or designs must be made of similar material as the ball. The plugs and designs must necessarily comply with all bowling ball specifications.

Have you ever wondered how many holes are allowed in a bowling ball? Here’s an answer for you: 12 holes in each ball. You are allowed one hole for each finger and thumb for gripping purposes. One small vent hole is allowed for each of the fingers and thumb holes, to prevent popping at the release moment. There is another hole for balance purposes, its diameter must not exceed 1 ¼. This hole brings a ball into static weight tolerances.

The last hole, or a “mill” hole, is allowed for inspecting purposes. It must not exceed 5/8” in diameter and 1/8” in depth. This hole serves the purpose of checking the hardness of the cover stock below the actual surface of the ball. If you’ve seen equipment used by players in the PWPA and PBA National Tours, then you may have noticed that this is the hole placed just above their finger holes. The surface of a custom bowling ball must be not less than 72 Durometer “D”.
III. Rules

RULES OF COMPETITION

1. Modifications

The Special Olympics Bowling Competition is the body that approves the use of bowling ramps and other assistance devices. For single competitions, the athletes who use ramps may be placed in separate divisions from other players. An athlete may enter two classifications in the ramp bowling division:

1) Ramp Unassisted bowl
   a) Rules
      i. the athlete aims the ramp from a unassisted position.
      ii. the athlete positions the ball on the ramp with assistance and pushes the ball down the ramp toward the target.
   b) A bowler is permitted to bowl up to three frames consecutively.

2) Ramp Assisted Bowl
   a) Rules
      i. An assistant may aim the ramp toward the pins. In order to do so, he/she must have his/her back to the pins at all times and aim based on the direction (this can be done either verbally or by physical cues) given by the athlete.
      ii. If the athlete is unable of giving direction as noted above, he/she might be better suited to take part in Motor Activities Training Program (MATP) events.
   b) A bowler is permitted to bowl up to three frames consecutively.

2. General Rules

a. The following sequence is used when establishing the scratch entry score to determine the ability divisions:

   The bowlers whose averages are ABC, WIBC or YABA shall use the highest average from the most recent book.
   
   The bowlers who have over 15 games in an established league and no book average shall use the league average.
   
   The bowlers who don't have book or league averages shall use a 15-game average in practice or other play outside the league.
b. Individual handicaps are added together in doubles and team events. This will determine the total handicap for the whole team. The bowlers who don’t start and complete three frames shall not receive handicap and will have a zero score toward the event score. The bowlers who manage to complete at least 3 frames but are unable to continue will receive one-tenth of their average for each remaining frame and their full handicap toward the score.

c. The athlete’s or team’s handicap represents the difference of the bowler’s average subtracted from 200 (200 – bowler’s average = handicap/game)

d. In the case of tournament level play, the tournament directors may choose to make the tournament a “scratch” tournament or a “handicapped” tournament. In all cases, the FIQ regulations provide uniform standards.

3. General Rules - Unified Sports Events

a. An equal number of athletes and partners (one athlete and one partner or two athletes and two partners) is allowed in the Unified Sports doubles or teams.

b. The sum of each competitor’s overall score, including handicap, represents the final score for the Unified Sports teams.

c. There is no pre-established order of play for the bowlers of a Unified Sports team.

4. Target Bowl – very important for bowlers who have lower ability levels.

a. Equipment:

1) Regulation bowling pins

2) Two-pound bowling ball

3) Tape

4) Carpet

b. Setup:

1) Mark the bowling lanes by using tape. Bowling lanes must have the regulation width (1.06 meters or 3 feet, 6 inches).

2) The distance from the foul line to the bowling pins must be one-half of the length of a regulation bowling lane (9.14 meters or 30 feet).

3) The drag surface can be a carpet or an AstroTurf. Make sure you lay it down on the lanes and on the approach.

c. Rules and scoring:
1) The rules you must follow are those set by the American Bowling Congress (ABC). Even if the length of the lane has been changed, the bowlers still have to bowl from behind the foul line and any violation of the line will be enforced. Despite the modified length of the lane, bowlers are still required to bowl from behind the foul line.

2) Only when a ball fully crosses the tape which establishes the width of the lane will it be considered a gutter ball.

3) The players bowl 5 frames using the standard scoring system.

5. Frame Bowl—very important for bowlers who have lower ability levels.

a. Equipment:

1) A plastic playground ball with the diameter of 30 centimeters.

2) Ten big bowling pins made of plastic

b. Setup:

1) The pins must be set in the tenpin triangular bowling formation.

2) The lead pin must be placed 5 meters (16 feet, 5 inches) from the rolling line.

3) Using tape or chalk, draw a 1-meter (3 feet, 3 1/2 inches) long foul line.

c. Rules:

1) The bowler rolls 2 frames, with 2 rolls per each frame to knock down the most number of pins.

2) All the pins which have been knocked down must be removed from the lane between the first and the second roll. At the beginning of each new frame, the pins must be reset in the traditional position.

3) While rolling the ball, the bowler may sit or stand. He/she must stay behind the foul line when the ball is released.

4) The bowler is allowed to use one or both of his/her hands to roll the ball.

d. Score:

1) The number of pins knocked down by a player in the two frames stands for his/her score.

2) When all the pins are knocked down by the ball in the first roll of a frame, the player will receive 5 bonus points. He/she will get 2 bonus points when all remaining pins are knocked down on the second roll in the same frame.
**How to score**

Most people find it quite difficult to understand bowling scoring but it is not as hard as it seems! Almost all bowling centers have now a scoring computer, so this burden is off your shoulders. Of course, this might make people lazy and probably some bowlers are unable to score manually.

Don’t get too excited! Computers do make mistakes and they might even break down! That’s why you need to understand the scoring rules.

According to most bowlers, the most difficult part to understand is when a **strike** or **spare** is scored, because the score is not updated immediately. As you all know by now, a game is made up of ten **frames**. Each frame starts with a full rack of ten pins and you are allowed two deliveries of your ball per frame. Your goal is to knock down as many of the ten pins as you can.

You can call it a **strike** when you knock down all the pins on your first roll. However, the score is not updated immediately so you’ll get the values of the next two rolls as a bonus. Let’s take an example: suppose you score a strike in the first game, then you score a 7 and 1 in the second frame. Your total score for the first frame is 18 (10+7+1) and just 8 for the second frame. This makes a total of 26 after two frames.

**What is a spare?** Let’s say you knock down some of the pins on the first ball and in the second ball you knocked down the rest of the pins. This is called a spare, and the score is not updated immediately, but you get the values of the next ball as a bonus. So, if you score a spare during the first frame (for example a 6 and a 4) and in the second frame you score an 8 and a 1, your total score will be 18 (6+4+8) in the first frame, and 9 in the second. This makes a total of 27 after two frames.

Now let’s take a look at the final frame; things tend to get a bit different here. In the final frame you receive bonus balls if you strike or spare. There is a maximum of 3 deliveries. If you strike in the first delivery, you have the opportunity to strike in the remaining two and have three deliveries in total. Also, if you score strikes in each of the final 3 deliveries, you get a score of 30 (10+10+10) for the final frame. If you spare the final frame, you receive the third delivery as a bonus. The final score here will be 20 (9+1+10).
### Example 1

<table>
<thead>
<tr>
<th>Frame</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
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<tbody>
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<td>9-0</td>
<td>3-5</td>
<td>6-1</td>
<td>3-6</td>
<td>5-3</td>
<td>2-5</td>
<td>8-0</td>
<td>7-1</td>
<td>8-1</td>
<td></td>
</tr>
<tr>
<td>Score</td>
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<td>17</td>
<td>24</td>
<td>33</td>
<td>42</td>
<td>50</td>
<td>57</td>
<td>73</td>
<td>82</td>
<td></td>
</tr>
</tbody>
</table>

This example is a simpler one, so we omitted strikes and spares. Each frame is totaled and added to the general score.

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### Example 2

<table>
<thead>
<tr>
<th>Frame</th>
<th>1</th>
<th>2</th>
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<th>4</th>
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<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
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<td>9-0</td>
<td>3/</td>
<td>6-1</td>
<td>3/</td>
<td>8-1</td>
<td>5/</td>
<td>0/</td>
<td>8-0</td>
<td>7/</td>
<td>8/8</td>
</tr>
<tr>
<td>Score</td>
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<td>25</td>
<td>32</td>
<td>50</td>
<td>59</td>
<td>69</td>
<td>87</td>
<td>95</td>
<td>113</td>
<td>131</td>
</tr>
</tbody>
</table>

Example 2 shows you how to score spares and open frames together. A spare is scored as 10, plus the pinfall of the next roll. This total is added to the general score.

1. Frame 1) Count 9 pins
2. Frame 2) Spare (10), plus next ball (6) added to score = 25
3. Frame 3) Count 7 pins and add to score = 32
4. Frame 4) Spare (10), plus next ball (8) added to score = 50
5. Frame 5) Count 9 pins and add to score = 59
6. Frame 6) Spare (10), plus next ball (0) added to score = 69
7. Frame 7) Spare (10), plus next ball (8) added to score = 87
8. Frame 8) Count 8 pins and add to score = 95
9. Frame 9) Spare (10), plus next ball (8) added to score = 113
10. Frame 10) Add (10), plus 8 to score = 131

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### Example 3

<table>
<thead>
<tr>
<th>Frame</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<th>7</th>
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</thead>
<tbody>
<tr>
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<td>X</td>
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<td>X</td>
<td>X</td>
<td>X</td>
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<td>115</td>
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<td>143</td>
<td>163</td>
<td>193</td>
</tr>
</tbody>
</table>
Example 3 showed you how to score strikes, spares and open frames together. As we have shown previously, a spare is scored as 10, plus the pinfall of the next roll. A strike is scored as 10, plus the pinfall of the next 2 rolls. This total is added to the general score.

Frame 1) Strike (10), plus next 2 balls (3)(7) = 20
Frame 2) Spare (10), plus next ball (6) added to score = 36
Frame 3) Count 7 pins and add to score = 43
Frame 4) Strike (10), plus next 2 balls (10)(10) add to score = 73
Frame 5) Strike (10), plus next 2 balls (10)(2) add to score = 95
Frame 6) Strike (10), plus next 2 balls (2)(8) add to score = 115
Frame 7) Spare (10), plus next ball (9) added to score = 134
Frame 8) Count 9 pins and add to score = 143
Frame 9) Spare (10), plus next ball (10) added to score = 163
Frame 10) Strike (10), Strike (10), Strike (10) = 193

Tips for Bowling Etiquette

Just like any other game, bowling is supposed to be fun! While browsing through the following rules of etiquette, keep in mind that they have been established to help the game run smoothly.

1. Read carefully and follow all the specific rules that are posted at the alley.
2. While on the lanes, wear only bowling shoes.
3. Don’t start bowling until the pin-setting machine has finished its cycle.
4. Allow the bowler in an adjacent lane to play first if you both approach the runway at the same time. Otherwise, the player who arrives first goes first.
5. Don’t step or go beyond the foul line, even in casual play. Bowling is a sport so play fair.
6. The ball should be bowled down the lane. Avoid any throwing or tossing of the, as it may damage the lane.
7. Don’t play your game on another lane, you should have enough space on your own.
8. Always ask for permission first when using someone else’s ball.
9. Avoid distracting other players while they are bowling. Check your language and limit swearing as much as you can.
10. Be ready when it’s your turn to bowl.
11. Try to keep the score accurate. Almost all alleys have now automated scorekeeping.
A Few Tips:

Has bowling almost taken control over you? Be a real sport and invest in a comfortable pair of bowling shoes and a ball. This will save you a lot of money, because you no longer have to pay rental fees for the shoes or use multiple balls in a game.

While on the lane, don’t hesitate to show your enthusiasm, have a snack or a drink, play some music on the jukebox, or do whatever you like. Remember that discretion is essential. Other players may be there to bowl competitively and seriously.
IV. Playing Bowling

Warming Up for Bowling

Bowling, just like any other sport, requires some warmup for the muscles. Even though bowling may seem not to involve high-level exercise, it still has some repetitive moves that can make muscles and joints to be strained. Not to mention the player must carry and deliver the weighted ball!

Your arms, wrists and knees are subject to strain during bowling. Forearms, shoulders, back, torso, hips, legs and many other muscle groups are involved in the bowling action. Accordingly, the warming up exercises should include all the parts of the body that are commonly used or that you think you will use. You should start with slow controlled movements, then go through more ballistic movements and finish with the full bowling action.

When is warming up recommended? Ideally, warm-ups should be done before each bowling session, whether you’re bowling for a practice or competitive game. If you haven’t played for a long period of time, start with the following recommendations. Your muscles and joints must be prepared for the bowling action.

Preparation

Blood flow to the muscles is extremely important, so you should start by doing some light activity to increase the blood circulation. You can run around the block, run on-the-spot, or do anything similar in order to increase your heart rate. Then stretch your muscles and joints by passive stretches first, and then by active stretches.

Passive Stretches

Hold each of the following stretches for 10 to 20 seconds.

- **Neck stretch** - Hold your chin down until it reaches your chest and you can feel tension at the back of your neck, then move your head slowly to each side until you can feel the stretch.

- **Shoulder Stretch 1** - Holding your hand behind your hand, point your elbow upwards then, with your other hand, grab your elbow and pull it gently to the other side until you can feel a good stretch. Repeat the same moves for the other side.
• **Shoulder Stretch 2** - Keeping your arm horizontally across the front of your body, grab your elbow with the other hand and pull it gently to your chest. Repeat this for the other side.

• **Side Stretch** – Holding your feet slightly apart, start from a position similar to the shoulder stretch. Keep your hips stable, then bend your torso until you feel the stretch along your side. Repeat the same moves for the other side.

• **Hip Flexors / Hamstring Stretch** – Hold your body and feet facing forward. Place one leg back and the other leg forward, keeping your hands on the front thigh. Then move your weight forward, maintaining an upright position and keeping your both feet on the floor. Repeat the same moves for the other side.

• **Quadriceps Stretch** – While standing on one leg, support yourself with one hand. Bend your free leg back and grab your ankle with your free hand. Pull the foot higher backwards to increase the stretch.

• **Forearm Extenders** – With the palm facing down, hold out your arm dropping the fingers and palm at the wrist. Grab your fingers with the other hand and pull them towards the body. Repeat the same moves for the other side.

• **Forearm Flexors** – Hold your arm with the palm upwards. Drop the fingers and the palm at the wrist. Then grab your fingers with the other hand and pull them down and towards the body. Repeat the same moves with the other hand.

### Fitness Training for Bowling

Every sport needs specific training and fitness, and this depends on the complexity of the sport. It is true that a training program may not always improve your score, but it can help reduce the risk of being injured and it can also keep you on the lanes much longer. This means that you will be able to practice your favorite sport for longer periods without feeling tired. The best consequence is that, by practicing more, your score will improve.

**What are the areas you should train?**

A successful bowler must consider a series of physiological and physical factors: very good hand/eye coordination and balance, good flexibility, appropriate strength and aerobic fitness. A low level of body fat is also important in playing this game.

In order to have good bowling power and control and minimize injury risk, the muscles and skeleton must be in good shape. An appropriate state of health will reduce fatigue and, if you are
injured in some way, it will aid recovery. Consider these demands before starting your training and try to improve those areas you think will have the most impact on your game.

As a bowler, the parts of your body that are subject to injury are the shoulders, wrists, knees, elbows and hips. Try to minimize the risk injury by paying close attention to those areas during your training sessions.

**Training for Strength**

Think about those areas that are weak and likely to be injured, and make sure you use all your muscle groups. Try building up gradual workloads if you are beginner and use appropriate training techniques in order to maximize your strength.

Specificity, or improving strength in the trained areas, is important. It is highly important that you define the areas that need to be improved: train your leg muscles for better balance, the torso area for improved stability, the upper body region to gain strength and accuracy.

The next training principle is progressive overload. This means that the body will adapt to the higher overload placed on it during the training sessions. It goes without saying that if you always practice at the same level, your body will adapt only to this level and you will stop improving. In order to avoid this situation, make sure to progressively increase your training. This may mean increasing the time spent practicing or the intensity. About two to three workouts per week will improve your strength, but if you are new to this, you should start with body exercises until you gain good baseline strength.

**Training for Cardiovascular Endurance**

In bowling, cardiovascular endurance may not be as important as strength training, but maintaining good overall aerobic fitness is good for anyone playing a sport. We recommend a training level of at least three 30-minute sessions per week.

**Warm-Ups**

You should warm up before any training session, even before bowling. You can start with some low intensity exercise for a few minute, then move on to stretching exercises. These should involve the body parts that are being used.
Fitness Testing for Bowling

Are you that type of person who spends hours at the gym, eats better and studies the game? How do you know that what you do is appropriate? Maybe you can see some results in your bowling average but how can you tell where and how much you have improved?

Are your bowling scores an indicator of your improvement? It’s true, you can check your scores from time to time, to see if you are improving, but this cannot show you how you did it. Maybe you have improved some aspects related to the sport itself, and not other aspects that are equally important. You should consider some important factors that describe the physical and physiological attributes of a good bowler: exceptional hand/eye coordination and balance, good flexibility (upper and lower body), good strength (upper and lower body), good aerobic fitness and low body fat. Try to establish your ability in each of these aspects by making use of fitness tests.

You can choose from hundreds of tests for each of the fitness elements. These tests can range from elaborate and very expensive laboratory tests to simple and much cheaper tests that are carried out “in the field”. You can consider the advantages and disadvantages of each test, so that you make the best decision regarding these tests. If you decided to design your own fitness-testing regime, you should search for information about the requirements and abilities of each test, and only after should you choose the most appropriate test you want to use.

The aerobic fitness, for example, is the ability to exercise for long periods without getting tired. As bowling is not a highly aerobic action, you should try to stay healthy, to recover well and prevent fatigue during extended periods of play and over competitions that last several days.

What is biomechanics?

Biomechanics is the study of movement and physics applied to various biological systems. You can do some calculations and perform measures if you want to analyze your bowling technique. By using principles of biomechanics, you can measure the position of your arms and legs in relation to each other and in relation to the ground; you can calculate how fast your arm swings and the ball speed generated. All these calculations and measures can help you understand your bowling technique, compare your technique to other bowlers, and to identify deficiency areas that you need to improve.
How can joint and segment angles be calculated?

The extra information you need when adjusting your technique lies in understanding the angles made by your limbs throughout the bowling technique. An equally effective and much cheaper alternative is collecting video footage of a professional bowler. Then you’ll need a few clear plastic sheets, marker pens and a protractor. Tape the plastic sheets to your TV screen, play the tape and pause it at the appropriate times. With the plastic sheet held over the image of the bowler, you can easily draw lines between the points of interest. Move the tape forward, and again draw the lines. This technique helps you get a good picture of your technique in stick figures. Use the protractor to calculate any angles after you remove the sheet from the screen.

How are segment velocities calculated?

After you calculate the joint and segment angles, you can proceed to calculating segment velocities. For this, you must be able to calculate the distance from the video footage mentioned above and you will also need to know the exact frame rate of the video recording (at 25 frames per second, there is 0.04 seconds between each frame). The velocity of an object can be calculated by viewing the video frame by frame and calculating the distance the object moves from one frame to another. For example, if the object moves 2 inches between frames, it has a velocity of 402 feet/second. Ok, if you feel somehow blurry, that's understandable! It might sound as piece of cake, but it's not!

How does physics apply to bowling?

The object of physics is the study of the mathematics of movement, whereas biomechanics is the study of physics applied to biological systems.

Ball Speed

The point of release is the maximum ball speed. Upon release, the ball begins to slow down because of the bowling ball – lane friction. Usually, a bowling ball loses 3 to 3 ½ mph from releasing point until hitting the pins.

The amount of decrease in ball speed depends on a series of factors. The most important is the amount of friction generated between the ball and the lane during rolling. The ball is prone to slow less when rolled on lanes that have a lot of oil on them. Lanes with smaller amounts of oil on them will slow down more the ball. Another factor is the type of the ball you use. Don’t forget that the amount of the friction between the ball and the lane depends greatly on the weight of the ball.
A slow ball speed is considered to be of less than 17 mph. the average is from 17 to 19 mph, whereas fast speeds are beyond 19 mph.

**Friction**

This magic word – friction – actually makes the ball slow down during its course towards the pins. The level of the frictional force varies depending on the type of oil used on the lane and the weight of the ball.

Here comes the fun part! The kinetic friction equation is $\mu k = F_k/mg$, where $\mu k$ represents the coefficient of kinetic friction and $F_k$ represents the force due to kinetic friction. $m$ represents the mass of the ball (or the gravity).

**Ball Speed Calculation**

The simplest way is to check how much time it takes for the ball to travel the length of the lane, knowing that the lane measures 60 feet (18.3 m) from the foul line to the pins. You should better use a stopwatch for this! How do you calculate the ball speed? Simple: by dividing the distance by time. For instance, if the time was, 3 seconds, then the average speed will be $60/3=20$ feet per second (or 6.1m/second). Remember, this in only the average ball speed, since the speed of the ball at the release time is much greater!

You can always try calculating ball speed from video analysis. For this, you need to have video footage from directly side-on, a calibration mark than can be viewed on the screen and, again, the exact frame rate of the video.

**Ball Spin Calculation**

The easiest way to calculate ball spin is right after your release. For this, you need to place a piece of white tape above your finger holes on the ball then roll your normal shot down the lane.

*Method 1:* Ask someone else to watch and count how many times the tape rotates around the ball until the ball reaches the pins.

*Method 2:* This is a more accurate method. Use a video footage of the deliveries in slow motion.
Essential Bowling Tips

Bowling should be treated just like any other sport and, in order to maximize your performance, you need to maintain a top condition. How do you do this? A good diet is the answer!

Extra body weight is the main problem that bowler must face. Excess body fat add extra stress to the muscles and bones while bowling and it also causes major damage to your heart to the extent that it can threaten your life. Your bowling technique can be affected by this, as you might not be able to produce an appropriate technique, not to mention that your training time is reduced because of the fatigue from carrying the extra pounds.

A balanced diet will improve your state of your health and it will help you get rid of that extra weight. Here comes the major challenge for a bowler: finding healthy food at the bowling centers. The snack bar won’t offer you the opportunity of following a healthy diet, so you should prepare food at home and then take it with you when you go bowling.

Practice is Key

Here’s an old saying that applies not only to bowling, but to any other sport: “You don't win anything for practice, and you don't win anything if you don't.” Practice is in fact the key to improving your game and be a successful bowler, even though some find it boring.

Don’t walk into a bowling center for practice purposes without previously having developed a plan. You’ll see the good effects on the long run. Working on just one aspect of your game may prove to be productive. So don’t worry about where the ball is going, just make sure that your follow through is consistent and steady from shot to shot. Work on keeping your head steady or improving your knee bend! No matter what your work plan is, focus on your goal and keep practicing!

In order to reach a high performing level, a sporting skill requires approximately 1 million repetitions. We’re talking systematic practice here! Any improvement, no matter how small, in the performance of an individual player can considerably increase the general score of a team!

Progressive Stages of Skill Learning

These stages depend highly on the learning stage of the bowlers. For example, beginners may find it difficult to deliver the bowl by using a recommended technique, as their movements may not be
so fluent. The beginners’ goal is to elaborate motor programs for bowl delivery. Yes, there may be errors in learning and performing, but they may indicate the degree of uncertainty in the sequence of movements in a bowl delivery or may even show execution faults (limb misalignment, instability and so on). The good part in these pre-elaborated plans is that they reduce the risk of inefficient practicing and misunderstood technique. It is very important that bowlers eliminate these errors at the earliest stage of their practice.

What about the intermediate bowlers? They achieve this stage after some good hours of coaching and practice. In the intermediate stage, bowlers should be able to reasonably deliver bowls. Of course, occasional errors are not completely eliminated, but bowlers improve their accuracy, consistency, timing and, most important, self-confidence. At this level, the intermediate bowlers’ goal is to refine their motor programs.

As bowlers approach mastery of their performing skills, they move on to the final stage of learning. This happens after months or even years of intense practice, when the motor programs are so imprinted to the extent that they become automatic. Bowlers are now able to deliver the bowl with grace and fluency. The results are very accurate, too. At this stage, the bowlers’ goal to achieve further improvement is quite limited. They focus mainly on identification and solving of some minor imperfections regarding their technique. At this point, the objective is to improve and perfect the modified motor program.

Mastering tactical and mental skill requires similar learning, practicing and improvement processes. Before they even learn complementary skills, bowlers usually master the process of accurate delivery.

**Learning Bowl Delivery Technique**

As we have seen, bowlers should initially practice the delivery technique and elaborate motor programs, so they need to be coached by a professional who could offer them all the informative and motivational feedback. The coach must keep a record of observations and suggestions on a checklist which should also contain all the elements of a delivery movement as shown below. Please note that the usage of the terms “left” and “right” refers to right-handed bowlers.

**Preparatory Positioning**

- Well-practiced mat laying procedure
- Right foot along delivery line
- Left foot slightly separate but parallel
- Toes about 10cm behind front of mat

**Grip**
- Middle finger centered on running sole
- Bowl rings upright and aligned
- Right thumb near shoulder of large ring
- Bowls suitable size and grip comfortable

**Stance**
- Shoulders square to delivery line
- Right arm sufficiently elevated
- Right arm extended along delivery line
- Left hand not drawing right arm off square
- Knees comfortably flexed
- Weight over balls of feet
- Shoulder line forward of toes
- Attention directed forward

**Delivery Movement**
- Right arm unflexed during pendulum swing
- Left heel lifts as right arm passes hip
- Left foot advances parallel to delivery line
- Left foot advances a normal walking pace
- Sufficient amount of back swing
- Left heel grounds as forward swing starts
- Left foot settles parallel to aiming line
- Forward swing smoothly accelerates
- Right knee moves to position behind left ankle
- Left hand moves to left knee
Attention still directed forward
- Bowl released at lowest point of swing
- At least 90% of weight over left foot
- Shoulders forward, above left knee

**Follow-Through and Recovery**

- Right arm extended along line, palm upward
- Attention focused on moving bowl
- Recovery separated from follow through
- Steps forward off mat

Beginners should develop and efficient technique for delivering a jack. Any technical shortcomings should be corrected. Bowlers should maintain a smooth and fluent technique during faster deliveries (consider combining long ends with slow greens). A coach’s observations based on video footage should disclose whether technique falters when limb movements accelerate.

During the beginning stage you won’t need a jack or equivalent target. Your main focus should be on the delivery process, not on outcome accuracy. Individual practice is normally preferable at this point. This helps you gain full control of the practice environment and exclude distractions of any type.
V. Strategies

Keys To Personal Bowling Success

- **Models of Excellence**: Always use positive role models; what you think about, see, hear, draw strength from past successes for confidence and fuels your fire for desire, dedication and determination.

- **Positive Sensory Observations**: What you see or hear is exactly what you get.

- **Sensory Goal Vision**: Emotion provoking - trophies, hearing, names, TV, best of all players.

- **Commitment to Excellence**: Mastery of skills, and a commitment to the shot you are making.

- **Mastery of Fundamentals**: Always be able to adapt to change and play conditions. This will build your confidence and you will gain advantage over competition. Don’t think about how to do a performance - only do performances!

- **Develop and Use Successful Performance Strategies**: You should know how to select the proper equipment, look for one break, review your game strategy.

- **Use of Mental Rehearsal**: This should be done before, during and after competition. See, hear and feel yourself in competition; forget about all distractions. Sense motion; target and feel motion to reach goals. Defuse all negatives.

- **Positive Use of Adrenaline**: Nervousness means anxiety so try some relaxation methods before performing. Don’t forget that a relaxed brain sharpens senses. Learn how to relax and how to use adrenaline.

- **The AWE Factor**: Never look up to or at competition! YOU are the champion, YOU are the legend, YOU are the star!

- **The Burning Desire to Win**: Keep in mind that each time you practice, your technique improves! The more you practice, the more winning games you add to your general scores!

- **Translate Failure to Success and Mistakes to Opportunities**: Delete “failure” from your mind. Failure does not exist so you have no reason to perform poorly. Simply focus towards correcting your inefficiencies.

- **Love of Your Sport**: Any competition is a game, unlike life itself. So search to maintain your desire to learn, improve, excel, win and have fun out there on the bowling lane!
Overcoming Common Bowling Challenges

What would your idea of “fast feet” be? I can tell you, this is one of the biggest problems of a bowler! Fast feet occurs when your feet are ahead of the swing during or at the end of the approach. The bowler only feels a little off balance or he/she may be turned sideways at the end of the approach. The “fast feet” phenomenon may also concern other areas of the bowler’s game, such as dropping the shoulder, inconsistent releases, lack of follow through and inability to stay down with the shot and maintain balance at the foul line in the post-position.

How can you solve this problem? Here are common causes and solutions for fast feet problems:

**The Problem: Poor ball placement**

The ball placement is essential to timing. Fast feet is related to poor placement of the key step (the first step in a four-step delivery and the second step in a five step delivery). Another important issue is pushing the ball in an upward direction from a waist high position.

**The Solution:** This might be translated as a simple movement that slowly places the ball toward the target downwards. When the heel of your step touches the floor, you try to time your ball placement. Here’s a tip for you: think to yourself during the key step to step and only after that, place the ball!

**The Problem: Shoulders too far forward**

This causes extra bend at the waist level and not enough bend at the knees level, therefore the ball reaches the lane too early allowing loss of leverage and an unbalanced feeling in the approach.

**The Solution:** Shoulders should be erect and knees slightly flexed. As you begin your approach, the knees should gradually deepen their bend upon sliding without causing any strain. At the end of the approach, your waist should be slightly bent forward. As a general rule, the deeper the knee bend when sliding, the less the waist needs to bend.

**The Problem: Key step too long**

This means that all your steps are too long and so the swing will float through the approach resulting in no power. Usually, five step approaches must watch the length of a second step.

**The Solution:** Try taking a normal walking step and the rest of the steps will fall into place. At a five step, the first step is for momentum and usually shorter than your normal key step.
The Problem: Walking on toes
In this situation you will have too much speed in the approach and your shoulders will be too far forward. This also causes loss of leverage.

The Solution: Here you must place the heel first and toes last in each step. This way the approach is smoother and you can slow down the entire approach. Since the approach builds momentum from the back to front movement of your feet, the leverage will increase.

The Problem: Muscled armswing
You must apply this correctly, otherwise becomes detrimental to timing, leverage and overall consistency of the armswing and it may also cause injury and pain in the wrist, arm and shoulder.

The Solution: When swinging the ball, it should come from the shoulder with a minimal amount of muscling. Practice on relaxing the armswing. For example, imagine your arm is like a wet noodle. Let the noodle swing freely from your shoulder, allowing the weight of the ball to direct the swing throughout the approach.

Bowling Strategies: The Grip
Say you have chosen a ball. Now you have to choose the appropriate grip style. This is extremely important when it comes to your release and the way the ball travels along the lane. There are two basic grips, and when choosing one, you should consider comfort and desired ball movement.

1. Conventional grip – This is the standard grip and you usually see it in a "house ball" (a ball provided by the bowling center). It allows the middle and ring finger to slide into the ball down to the second joint, and the thumb to enter the third hole below. The bowler will thus have a firm grasp of the ball. Since it is so easy to control, this type of grip is used mainly by beginners who are throwing a straight shot.

2. Fingertip grip – This is a completely different type of grip that is used mainly by more experienced bowlers looking to throw a hook. The release of the ball with a hook is much different than that of a straight ball, so the fingertip grip is used to ease in a bowler's fingers slipping out of the ball much easier. Only the tips of your middle and ring fingers (down to the first knuckle or joint) slide into the ball.

Here’s a list of what you should do when choosing the right grip:
1. Establish how you want to throw the ball. Is it going to be a straight ball or a hook/curve?
2. Ask for the advice of a pro shop regarding the grip that best suits you.
3. Ask an experienced bowler to evaluate your swing.
4. Make sure the span of your grip is comfortable, so there is no unnecessary strain in holding and handling the ball.
5. Last, but extremely important: choose whatever feels most comfortable.

**Checking Your Grip**

Are those extra pounds you gained during the off-season starting to bother you? Were you on medication or did your medication change in the last few months? Then you are one of many bowlers that should check the grip of their ball before starting your next season. The overall size of your thumb is affected by the factors mentioned above. A loose or tight fitting thumb will have a definite affect on your swing and bowling.

You should be able to keep a some grip pressure during your entire swing until release point. The fingers take control over the ball from this point on.

If your thumb is very loose, your grip will definitely need additional pressure. This is likely to interrupt the free swing of the ball during your approach and will also interrupt the release process, then the direction of the ball and follow through. Conversely, if your thumb is extremely tight, you will be unable to put your thumb all the way to its base. This procedure will have the same affect as the extremely loose thumb fit discussed above.

How should a good fitting thumb look like? Well, it should be big enough to have a slight amount of pressure on the sides of your thumb knuckle. Some bowlers prefer to have their thumb hole ovaled because the thumb's overall has the shape of an oval. A good fit will help you keep the thumb relaxed and allow it to clear the ball at the bottom of swing and transfer the weight over to your fingers. Thus, the bowler can establish a consistent grip pressure, and a good free swing throughout the approach and release position and develops a sense of consistency.

**How To Improve Your Game And Score!**

**Bowling Tip #1 - Keep Your Arm Swing Loose**

Keep your grip relaxed in the ball. Don’t squeeze your fingers or thumb. Your ball must be fitted and drilled correctly so that you can have a relaxed thumb. A loose thumb hole will make you squeeze the ball and muscle your swing. Try placing a large webbing at the base of your thumb by adding extra bevel around the top of the thumb hole. This will give you a more secure fit.
**Bowling Tip #2 - Use Your Lower Body Leverage**  
Bend your knee to get lower to the lane on the last step. Then slide your foot towards the foul line, but make sure it doesn’t run. This is very similar to sliding into a deep-knee bend. Move your other leg sideways to the opposite side of your bowling arm and make sure you keep your torso erect while getting down to the lane.

**Bowling Tip #3 - Finish Up Close To The Foul Line**  
The distance between the delivery line and you should be of about 6 inches if you want to have an optimal release. This means that the ball is lofted a small distance over the foul line before it makes contact with the lane. Thus, the ball gets further down the lane and it preserves energy when hitting the pins. Finishing too far from the foul line means you’ll have to move closer to it when you start in the stance.

**Bowling Tip #4 - Relax Thumb, Come Through Ball**  
Overlifting or turning the ball during release will only cause muscling and misdirection of your arm swing. What you do is relax your thumb and come cleanly through the ball as you release it and follow through. Keep your eyes focused on your target! You want a strong release? Finish up close to the foul line and make sure you have good lower body leverage!

**Bowling Tip #5 - Bowling Is A Mental Game**  
Carefully analyze your delivery. Think about what you are doing when you practice. Define your good shots and repeat them over and over until they are imprinted in your mind. Visualize the lanes in your mind and practice those perfect shots of yours!

**Bowling Tip #6 - The Drop Away Method**  
This method replaces the push away, so you should hold the ball up in the distance at shoulder level. Then take a small first step but don’t move the ball (don’t push it away). Simply let it drop down into the swing on the second step.

**Bowling Tip #7 - Shoe Sliding Problems (Sticking)**  
A Dexter red slide sole and some Velcro self-sticking fastener should solve the problem of sliding. To do this, cut the red slide sole and the Velcro self sticking fastener the exact size as the rubber heel on your slide shoe. Then paste the Velcro fastener on the rubber heal and fasten the red slide sole.
Bowling Tip #8 - Elaborate Your Own Bowling Style

Do whatever you think helps you improve your game and gives you the highest scores. Anything can work!

Bowling Tip #9 - Watch Professional Bowlers on TV

Your game will improve by studying the styles of professional bowlers on TV or VCR.

**How to Manage Your Spare Game**

Modern games encourage greater power and striking. Thus, spare shooting tends to step back, even disappear in some cases. Good spare shooting abilities are a must for anyone who wishes to have any success in bowling. By practicing even the easiest spares on a regular basis, your game will significantly improve. Here are some tips on how to do just that.

**Go directly for a pin spare.** Don’t waste time thinking about it, just do it! You’ll see how your spare percentages will increase immediately. Why? Because you are learning just how to throw a straight ball to certain areas of the lane. In most cases, bowlers use a “spare ball” made of plastic, which goes much straighter than regular urethane or resin. You should also learn how to straighten your wrist, without “hitting” the ball at the bottom of your swing. This will eliminate a good amount of spin and revolutions on your ball, allowing it to go much straighter.

**Don’t take spares for granted.** Don’t just step onto the lanes for your spare, and mind your delivery. Don’t worry if the pins aren’t going anywhere: a few extra seconds won’t make them vanish.

While practicing before league, or even a tournament, take a couple balls and shoot at the 7 pin (or 10 pin for the left-handed bowlers). This way you can observe your reaction while going across the lane. You don’t want any surprises during the game. Always be prepared for all sorts of situations, gather as much information as possible before entering competition.

Each and everyone of us would like to strike every time we step on the lanes. But let’s face reality: this is not going to happen. Knowing what to do on that second ball will help avoid needless opens, and in turn raise your average. Remember the motto, “Strike for show, spare for dough.”
Bowling On The Sport Condition

Ever since sport leagues and sport conditions appeared, bowlers hungry for greater challenge are able to get just that, as long as there is a sport center near them. Many tournaments are adopting sport conditions for certain higher end competitions. Here are some things to remember about the sport condition.

It is vital that you understand there is no one “sport condition.” A sport condition is a pattern that has a 2:1 ratio of oil or less. This means that the oil in the middle of the lane cannot be more than double the oil applied to the outer edges of the lane. Therefore, you could have many different types of oil patterns that could be classified as sport compliant.

In order to be effective on a sport condition, you must repeat the same shot over and over again and search to minimize the mistakes you make. Try hitting the target as many times as you can. The ball might go anywhere on the lane, but this is not important. All you have to do at this point is throwing the ball the same way repeatedly.

Most likely, you won’t be able to score an average of 260 when bowling in a sport league or in a tournament with the sport conditions on the lane. You’re going to make mistakes, and some of them will be costly! Did you know that the difference between a winner and a runner-up is exactly how the player reacts to a mistake. If you threw a bad shot, don’t weep over it: try to move on as soon as possible. Don’t let a bad shot stop you from throwing very good shots. Remember that a successful player is the one making the fewest mistakes in a similar situation.

Keep the ball in play! When you go into practice, make sure to practice making spares, even on full racks. The best thing about practice is that the score does not matter! So play with your own abilities. Repeat your moves and improve your technique so that when on the lane, in a real competition, your chances of success be as high as possible.

Try to learn everything you can about the sport condition, and try to understand how it works. Knowledge is power, especially in the sport of bowling.

Taking Your Time On Spares

Bowling is very much based on spares. Yes, having 8 or 9 strikes in a game is great, but when the other frames are missed spares, that 250 game becomes 200-210 in a hurry. Here are some
things to think about concerning spares.

**Take your time.** As frustrating as it might seem, just go up and throw the spare shot without lining up. You’ll see this is a good method of knocking out pins. Carefully analyze where you want to line up for the spare and then take your shot. That extra couple of seconds between strike and spare shots can make the difference between making your spare and missing it.

**Don’t hook the ball into the pin when leaving single pin spares.** You must learn how to throw a straight ball at spares (the more boards you cover, the more of a chance the ball has of reacting unpredictably). This takes us back to practicing: you need to know how to relax your wrist at release point. This way, the rotation will be minimum so the ball will go straight down the lane. Recent research has shown that plastic balls generally go a lot straighter than reactive bowling balls so maybe you should consider investing in one of those plastic balls.

**When To Use New Techniques**

Bowling balls can be thrown using many different techniques. This means that intermediate and advanced bowlers are always learning new things. Given the fact that bowling is a permanently changing sport, you need to stay on top of all the changes that occur in the game.

What is the best way to master any new technique? Practice is the answer! By repeating the same things hundreds of times, once you get to handle them, you can use them in competitions. Nevertheless, keep in mind that you should carefully choose when and what to add to your game.

It’s only natural that you don’t be very good from the first time you start learning something new. Therefore, trying something you just started learning in a league or tournament may not be the best idea. First, you need to adjust your muscles to the new motions, otherwise they will not be able to perform as well in a real competition. You may also start trying new things in practice and only after you get to master them try them in competitions.

**Hook Bowling**

There is nothing wrong with straight bowling, though it can limit most players to a 180 average. A straight bowler has a narrow area to hit. In other words, he/she has to focus on scoring well. Then, a rolling ball imparts more force into the pins than a skidding ball but is harder to keep consistent. Therefore, a straight bowler must choose between skidding consistently but with less impact, or rolling with less consistency but creating more impact. None of the two choices is perfect. Only the best straight bowlers can maintain high averages.
You can score more by changing your straight ball to a hook ball, but keep in mind that this may not be easy.

**What is a hook ball?**

Instead of going straight, a hook ball performs a curve after delivery. The bowler’s hand comes from behind the ball, rounding the side that makes the ball rotate sideways. This sideways rotation makes the ball go left or right.

Coming in from the side increases the area a bowler can hit to get a strike (the pocket) meaning absolute consistency is less important. In addition, the ball will have started to roll in order to turn which allows it to create plenty of impact.

Hook bowlers tend to use two styles of hook: the crankers and the stokers. There is a third style in Asia, called a spinner or a helicopter bowler. Let’s see these three types described below.

1. **The Stroker**

   The Stroker’s sliding foot stops right before the ball gets to the bottom of the swing, creating moderate leverage for a controllable ball reaction. The shoulders are very square at release point. The Stroker generally plays straighter up the outside of the lane allowing the ball to gently hook up into the pocket.

2. **The Cranker**

   In this situation, the ball reaches maximum revolutions. This way, more power is produced. The cranker will usually stand with their feet to the left hand side of the approach, and swing their ball out to the edge of the lane. For this, the cranker uses "late" timing (this means getting to the foul line before the ball). They plant their foot and then pull their arm through, bending the elbow in order to keep the hand behind and under the ball and leaving the shoulders open for maximum leverage. Because of all these moves, a cranker is prone to muscle injury.
3. The Spinner/Helicopter

This style is very popular in the Asian variation of bowling. In fact, it originated in Taiwan, where lanes were not always in very good shape. In this style, spinners use ball weighing from 10 to 12 lb. bowler deliberately brings the fingers all the way round the top of the ball, as opposed to the hook bowler who brings the fingers round the side. Regardless of the oiling pattern, the ball travels straight down the lane but it rotates in a similar way to helicopter blades (hence the name "helicopter bowling"). No other technique hits the pins as this one. Once you get to master this style, it will prove to be extremely effective.

The Lane

The Pindeck

The diagram below shows the arrangement of a pindeck. Here are the basic measurements of a pindeck:
- distance from one spot to another: 12 inches.
- distance between sleepers: 20.75 inches (1 & 5 pins, 2 & 8 pins or 3 & 9 pins).
- distance between the headpin and the tenpin: 36 inches.
- distance between the centre of the headpin spot and the back of the pindeck: 43.1875 inches.
**The Angle of Entry**

Suppose you are a right-handed bowler and you make the perfect shot into the 1-3 pin pocket. Your ball should only contact 4 pins (1, 3, 5 and 9 pins), as shown below. This is the angle entry. What you should do is try to create the perfect strike where all the pins are swept off the pindeck leaving no pins visible. Conversely, for a leftie, the ball should knock down the 1, 2, 5 and 8 pins.

![Diagram of the Angle of Entry]

**The Lane**

A bowling lane is made up of 39 boards and it measures 42 inches wide. The distance between the foul line and the head pin in 60 feet, with another 15 feet making up the approach area.

There are seven arrows drawn on the lane, and their purpose is to locate 15 feet down the lane from the foul line. The arrows are situated on boards 5, 10, 15, 20, 25, 30 and 35. Consequently, they are referred to as first, second, third arrow etc, with 4th arrow being right in the centre. A right-handed will count the arrows from right to left, whereas a left-handed will count them from left to right.

There are seven dots on the foul line and two others sets of 5 or 7 dots. The two sets of dots (usually five each set), are placed 12 and 15 feet from the foul line. The purpose of these dots is to help bowlers line up for their shot and they correspond with the arrows on the lane. You’ll find them located on boards 10, 15, 20, 25 and 30.

As a general rule, after having been released, the ball contacts the lane at seven boards from the inside of the bowler’s shoe. Remember, this is a general rule, so it does not apply to every player!
If a bowler walks in a straight line up the lane without drifting, and wants to play the ball straight up second arrow or board 10, standing on board 17 should help them accomplish this.
The Oil Patterns

Did you know that a 16lb bowling ball can hit the lane with a force of over 2000lb per square inch? Imagine the amount of friction there would be between the ball and the lane. The oil is placed on the lane for protection purposes. To be more exact, the oil protects the lanes from wearing out and any possible tearing. The oil can be placed differently on the lanes, according to some “oiling patterns.”

Typically, only the first two thirds of the lane nearest to the bowler will usually be oiled. This way the ball will not carry large amounts of oil into the pinsetting machinery and will not cause any breakdowns (if the machinery gets too wet, it might not be able to return balls to the bowlers).

Bowling centers usually place more oil in the middle of the lane, because most of the bowlers play straight in the middle. When balls are rolled, the oil moves to other parts of the lane, and after a period of time the oil quantity is reduced.

With no oil at the back of the lane, the friction between the ball and the lane increases. It is precisely this friction that allows a hooked ball to grab hold of the lane and turn into the pins as opposed to skidding past.

Oiling patterns are so numerous that each bowling centre and mechanic have their own ways of dressing the lanes. Perhaps this is what makes bowling interesting in different centres. A good bowler should thus learn how to adapt to the different conditions offered by each bowling centre. Here are some most common oiling patterns:

- **Flat Oil** – equal amount of oil across the entire lane width.
- **Blocks and reverse blocks** – more oil in the middle of the lane and less oil on the outside boards. This is known as a “wall”, because a wall of friction is created on the outside boards. It is also advantageous for hook bowlers, as it allows them to pursue a very high scoring pattern: the hook bowler will place the ball on the oiled lane, angling it out to the edge boards where the friction increases and allows the ball to "turn over" and hook into the pins (hopefully into the pocket). A reverse block means that there is more oil on the outside boards and less in the middle part of the lane. This type of block is usually created by straight bowlers playing down the middle of the lane and "drying" out the oil. It is a very hard condition to play on and every hook bowler's nightmare.
- *Christmas Trees* – this is one of the fairest possible competition conditions: the oil is placed at each side of the lane, going into a point further down the lane where it creates a triangle similar to a Christmas tree. This oil pattern applies to all styles. The Christmas Tree condition is commonly thought to be one of the fairest possible competition conditions. The oil starts at each side of the lane and goes into a point further down the lane, creating a triangle resembling a Christmas tree. This condition caters for all styles.

![Image of bowling lane conditions](image)

**Bowling Balls**

Materials used to make bowling balls vary, but they are known under the generic name of coverstock. The harder the coverstock, the more likely the ball will go straight. The weightblock is the material from the inside of the ball. This determines how much your ball will hook.
Below is a list of the most common coverstock materials:

**Polyester**

This material, also known as "plastic," has been introduced to the bowling industry in the 1960’s. Balls made of polyester are much cheaper and very durable as compared to other types of balls. The polyester surface is hard and so the friction with the lane is very low. This causes plastic to skid more and have a much straighter direction. Polyester balls are mainly used by beginners, whereas advanced bowlers tend to use them as spare balls.

**Urethane**

In the late 1970’s, bowling manufacturers introduced a new material called polyurethane or simply urethane. Being softer than polyester, urethane produces more friction and it hooks more. Another interesting aspect of this material is that, in order to increase or decrease the hook potential, urethane balls can be sanded or polished. You might want to use a urethane ball when learning to hook the ball or when playing on a dry lane.

**Reactive Resin**

The early 1990’s brought new bowling balls manufacturing techniques. The manufacturers started adding resin particles to the urethane coverstocks, because the resin made the ball tackier, leading to increase of the friction, thus creating more hook. When used on oiled lanes, the resin makes the ball skid more. When used on dry lanes, the friction increases so the ball has a bigger backend reaction for more striking power than prior ball types. Advanced bowlers use the reactive resin coverstock on most lane conditions.
**Particle**

The popularity of resin balls inspired manufacturers to start adding textured particles such as ceramics and glass for an extra kick. This created even more friction, so the ball hook was more controllable on the oiled lane. The hook potential for most particle bowling balls is higher than all of the other types of coverstocks. Because these balls are so aggressive, most particle balls are for use on oily lane conditions only.

**Targeting Aids: dots and arrows**

The DOTS (dowels) and ARROWS on the lane are in fact visual aids indicating the proper alignment for strikes and spares. These aids are positioned on numbered boards.

**On the Approach**

There are three sets of seven dots on the approach.

- The first set is located at about 15 feet from the foul line.
- The second set is at 12 feet away.
- The third set is positioned at approximately 3 inches away.

In some bowling centers, the outermost dots are missing at the 12- and 15-foot levels and the center dot in each set is usually larger than the rest of the dots. The first two sets help you choose where to stand on the approach for strikes and spares. This is called your setup location. The third set will help you or an observer determine exactly where your ball touches down on the lane. This is called the touchdown point.

**On the Lane**

There is a set of seven arrows located at approximately 15 feet from the foul line and a set of 10 dots located at approximately 6 feet from the foul line. These are parts of the Rangefinder ® targeting system innovated by Brunswick during World War II. The approach dots and the lane arrows are in line with the pins, while the lane dots are not.

**How to target for a strike while in your setup**

For this, you may use either the arrows or the dots as your visual target (the point where you fix your gaze). The method described below uses both.
1. Determine your intended target line by starting from the approach dots at the foul line and ending with the arrows at 15 feet. This target line should be approximately 15 feet long. For example, let’s pick a 12-to-8 target line. The ball will touch down on board 12 and cross board 8 at the arrows. Now walk toward your target.

2. Using your mind’s eye, extend this path all the way back to your setup position on the approach. It crosses board 16 at the level of your setup. Walk toward your target.

3. Next, position your bowling shoulder and your ball directly over this extended target line. Both would be over board 16, with your forearm in line with your target. Walk toward your target.

4. Square your shoulders until they reach to a 90 degrees position to your forearm. Walk toward your target.

5. Square your feet perpendicular to your shoulders and parallel with your target line to make sure that you will walk parallel with your swing. Walk toward your target.

6. The lane dots at six feet are closer and easier to see, so now you must drop your gaze back to these and use them as your visual target during your delivery. Since these dots are closer to each other, you can more effectively appreciate where you place your ball along your target line. Walk toward your target.

7. When you start to move, push your ball toward your target and walk toward your target.

**Four-Step Delivery Overview**

This is the simplest and the easiest way to troubleshoot, because the ball is pushed out right along with the first step. During the four-step delivery, there is something for the upper body to do in coordination with each step taken.

**SETUP** – First, take your setup with your feet 3 - 4 inches apart and neither foot leading, then point your feet in the direction of your target. Do not lean forward! You should have a general upright position, with your legs straight, your knees neither bent, nor locked either. To help you relax your bowling hand and arm, hold most of your ball’s weight in your hand opposite your bowling hand (or balance hand).

**STEP 1** - Move the ball as you pick up your foot on the same side as your bowling arm (or your swingside foot), then push your ball straight ahead. Never move it down! Here’s a helpful tip: think of it as placing your ball on an imaginary table having the same height as the ball was held in the
setup. When the ball reaches the limit of your reach with both arms, your swingside heel should be making contact with the approach.

**STEP 2** – Make a pendulum swing by letting your ball simply fall from the arms, then make sure your body is in an upright position. Your head must not follow your ball down into the swing! Let your balance move to a position out, down, and back (about 90 degrees to the plane of the swing) at the same speed as your downswing. Make sure your sliding heel makes contact with the approach as your ball is at the lowest point in the backswing.

**STEP 3** – allow your ball move up to the top of your backswing using its own force. Gravity will do your job! Don’t use the muscles of your upper arm and back to hoist it any higher, otherwise your body will twist as your bowling shoulder is pulled back, and your ball will become late relative to your footwork. When the ball gets to the top of your backswing, your swingside heel should make contact with the approach.

**STEP 4** - Take your last step very slowly on your sliding sole. Bend your swingside knee very deeply so that you have a long slide and enough time to achieve a superior body position for your release. Your body should be in an upright position your balance arm should have the exact position it attained during your second step. This will offer you much better leverage, less fatigue, and more consistently placed shots.

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Take a quick look at this little poem written by bowling scholar Bill Taylor, with my own parenthetic explanations:

"Push the ball (place your ball on the imaginary table)
Let it fall (let gravity take the ball down)
Point to the wall (extend your balance arm out, down, and back)
Walk tall" (keep your back straight and stable)

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**Know your exact position on the approach**

This is very important for your strike ball and your spare ball. The locations relate to your body build and to the path of your ball. Therefore, you cannot just stand in whatever place you might think appropriate and roll your ball toward an arbitrary target without it interfering with the quality of your delivery. You must choose a position that ensures accuracy and consistency in the path of
your ball. This is available for any type of shot. But you should first understand the approach coordinates which involve two dimensions. These dimensions are explained below:

**Coordinate 1 - DISTANCE FROM THE FOUL LINE**

This has to do with how far from the foul line you take your stance (or setup). Most bowlers very often ignore this, but it has turned out to be a critical factor in determining how well your footwork fits your swing. A too “far-back” position will make your steps be probably too long, and your swing will be hurried. Conversely, a too close position will cut your last two steps short, making you lose accuracy and lift during your release. Don’t change your best length after determining it.

How far should a bowler take the setup from the foul line? The player should not use the traditional method of "pacing off" the approach and adding half a stride for his/her slide! This will only position the setup too close to the foul line, so the distance for an effective shot will be too little.

Take a setup position, but keep your back to the pins and your heels about 2 inches from the foul line. Don’t take ball, just simulate a delivery using walking steps. End with a deep knee bend and a slide and then look down to see exactly where the toe of your sliding foot has stopped. Have this place imprinted in your mind, because this is where the backs of your heels should be during your setup.

**Coordinate 2 - LATERAL POSITION, LEFT TO RIGHT**

This will help you determine your alignment for strikes and spares. Imagine you must roll the ball from your setup position without taking any steps. The ball would follow a path determined strictly by the direction of your swing. Of course, you will always need a lateral starting point and a direction to walk for a particular ball path.

Your target line corresponds to the desired ball path so keep your swing plane (or the circle made by your ball in the swing) aligned with the target line! Accordingly, the centerline plane (or your body’s center of gravity) traces an imaginary line on the approach.

In order to keep your swing in line with your target during the approach, your approach line and target line must stay parallel with each. Bowlers usually say: “Walk alongside your swing, never toward it, never away from it!”
The dots and arrows can help you choose what path you want your ball to follow. After having chosen the path, line up your bowling shoulder and your ball with the ball path. Square your shoulders 90 degrees to the ball path. The final touch: push your ball toward your target and walk toward your target. This will considerably improve your bowling technique.

**Starting off Right**

Think of bowling like a college class: every student who “signs up” for a course expects to be taught and have homework. Are you taking bowling seriously? If yes, you should have the same expectations. Bowling offers so many interesting aspects and the only way to understand them is to approach them seriously and systematically.

**Being Taught**

Locate and hire a good bowling instructor and pay him for his services! This should be done regardless of the your bowling knowledge stage. Feel free to search for help at a pro shop professional, a bowling center proprietor, a PBA representative for a referral to a competent bowling instructor.

What is the best way to find the quality of an instructor? Always remember that a good instructor is not necessarily a great bowler, but a good observer who can make a list of the causes of problems quickly and then suggest you some ways of eliminating the cause of the problem. The good instructor understands the relationship of ball fit and total weight to each and every element of the delivery.

You could start by watching and listening to an instructor during a lesson with a student. A good instructor is always objective, always dealing with issues and never with the personalities of other instructors. A good instructor is a problem-solver and a time-saver for the student.

Never choose a poorly informed instructor! A good instructor can always tell you "why," while a poor instructor can barely tell you "how." Be sure not to take enthusiasm for a teaching skill; even though an instructor may be quite motivational, the lesson can still lack substance.

A poorly informed instructor is very likely not to pay close attention during a lesson and he may not know exactly what to observe. His demonstrations may be good, but he may not be able to explain the concepts. Furthermore, if he makes any recommendations, they may refer only to symptoms.
and not to causes! Don’t let a poor instructor use you – the beginner – as a guinea pig! This will only lead you to acquiring more errors.

**Do Your Homework**

The first step here is to purchase a good basic bowling book. You may as well ask your instructor (or a shop pro) for a title. Don’t just read the text: study it and take notes. Always compare your play on the lanes to what you learn.

Pay special attention to the timing between footwork and the position of the ball in the swing. Establish and maintain a pendulum swing and fit the pace of your foot to it. Once your pendulum swing is consistent, everything else (direction and speed of your steps, the orientation of your upper body) will remain consistent. This will help you have a simple, smooth, and consistent delivery.

Remember the dots and arrows on the approach and lane? You should memorize their location! This will help you remember where to stand on the lane and where to fix your gaze during your delivery. Use them correctly and your body and swing will be aligned to the extent that your ball will have consistent direction.

**MORE STRATEGIES**

**Should I Use a Four- or Five-Step Approach?**

**Q:** I learned to bowl on my own and developed a 3-step approach. I’d like to learn how to throw a hook, because recently I received a new ball. Do I have change my approach to a 4 or 5-step? Which one of these approaches would be easier to learn? Could you explain me how a hook works? What’s the starting position of a hook?

**A:** A four-step approach would be of great help. You can’t get a correct swing with a 3-step because you need to muscle the ball too much in order to get to the line in time with the ball. By using a four-step approach, you can make it a lot smoother and this will allow you a free armswing. You should practice these moves under direct supervision of a good instructor. This could help you in the beginning, but as you progress you will definitely need someone to watch!

Here’s how the four-step approach works: start it with your right foot, if you are right handed, and start your pushaway at exactly the same time. Imagine your arm and leg are attached (when one moves the other moves too). Then walk up along side the ball as it swings. You can practice this at
home with your own ball. To throw a hook, put your hand under the ball with your thumb pointing at
the 2 on the clock (for right handed), opposite for left at the release point turn your hand until the
thumb is pointing to 10 or 11 on the clock. Simultaneously, slightly press upwards with your
fingers. This might turn out to be a bit tricky so ask for help. Remember that before trying to add in
the lift and turn, you must learn the approach well. If you really love this game, you won’t mind
spending extra money on the lessons!

Ten Important Tips

1) Equipment: buy your own ball and make sure a pro shop will drill it so it fits your hand. You may
ask the advice of the pro shop when purchasing the ball and choosing the appropriate grip.

2) Approach: Opinions differ greatly when it comes to a good approach. Some bowlers prefer a
good 4 or 5-step approach. On the contrary, others think that any approach is good enough, as
long as you feel comfortable about it. Either approach works just as well, provided your feet and
the ball get at the line at the same time. Don’t neglect your pushball: it is vital to your game, as it
sets up your armswing and ball speed. Pay extra attention to the next part of the approach! When
getting to the foul line, stay down with a good knee bend and be stable. This way you will have
more control over the shot. Don’t jerk-up at the line, because this will only make you move your
head too much and pull the ball so you won’t be able to keep your eyes on the target.

3) Armswing: when setting up, hold your ball outside your body. This will stop your armswing from
going inside/outside, around your body. Let the weight of the ball choose the speed of the swing as
your arm acts like a pendulum without exerting force of its own.

4) Release: This is by far the most important part of your game. Always try to keep your palm
-facing upwards when releasing the ball. When your thumb releases, your hand rotates around the
ball. Probably you’ve heard many bowlers saying the best way to make a hook is by spinning.
Well, they’re wrong. A good hook is made by rolling end over end by staying behind the ball.

5) Follow-through: This dictates the direction of the ball. Many average bowlers cut their armswing
short after releasing. But a good follow-through requires having your hand end up next to your right
ear (for
righties).

6) Aiming: When practicing, choose a board or arrow to aim at when you throw the ball. This
means that you “mark.” If you are a rightie and you are hitting your mark but the ball is playing to
the right of the pocket, simply move your feet several boards to the right on the approach.
Conversely, if you are hitting too far left, then move your feet left.

7) *Lane Conditions:* Always try to locate where the oil is on a blocked condition (usually from the 10th board to the 10th board). Play just inside of it, permitting the ball to "drift" into the dry producing a strong backend reaction. A spotty or reversed-block condition (dry inside and oil outside of the 10th board) requires straighter play. Another important factor is ball selection: you should use a urethane ball for spotty conditions. Because it doesn’t overreact.

8) *Tempo:* Be prepared to bowl before you step on the approach. Get ready while the person who bowls ahead of you is in the process of bowling.

9) *Mental Preparation:* Imagine in your head what is going to happen before you throw the ball. Remind yourself of critical tips such as staying down at the line and following-through. And always keep your cool and stay under control.

10) *Practice:* The only way to be consistent in bowling is through practice. Practice gives us the muscle-memory necessary to throw the ball the same way over and over again. When practicing try not to keep score. Work on those aspects of your game that need addressing. For example, if you are prone to missing 10 pin spares then practice them repeatedly.

**Semi-Finger Tip Grip vs. Full-Finger Tip Grip**

**Q:** What is the difference between a full finger-tip grip and a semi finger-tip grip?

**A:** With full fingertip drilling, the middle finger and ring finger are inserted to the first joint nearest the fingernail. With semi-fingertip drilling, the same fingers are inserted into the ball down to a point somewhere in the middle between the first and second joint. With conventional drilling, the same fingers are inserted down to the second joint on the same fingers. In all 3 situations, the thumb is fully inserted into the ball.

The semi-fingertip drilling used to be somewhat popular years ago, but nowadays it is rarely used. This is primarily because it does not fit as well as the full fingertip or conventional drilling (these other two drillings insert the fingers right up to a joint on the fingers). The semi-fingertip is not a natural insertion depth into the ball but the full fingertip drilling and the conventional drilling are both more natural setups.

If you want to improve your game, switch to full fingertip drilling. It will allow you to have better control on the rotation of the ball, therefore the pin action will also improve. Full fingertip might add to the complexity for new bowlers to adjust to.
Once they switched to full fingertip, higher averagers almost never want to come back to the conventional drilling. Even if at first glance the full fingertip drilling might seem hard to control, you’ll find out that it’s exactly the opposite. Once you learn how to do a correct full fingertip drilling, you’ll find that it actually allows you to use a heavier ball without increasing the loading on the body.

**Armswing Fundamentals**

What does armswing mean? Basically, your arm goes through to make your shot. Here are several different movements that comprise your arm swing.

1. The “push away” or the initial movement means that you must push away the ball away from your body to begin the swing.
2. In the next step, you should keep your arm straight and begin the pendulum motion of the swing, bringing the ball behind your body.
3. The “backswing” means that you start bringing the ball behind you.
4. The “swing” follows your backswing, as the ball starts to move forward again.
5. After the ball is released down the lane, your arm should continue in an upward fashion. This is known as the “follow through”

**Release**

There are two basic types of releases.

1. Your hand should maintain the same position throughout your swing. This works easily for straight bowlers.

2. When coming through your swing and are about to release the ball, your thumb should rotate 90 degrees from a 12:00 position to a 9:00 position, in a smooth fashion. This type of release is used by players who want to throw a hook.

**Timing**

You should be able to execute your approach and armswing with consistent rhythm, tempo and balance. Never forget that timing is extremely important, and will take practice to achieve. The benefits of good timing include a consistent release, some degree of control and hopefully high scoring.
How to Choose a Type of Shot

All effective bowling shots are divided into three categories defined by their actions, as follows:

1. **Straight ball** - This shot is used mostly by beginners, and involves throwing your ball in a straight line down the lane.

2. **Curve ball** - Throw your ball so that it moves in a smooth arcing motion down the lane. This way the ball should enter the pocket at an angle and the "pin action" will increase.

3. **Hook shoot** - Throw the ball so that it moves down the lane in a straight line, but breaks towards the pocket at the end. This shot is thrown for more "pin action," and is usually thrown by more experienced bowlers.

Rushing the Line

Most bowlers at any level usually develop the ability to deliver the ball consistently with the same approach, release and ball speed. Let’s say you achieved a certain level of consistency. At this point, you must face a real problem: rushing the line.

As your approach and delivery become more and more consistent, you’ll feel the need to speed up the process, thus the term “rushing the line.” Once you start, it’s difficult to slow down, relax and follow the technique appropriate to your current bowling level. Since you can’t always tell when you are rushing towards the foul line, here are some hints:

1) You are topping the ball
2) You are dipping/scooping at the line
3) You feet get to the line before the ball
4) The heal of your slide foot is sticking on the approach
5) You deliver your ball across your body instead of delivering it toward the pins

There will always be somebody to tell you that they think you’re rushing toward the foul line. These little observations can be very helpful for you as you can correct your “rushing” mood. The best thing you can do is start counting each step as you approach the foul line. Then, follow through just like you did hundreds of times before. Don’t mind your current score and try to count your steps slow. Your arm swing must be consistent with your feet. Most important: do not focus on anything else but hitting your target! You will probably have to do this exercise a few times in a row, until your game slows down to a correct pace.
Once you hit your target, watch the ball! You won’t regret all the counting! The results will simply amaze you! If you find yourself rushing the line, count your way through it and until the ball knocks down the pins.

**Strategies to Improve your Shots**

**Understand Your Equipment**

Among the three most asked questions that bowlers have:

1) What is the pin on the ball?

2) What are the pros’ criteria when selecting the preferred drilling position?

3) How do the pros get the balls drilled on tour?

The pin is a colored dot on the ball. It indicates the position of the top of the core in the ball. It is highly important that the ball driller know where the core is in the ball. Now, imagine how a ball is built: the core is anchored by a small rod and is suspended in a mold. The cover stock is then poured into the mold. After the cover material has hardened, the ball is removed from the mold. The rod holding the core of the ball is removed, too. The hole in the ball has to be filled and it’s usually filled with plug material. This looks like a dot on the surface of the ball.

Columbia used to be the only company to color these plugs until the early 1990’s. In the mid-70’, the dots started being used as some sort of makeup of the ball (take the example of Columbia’s Yellow Dot). Until then, Columbia was manufacturing a hard plastic ball with a white dot in the middle of the label. After making the Yellow Dot, everyone started to refer to Columbia's balls by the color of the dot.

The resin-urethane balls have strong cores, so it is extremely important for the ball manufacturers to color the plug, so that the bowlers could see what they are dealing with. The center of gravity (or the “cg”) helps us identify where exactly the core is and how far it is. Usually the cg is marked by a small punch mark on the surface of the ball. Why the cg so important? Well, depending on its position relative to the pin, it determines how we drill the ball for the reaction we’re trying to get.

Very few high-performance ball labels are located near the pin and the cg. Usually they are located away from the drilling area, so the ball driller can see the cg and the pin. The only balls that still put the label over the cg are the plastic balls and the lower-price resin urethane balls having a
pancake-style weight block. Columbia is the only company that having the pin and cg in the same spot on their plastic balls.

The professionals usually choose their drillings based on what they feel will work for them. They need to have strong knowledge of bowling ball construction (this includes core, cover stock, and how they influence each other).

Imagine there are two bowlers (with equal talent!) bowling equally well. Which player do you think will win? Tough one, isn’t it? Well, the player with the better ball reaction will always win! All the professional bowlers consider the lane condition and the ball reaction they’re getting if this reaction is not good, they start thinking about what piece of equipment and drilling configuration will help them get the reaction they need to help maximize their performance. So, if you want to become a pro, you need to know how to get the right ball reaction through the use of equipment. This will help you not blaming bad bowling for a problem caused by using the wrong ball.

Usually, the pros look for the right type of ball movement according the condition they are playing on. For instance, if you are bowling right after the lanes are stripped and oiled, this will significantly affect your front-end skid and back ends as the ball will automatically slide down the lane and finish hard without a lot of effort from the ball or from the bowler. On this type of condition, you need to have the ball set up so that you can control the movement.

Because of carrydown, the heads will be hooking early and the back ends will be tight after a lot of bowling. This will affect the shot, you will need a ball that goes long and finishes hard. Besides, during the day you could encounter many different ball reactions between these two extremes.

The good news is that the ball companies have staffs of players on pro tours. Their job is to help the players repair the ball if there are any problems. These persons are generally called ball reps. A ball rep must watch the ball reaction as the players use the balls manufactured by his company. Therefore, if a bowling player requests assistance, the ball rep will watch the player and make some recommendations about the appropriate equipment to be used. We can say that the ball rep has the role of a consultant and sometimes he may act as a coach.

Players can’t always afford hire a personal coach to accompany them on tours. That’s why the ball rep is a very valuable person for the players while on tour. Even the pros who bowl on a daily basis need advice from a pair of experienced eyes because sometimes it is quite difficult to establish if
you’re throwing the ball properly or not. Once again, selecting the right ball depends on lane conditions and, of course, each player’s personal technique.

Another good aspect is that the tours often feature “traveling pro shops” that will drill balls for the players while they’re on the road. If a player feels his arsenal does not contain some specific item used for drilling the ball, he may ask for help from the ball rep or the tour ball driller.

Given the fact that pro tours are very difficult, players can’t literally survive without having a good understanding of equipment and how to use it to be able to keep up.

**Don’t Be Afraid of Change**

In order to improve your scores, you must adjust to the lane. Also, you need to have a strong physical game that will allow you to repeat shots at about 80% of your "perfect" shot. If the ball hooks too much or not enough, you make a shot at 80% and the ball hooks too much or not enough, feel free to make adjustments.

**The Four-Shot System**

The three aspects you must pay attention to when watching ball reaction are:

1) the distance the ball travels down the lane before changing direction;

2) where the ball is from left to right when it changes direction;

3) how fast the ball moves from right to left for right-handers (left to right for left-handers).

Once you get all the information during practice, you can get lined up correctly from the start.

Choose a 4-shot system when you start practice. With your medium release and medium ball, first shoot the 7-pin using the cross-lane method. This will help you see whether the middle of the lane and the back-end reaction is oily, medium, or dry.

Your second shot must be at the 10-pin. Use your medium release, medium ball, and the cross-alley spare system. This shot will offer you information about the middle of the lane and the back-end reaction.

Your third shot must be at the 2-pin. This way you will get specific information about the area of the lane near the pocket.

Your final must be a pocket shot. By now you should have made an idea of how much and where the lane.
Mind the Personality of the Lane

As you should know by now, the oil changes as you bowl, thus changing your ball reaction. It is vital that you keep your eyes and your mind open, and always make decisions based on sound analysis of the situation. If you question your decision and shoot halfheartedly, the result may lead you to losing frame after frame. Fast, bold adjustments will keep you on the lane much longer!

The reaction of the ball very often offers essential information on the “personality” of the lane so carefully watch your ball travelling on the lane. Watch what the ball does all the way down the lane, observe the shape of the shot so that you can make all the necessary adjustments.

Adjustments

Bowlers use two major types of adjustments: alignment and ball choice. Why major? Because your adjustment usually will involve changing alignment, ball choice, or even both. The minor include speed, loft, release, and finger pressure.

There are quite a few ways of controlling the ball reaction. Changing your alignment means you must move your feet and/or your target to match ball reaction to what the lane is giving you. This means you also must move your body to match up with the line on which you want the ball to roll.

Changing your choice of bowling equipment is another way of controlling the ball reaction. This allows you to change your ball reaction without actually changing how you deliver the ball physically. Since you have so many choices on the market today, you should understand how powerful bowling balls can be. As a matter of fact, different balls do different things. By changing coverstock type, surface, layout, or grip, you can see dramatic differences in ball reaction on the same lane.

We were talking about minor physical adjustments: speed, loft, release, and finger pressure. These elements are used intuitively by very good players. Minor adjustments make a difference of getting the ball to go two feet farther down the lane before it hooks. At a high level, this can mean the difference between being a top-10 and top-three player.

Tips for Senior Bowlers

You're never too old to bowl and besides "winning never gets old." One of the most appealing aspects in bowling is that age is not an obstacle. Simply adjust your game to what's happening or
what has happened to your body. You can enjoy bowling even if you are 65 or 70 years of age. Here’s a little detail that can make a difference: one of the oldest active league bowlers passed away at 106 years young. So don’t hesitate to get back on the lane, practicing this sport of individual achievement and competitiveness, used by some for recreation, gambling, socializing, exercise and a method of stress relief.

Both senior and younger bowlers goal-oriented. Let’s face it, we all bowl for the competition! Just like in real life, bowling dictates competitiveness. Can you remember just one time when you were happy with yourself for missing a single pin spare, or fouling, or not being able to throw the big strike for a win? Don’t underestimate your desire to bowl well, we all want to improve our game. Senior players with high average may continue to be proficient and are probably still competing in good leagues and tournaments with higher average bowlers. The simple fact of being able to bowl regularly provides the major source of enjoyment for seniors, not the pursuit of high scores! If you’re good at something, you surely want to display your skill so don’t let your age stop you practicing something you’re very fond of! Even though your methods were invented long time ago and they might not work so well in today’s game, you can still learn some new techniques.

For starters, get rid of that 25-year-old ball! Don’t you think it’s too heavy? Besides, your body changed during all this time, you added a few pounds, your fingers changed in size, not to talk about arthritis, rheumatism or injuries that occurred over the years.

The other part of the coin here is that seniors often underestimate their physical strength and tend to choose a ball that is too light. Well, a ball like this usually causes the swing to be flat uncontrollably, thus creating poor direction, loss of roll and hitting power.

Always remember that selecting the proper ball type may achieve wonders! You’ll be able to fully enjoy your game with friends and neighbors. Choose a ball that you can swing comfortably for at least three games in a row. If a pound lighter ball picks up your overall ball speed by 1/2 mile per hour, you could in effect still have as much hitting power as the heavier ball.

Proper ball fit can help you improve your scores. Now, wouldn’t that make bowling a lot more fun? Seniors generally use balls that were drilled many years ago. Make a point to have your grip checked, you probably haven’t used your equipment in five or ten years. Go to a local pro shop and have your grip checked. The conventional grip suits best senior players. You can also drill an extra hole or two. This might really help you! If not, just purchase your own ball, new or used, and have it fitted correctly.
Use wrist supports. Seniors don’t have the wrist strength to hold the ball in the proper position through the swing. A wrist support can be very effective for that matter, but make sure when you have your ball fitted you are wearing your wrist support during the measuring process.

Closely analyze your approach. You’re probably starting on the last row of dots or over striding. Ok, so this method might have worked years ago, but now you don’t have the same flexibility. With the start of every approach, more than 145 muscles move in a coordinated effort to deliver the ball at the pins.

- **The Five-Step Approach**: This is the extra step approach, but is used by most seniors because they are flat swingers. This causes your swing speed and follow through to be overdeveloped. If you adopt a five-step approach, your game will definitely improve in terms of speed and scores!

- **The Three-Step Approach**: This approach is useful when you feel you are slightly uncoordinated or find it difficult blending the arm swing and approach. Take your stance about 9 or 10 feet from the foul line, hold the ball below the waist. Start your approach with the left foot, after initiating a slight upswing. This will decrease the need for coordination and will offer you more control over the ball direction.

- **One-or Two-Step Approach**: This applies to seniors who have not bowled before.
VI. Mindset

What would you feel if you were to bowl in front of your home town crowd or against your idol or the best players in the world? Wouldn't feel fear of the unknown? Wouldn't you be unable to concentrate? Not to talk about technical errors!

It’s your mind that determines how you react to the various distractions while standing, observing, playing and walking off the lanes after a shot. Mark the words of the great Chinese philosopher Chuang Tzu: “When an archer is shooting for nothing, he has all his skill. If he shoots for a brass buckle, he is already nervous. But if he shoots for a gold ring, he goes blind or sees two targets - He is out of his mind!”

You are the archer. Your skill has not changed. You are divided between the prize, the competition and the emotions. Therefore, you think more of winning than of making the shot.

The need to win drains you of power. You must learn how to control your brain during a competition. You must learn and believe that you can master the game, the shots, the deliveries. You’re number one! You have trained in the most effective way, so trust what you learned! You can always improve!

By now, your mechanics, physical adjustments and methods of delivering the ball should no longer be a problem. Your body should know what to do. This is called muscle memory. No effort or thought is required to bring back all that you have trained.

Determine which aspect you want to focus on during your game: a solid stance or the grip of the ball, balance at the foul line or height of follow through. But do this before starting the game, before stepping up on the approach! Concentrate on one aspect!

Make sure not to judge yourself as you are performing. You can do that later. When you are about to make the shot, for example, do it with commitment and dedication and then feel it as you are doing it. Don’t talk about this while on the lane: just feel your play.

Don’t pay attention to the reaction of the crowd (this may include your instructor, family members and friends). This can seriously distract you from your game.
The most important thing you should definitely do while bowling is enjoy your game! Your performance on the lane is the result of hours and hours of training. It’s time for awards, not for corrections! Don’t be too self-critical during your performance! You can do that back at the training place. You’re in a competition. Celebrate your skills and knowledge. Have fun!

**Learning Experience or Skills**

Life offers you plenty of situations from which you can extract lessons that will prove to be useful while on tour. Absolutely everything and everybody you interact with is important for your game. Learned experiences and skills will reinforce your game and your overall scores.

Consistency is the key to success both in sports and life. Now, let me make sure you know what consistency means. Consistency is closely related to performance. True success means permanent practice, under all kinds of conditions. Inconsistency will win some of the time; consistency will win most of the time. It requires the same concentration, determination, and repetition on every shot and every attempt.

Here’s what you must do to be consistent:

- Take nothing for granted. Don’t let anyone or anything knock you down.
- Be proud of what you do. Be proud of how you do it. Did you know that the things you do well are the things you enjoy doing?
- Consider all your chances. Be honest to yourself. Risk something if you really want to win something.
- Develop a personal plan. Analyze your play. Imagine how you could improve your shots.
- Don’t take "no" for an answer. You can do what you believe you can do.
- Celebrate the victory!

**Playing To Your Potential**

Bowling is an individual game, and each player has his own ideology and approach to the game. Good physical skills will enhance individual performances during competition. Repetition of those skills is very important, also. The keyword here is “trust”, the belief that the player has to act properly and successfully. Trust is one of the many mental processes a world-class player must
never lack.

Trust your knowledge, your self-reliance, your confidence, your personal abilities. Have faith in yourself! Think of those countless hours you spent studying, training and practicing bowling. They have helped you obtain all the physical skills that will guide you to the highest levels. Feel your game and enjoy being out there on the lane: trust your bowler instincts. Trust your subconscious mind on how to mentally play the game.

If you learn how to overcome anger, fear, frustration, disappointment, and whining, you'll be more relaxed and your mental condition will allow you to make the correct decisions. You'll avoid the “panic syndrome” that makes you lose your sense of judgment. Let me explain you how this works:

- **Recognize** – this means that a player uses his powers of observation to feel or see what happens or within himself. This concept also helps the player see how the lane surface interacts with his style of play, both at the physical and mental level.

- **Analyze** – in this situation, the player uses his mental capacities to obtain all the data that is necessary for adjustments. Thus, the bowler can make all the corrections for the next shot. This may lead to changing style, hand position or even bowling balls.

- **Process** – here again the players must use their mental capacities to accept the previously analyzed data and then put it into their next shot.

- **Materialize** – this actually means putting in practice the technique. It requires concentration, focus and good execution.

Understand that you cannot deliver a perfect shot each time: learn to accept this fact. Once you have that settled in your mind, you will be able to keep focusing on the next shot at hand. For example, when bowling on tough lane conditions, or even on easy conditions, keeping the ball in play should become routine. Make sure you keep your mind on the tournament. Thus, your play will be successful and your scores will reach the highest level. The minute you stop concentrating on your next shot at hand, you are very likely to perform less proficiently.

One can easily tell a player that has a strong mental toughness from a player that lacks this type of strength. Mentally tough players don’t let themselves be distracted by the lanes, ball reactions, their peers, and develop an inner strength to pursue their dreams through many years of failure and disappointment. Great players never underestimate the importance of the right mental approach to the game. A player must be very confident; but be sure not to confuse it with vanity or
pride. Vanity is telling others how good you are; confidence is telling yourself how good you are.

Bowling has been developing a psychology of its own. A player has to pass through numerous stages: unconsciously incompetent, consciously competent, and unconsciously competent. Generally speaking, the best players strive to stay on the third level, as they only want to see the target and let it go. They realize how much better their swings are and the more sharply they focus on their target but they tend to have no thoughts about mechanics at all. They don’t consider a very important factor: positive attitude during competition. Nowadays, winning scores are high and players have to be free and confident from the first frame, through the first game, the entire block and tournament.

The Competitive Athlete

A competitive athlete has very good knowledge and will always apply mental skills. It’s like computer whose gigabytes are useless without the software to make it run. The competitive athlete’s software is his mind. It controls that collection of hardware known as flesh and bone and muscle. Apart from the physical power, a world-class player must use his mental muscles. This is what makes him different from all the other players. In bowling, especially in the PBA Tour, you would probably have to add experience to this formula. The difference between you and the other guy next to you is almost completely mental.

Years of research and studies have proved that psychological preparation is vital in any sport, not only when it comes to bowling. Sports psychologists from famous universities around the world agree that a new concept called “mental management” contributes to an athlete’s performance. Sometimes it accounts for 90% of a player’s success.

Successful players are better able than the rest to deal with distractions. It’s amazing how athletes find ways to remain focused on the competition without considering the fans, opponents, environment (lane conditions and general building atmosphere) or personal problems. Successful players attend primarily to those cues or stimuli that are relevant, or within their control.

This takes us back to mental preparation. The intense concentration or focus "mental management" involves a several techniques (imaging, comparing performances, positive self-talk, mental relaxation and achieving what players call “flow”). Any player can benefit from these mental techniques. While many of us may lack the dream or the gift to compete on the tour, we can still use our minds to improve our sports performance.
Mental rehearsal refers to feeling and imagining the movements you (the player) will do. A
Canadian sport psychologist discovered that 99% of the 235 athletes he surveyed rely on this
technique to prepare themselves for competition. Furthermore, studies by the U.S. Olympic
Training Center showed that 94% of coaches use mental rehearsal for training and competition.
The mental techniques used by players are numerous and very different. Some may even talk to
themselves while preparing by saying, "I want to win this tournament." Then they elaborate a
detailed plan with strategies and coping methods. They visualize the whole action and then enter
the tournament with it imprinted in their minds. Others will begin their visualization techniques a
couple of days before the tournament. They picture themselves in the settee area, than up on the
approach in their stance and beginning the act of the delivery. This is a good method, because you
won’t have to worry about all the little details when on the lane.

Now let me tell you what exactly imagery training involves:

- Focusing on the most desirable aspects of the performance
- Emphasizing the feeling of the activity (by including all senses that come into play)
- Conjuring the image several times
- Envisioning the whole bowling environment
- Incorporating competition strategies into the images.

**Comparing performances** with competitors who have very similar qualities helps players build
self-confidence.

**Positive self-talk** is in fact an internal dialogue that helps athletes assess their performance. Be
careful not to go on the negative self-talk side! This may be worse than no talk at all. Don’t use
negative sentences.

**Relaxation** is vital when even the slightest deviation from the norm can throw the player off
competition. The stress generated by the tournaments is likely to turn into muscular tension, which
detracts from performance because it disrupts the natural rhythm. As a general rule, players use
deep breathing to help their body relax before the next shot.

**Flow** includes a series of feelings such as bliss, euphoria and contentment. This is what players
feel when their physical and mental aspects of performance are completely synchronized. Nothing
else matters in that state. Some players see it as an “out-of-body” experience, others claim that in
those moments they don’t feel their legs and arms anymore. All that matters is the target and the
path of the ball traveling to the pins.
**Taking it to the Lanes**

Maybe your physical attributes or experiences are not good enough to perform at the highest level in any sport, but if you adapt the same mental techniques used by athletes, your game will surely improve. Here's what you should do:

1. **Set realistic goals.** Always know exactly what you want to accomplish. Achieve your goal by clearly pre-established steps.

2. **Build self confidence** by being honest about your skills. Don’t be so sure you’ll shoot 300 after not practicing for a long period of time! Think on what you have accomplished before and have faith in your current potential.

3. **Relax.** How to do it? Think about something that makes you feel comfortable, breathe easily and fully. Picture soothing images or scenes that make you feel genuinely good.

4. **Imagine your performance.** Imagine how will you react and feel as you break the 200 barrier, being the tournament leader. First see yourself in this position, then make it happen!

5. **Positive self-talk.** Believe it or not, this is your way to success. Tell yourself that you will accomplish your goal because you all the necessary skills. Keep coaxing yourself, and listen to your self-talk.

6. **Control distractions.** Make a quick list of everything that might distract you from accomplishing your goal. Then eliminate everything that you can't control. Concentrate on the here and now.

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**Teach your mind how to win**

Mental techniques are perhaps even more important than physical ones. So try to work on your mental skills, as they will definitely improve your game. This will lead to greater success in scoring and you’ll be able to enjoy your game more. The areas that you should concentrate on are self-talk, mindset, focus, goal setting, visualization, and pre-shot routine.

Just work on these areas and you’ll see the good effects! Your bowling and your mental approach to life will improve considerably. Think of bowling as to a microcosm: all the bowling skills that you manage to enhance will make a difference in your life. The “self-talk” is even more common that you might have imagined! We are all doing it! Each and every aspect of our lives requires self-talk. It’s true, the competition self-talk differs slightly, but it can make you a more disciplined bowler.
Have you noticed that the communication between you and your coach has a certain degree of respect? But when you get on the lane, you must rely only on yourself. You are now your personal coach. So treat yourself with the same respect. Would you want to hire a coach that treats you disrespectfully? You might be really surprised of what your inner voice is saying to you. At the beginning you’ll probably need to practice some thought-stopping technique in order to generate positive thoughts. Before a competition, tell yourself that no matter what happens, you will give 100 percent on each shot. Even if you’ll miss a few frames, tell yourself you will still continue to make each shot with your full effort.

Another mental game is keeping yourself focused. Your mind is very active while working on your physical skills, so you will need to decide on the skill you’re working on, otherwise you risk missing your shot. Be sure not to keep score when working in this mode. Be patient with your progress, and remember that you’re focused differently than you would normally be in a competition. Typically, when athletes in any sport are asked about their best performances, many say they weren’t thinking about much, they were just playing.

When in competition, pay attention to what the ball does as it goes down the lane. Your eyes should be on your ball reaction, interpreting what the lanes are doing by that reaction. This is happening outside of your body and is referred to as “external focus.” This focus allows you to make decisions faster in respect to how you’re lined up and which ball you’ve chosen to use.

Another strategy is goal-setting. This will help you plan your work and you will have a series of pre-established steps to follow. You will be able to identify important performance keys and establish quality practices. When setting your goals, “S.M.A.R.T.” summarizes some cues in developing your goals:

- **"S" is for specific.** Restate your goal, if it’s not specific enough. Instead of saying "I want to be the best bowler in my league," consider taking a smaller step: "I want to be a better spare shooter."
- **"M" is for measurable:** "I want to average nine out of 10 single-spare conversions."
- **"A" is for attainable.** Make your goal one that is possible. Remember that a 300 is not easily attainable!
- **"R" is for realistic.** If your goal isn’t attainable or realistic, then it may lead to discouragement that may keep you from progressing.
- **"T" is for timely.** Use short-term goals to plot your course to your ultimate destination.
If you intend to move forward as a bowler, you can find motivation and inspiration in your pre-established goals. There are two different types of goals: process goals and outcome goals. A process goal is action-oriented (getting a consistent start matching your footwork and armswing tempo) whereas an outcome goal focuses on a result (shooting my first 300 game).

Your mental plan must include parts of these two goals. **So remember: process goals are best used in practice and in competition**, as they allow you to focus on the actions that will result in good shots; outcome goals are great motivators. Just look back at all the hours you spent training and practicing!

As a general rule, the outcome goals are used outside of the bowling center, but they may add a zing to your practice. However, during competition you are advised not to think about outcomes because this will add extra pressure and while focusing on the outcome, your shot may not be executed cleanly and smoothly.

Use your mind's eye to visualize yourself executing a shot or seeing the ball travel down the lane. This is one of the best mental games that you can use during preparation. Your execution will be much better if you visualize yourself! Besides, you can use it any time, even when you are unable to go to the bowling center! This lets you see yourself win before it even happens. Once you visualized yourself in the winning position, focus on the movements or action you want to execute.

Visualization can also help you develop adaptability and versatility by mentally rehearsing all the things you haven't practiced yet. Imagine your ball is hooking too much. You can picture the move in your mind and “see it” before stepping up to make the next shot. You can also imagine playing a line you've never played before - before you ever attempt it.

Visualization can be either internal or external. Internal visualization is actually "seeing" the movement of your body to the line from the actual perspective of your eyes watching your target as you move. On the other hand, the external visualization is imagining watching yourself move to the foul line from an external perspective, just like a video camera would record your movement. Of course, you may develop a favorite method, but you can also use a combination of the two. The more you practice visualization, the better your game.

Try to practice everyday. As you get better at imagining your game, use as many senses as you can. My suggestion is that you spend 90% of your time picturing yourself execute and dealing with
expected situations and just 10% of your time imagining your reactions to unexpected situations. Don’t forget that creativity is the keyword here!

Many bowlers have some sort of pre-shot ritual that they go through without even knowing it! This is also part of the mental preparation. As you take your game to the next level, plan your pre-shot routine so that it helps you settle in for each shot and perform well. Your routine must not turn into a habit. It should help you remain calm and concentrated.

When bowling, the player is dealing with constant distractions and this is why using the focusing skills is vital. Focusing skills help the player eliminate all the distractions. So, once you’re out on the lane, use your breathing to settle to a calm intensity: take a deep breath in through your nose and let it out through your mouth. Keep your focus external and imagine the path of the ball.

In order to track your progress and continue challenge yourself, you might want to use a goal ladder, for example:

1. Write down there I currently start, look, and slide for each of my single-pin spares.
2. Look at bowling books and get some new ideas on spare shooting.
3. Test some different spare systems in practice and evaluate.
4. Make sure my body stays in line with my target line throughout my approach.
5. Shoot at least seven 10-pins and seven 7-pins at the start of each practice and record my progress.
6. Make a plan for shooting each pin (the 1-pin through the 10-pin) during each practice.

“Self-Talk” Affirmations

PERSONAL AFFIRMATIONS
* I have practiced enough and I am ready for this competition.
* I am ready to give it my best.
* I am a winner.
* I respect myself and my opponent.
* No lane beats me. I can always figure them out.

TEAM AFFIRMATIONS
* Whatever we do, we’ll do together.
* I always encourage and support my teammates.
* My teammates are helpful and beneficial to my game.
* Positive is the only energy source we know.
* Our greatest successes are those we share.
Dealing With Luck

Have you recently watched the PBA players dealing with luck, whether it was good or bad? The important thing for any serious bowler to keep in mind is that there is always an element of luck in bowling! Sometimes the best-thrown shots do not strike, sometimes your opponent is hitting everywhere but the pocket and knocking all the pins down, or breaking up splits that you are leaving. You have to learn how to deal with all these chips stacked against you. This may seriously affect how you approach your next shot.

Many of the pros don't even watch their opponent bowling. Bowling is not like football or tennis, where your actions directly affect your opponent's. Bowling is an individual game: a game of you against a lane and ten pins. For many people, watching another bowler get lucky can disrupt their game.
VII. Advice

Eye dominance is crucial when bowling. It can affect what you see and how you see it. Eye dominance can help you communicate about targeting and visualization techniques. So, when your coach says “Hit 10”, you might translate that into “Look at 8.”

Do you actually know to determine your dominant eye? Here’s how to do it right. Hold your arms out in front of you with the palm of the hands facing away from you. Then touch the index fingers together and overlap the thumbs so that a triangle is created between the two parts of the hands that are touching. Keep the hands at arms’ length and, with both eyes open, put something 10 or 12 feet or even farther away from you in that triangle. Don’t cheat and look at whatever you have chosen with one eye or the other: so it with both eyes open. Close the left eye and then open it. Do the same with your right eye. Have you noticed that when one of your eyes was closed, whatever you were looking at disappeared from the triangle? That is your dominant eye.

Most right-handers are right eye dominant, but there are some who are left-eye dominant. Left eye dominance in a right-hander usually causes a miss left of three or four boards. So, if you want to hit 10, look at 6. The variance in the miss is caused by how far the eye is from the target. What a left eye dominant right-hander sees with is pretty far from the bowling shoulder!

There are exceptions to these rules, however. For instance, you may need to look 2 to the right when playing 10 or out, look at what you want to hit when playing 11 to 16, and go back to looking to the right to play inside of 17. This is not a problem unless you don’t know it. You and your coach must discover what your tendencies are.

Use tape to mark the lane, or you can also use clickers. Clickers are those tabs you find in the office supply store that affix to files. They will attach to the lanes well, cause no damage, come in different colors, and make a clicking sound if hit by the ball. You can place one each on the 6th and 9th boards. If you look between them and hit the one on the ninth board, then you will need to look to the right of what you intend to hit when playing this area of the lane. Move the clickers across the lane until you have defined your tendencies in all the areas of the lane.