

Building A Bowling Ball Arsenal



Two Main Components of a Performance Bowling Ball

1. Core

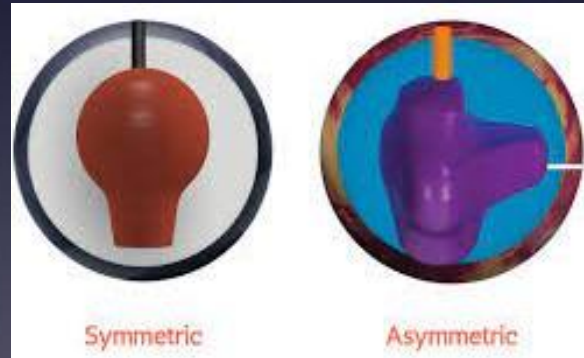
2. Coverstock



Two Different Types of Cores

1. Asymmetrical

- Identified as having a 3rd marking on the ball (Mass Bias)
- Generally 6 ½" or so from the pin
- Tend to be more responsive to friction vs. symmetric balls



2. Symmetrical

- Identified as having only two markings on the ball (Pin & CG)
- Tend to be smoother and less responsive to friction vs asymmetric

Two Main Properties of Bowling Balls

1. Radius of Gyration (RG)

2. Differential (DIFF)



Radius of Gyration (RG)

- Determines how easy it is for a ball to complete one revolution
- The higher the number (RG), the longer the ball will travel down the lane before hooking.
- The lower the number (RG), the earlier the ball will want to hook.
- You can find the RG numbers on the manufactures website

Differential (DIFF)

- Determines the overall flare potential of the ball
- The higher the number (DIFF), the more flare potential the ball will have.
- The lower the number (DIFF), the less flare potential the ball will have.
- More flare potential = more hook potential.

The 2n1 Arsenal

- Building an arsenal depends on:
 - Bowlers talent, traits and style
 - What kind of events you are bowling
- Asymmetric and symmetric balls
 - Look at these separately
 - Build two arsenals within one (2n1)

Example of a Six Ball 2n1 Arsenal

Asymmetric Balls

1. Strong asymmetrical – solid, aggressive cover
2. Cleaner asymmetrical – pearl, less aggressive cover

Symmetric Balls

1. Strong symmetrical – solid, aggressive cover
2. Cleaner symmetrical – hybrid cover
3. Weak symmetrical – pearl, less aggressive cover
4. Urethane/Plastic

Simple 4 Ball Arsenal

- **Build arsenal around benchmark ball**
 1. Benchmark ball
 2. One ball stronger than benchmark ball
 3. One ball weaker than benchmark ball
 4. Urethane/Plastic

Determining Your Arsenal Size

- Based on what you bowl, talent and your needs
- Journal – part of your technical skillset
- Avoid the same type of ball relative to motion and shape (overlapping)

Bowler Traits To Consider

1. Ball Speed
2. Axis Tilt
3. Release RPM's
4. Axis Rotation
5. Ball Surface

- Know Your Bowlers
- Arsenals will be different for most bowlers

RPM	325
Tilt	16°
Rotation	60°

Ball Speed

Axis Tilt

Release RPMs

Axis Rotation

Ball Surface

What About Layouts?

- Avoid “tricking” the dynamics of the ball
 - Example: High RG, Low DIFF, Clean Cover – trying to get it to roll early
- Avoid too many different layouts
 - Find one or two that match your bowler traits
 - Don’t complicate the “puzzle”
- Use the physics and chemistry of the bowling ball

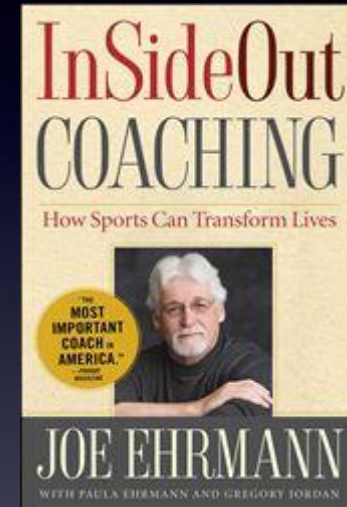
Building A Strong Team

Developing a Winning Culture

Top 3 Qualities of Coaches (in order of importance)

1. Relational – know your players

- Person first, player second
- Insideout Coaching



2. Knowledge of the game – all four areas

- Develop a Growth Mindset
- Avoid a Fixed Mindset

Developing a Winning Culture

Top 3 Qualities of Coaches (in order of importance)

3. Develop teaching/coaching skills

- Understand the process of getting better each day
- Have a daily plan
- Teach life skills
 - Example of bowler in 15 years....

The 4 Skill Sets

1. Physical

2. Mental

3. Technical

4. Wellness

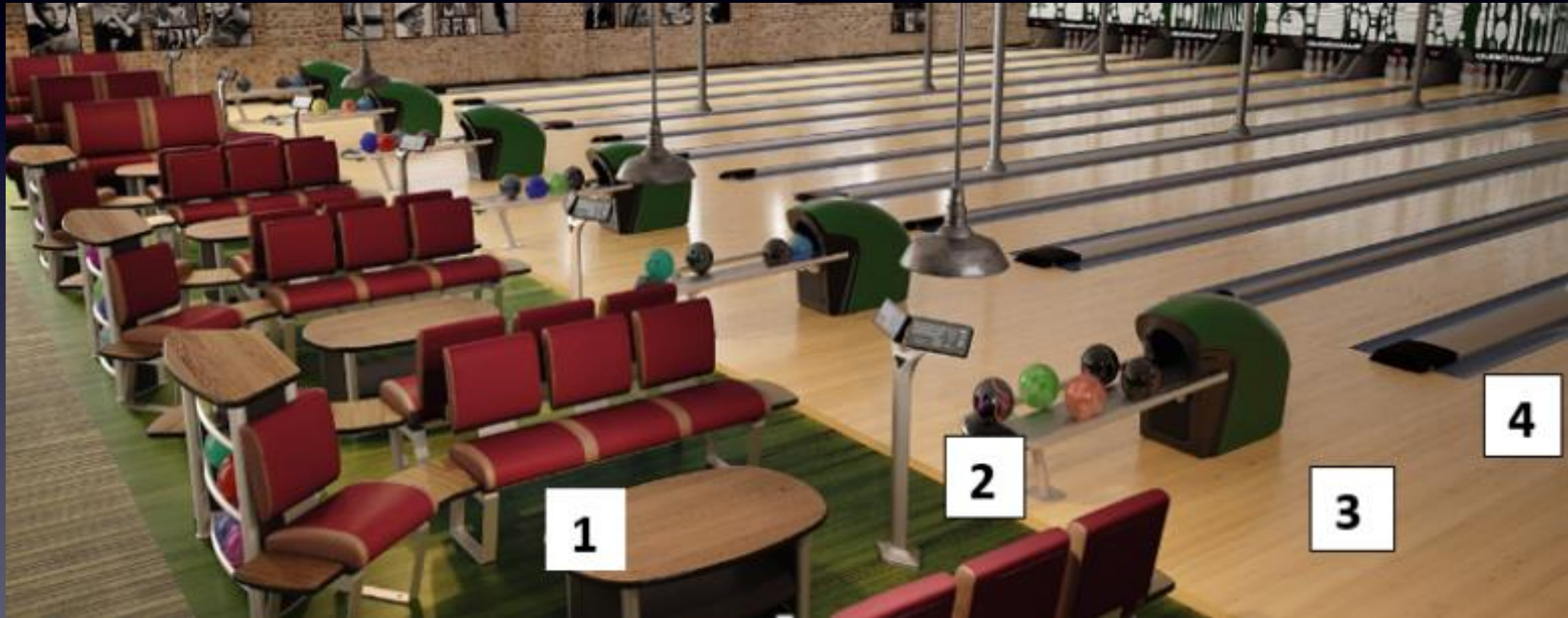
Physical Game

- All bowlers are unique
- Improve strengths
- Development opportunities for growth
- Analyze bowlers for “Cause/Effect” and “Cure for the Cause”
- Use daily/weekly evaluations
- Skill Drills - daily

Mental Game

1. Change perspective on struggle and failure
 - Re-learn it as a positive
 - See failure as an opportunity for growth
 - Result every shot (Win or Learn)
2. Teach to focus only on Controllables
 - Breath, self-talk, visualization, flush, preparation, reflection, etc.

4 Quadrant Routine



Mental Game Scoresheet

Shot by Shot Version

Process Goals										
1. Breath 2. Visualize 3. Commitment 4. Release/Flush										
Frame	1	2	3	4	5	6	7	8	9	10
# of Shots	1	2	2	1	1	2	1	2	1	3
Process	1	2	0	1	0	1	1	2	0	2
Total	PROCESS SCORE _____ 10/16 63% _____									
Notes	Breath, visualization, flush was consistent. Struggled being committed									

Scoring System

1 Point per Shot

- If all 4 Process Goals were achieved for each shot in the frame
- Each shot is worth 1 or 0
- The 10th frame –three points are possible

0 Points

- Zero points are awarded if three or less Process Goals are achieved for the shot

Mental Game

3. Routines

- Pre-event, Pre-shot, Post-shot, Post-event
- 4 Quadrant Routine (present moment focus)

4. Mental Game Scoresheet

- 100% Controllable
- Takes mind off of result/outcome

Mental Game

5. Journal

- Reflection
- Strengths, opportunities, practice plan

6. Read books on the mindset

7. Gratitude

Technical Skills

- Lane play
- Bowling ball arsenal development
- Bowling ball sequencing
- Bowling ball surface management
- Spare shooting
- Visual Training

Lane Play

You Need a PLAN!

- To become a better bowler, you need to begin the process of lane play planning.
- Preparation is the difference between success and failure.
 - More consistency from tournament to tournament
 - More difficult/challenging the pattern, the more planning.
 - Without planning, pins are given away early in the event.
 - How many of you have just missed a cut?

Lane Play

Pattern Length



Lane Play

Oil Volume

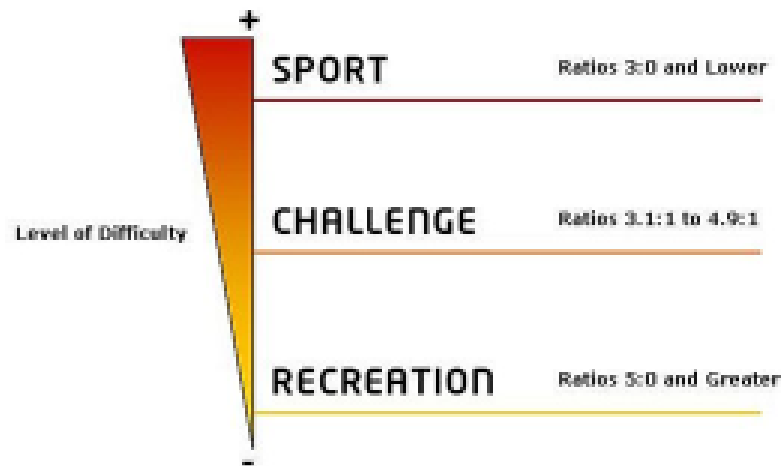
- Low (under 20 ml)
- Medium (21-25 ml)
- High (26ml or more)



Lane Play

Ratios - Oil

- Tells you the difference in the amount of oil from left to center and right to center
- The lower the ratios down the lane the more difficult the pattern



Lane Play

Reading a Program Sheet

Three Important Variables

Oil Per Board: 40 mL

Oil Pattern Distance: 39 Feet

Volume Oil Total: 18.76 mL

Total Boards Crossed: 469 Boards

#	Start	Stop	Ld	Sp	Cr	Start F.	End F.	FT	TOil
1	2L	2R	2	14	74	0.0	1.9	1.9	2960
2	7L	7R	1	14	27	1.9	3.8	1.9	1080
3	10L	10R	2	14	42	3.8	7.7	3.9	1680
4	12L	12R	2	18	34	7.7	12.8	5.1	1360
5	14L	14R	2	22	26	12.8	19.0	6.2	1040
6	2L	2R	0	22	0	19.0	28.0	9.0	0
7	2L	2R	0	26	0	28.0	34.0	6.0	0
8	2L	2R	0	30	0	34.0	39.0	5.0	0
9	-	-	-	-	-	-	-	-	-

Forward Oil Total:

8.12 mL

Forward Boards Crossed:

203 Boards

#	Start	Stop	Ld	Sp	Cr	Start F.	End F.	FT	TOil
1	2L	2R	0	30	0	39.0	34.0	-5.0	0
2	14L	14R	2	18	26	34.0	28.9	-5.1	1040
3	13L	13R	2	18	30	28.9	23.8	-5.1	1200
4	11L	11R	2	18	38	23.8	18.7	-5.1	1520
5	9L	9R	2	14	46	18.7	14.8	-3.9	1840
6	8L	8R	1	14	25	14.8	12.9	-1.9	1000
7	7L	7R	1	14	27	12.9	11.0	-1.9	1080
8	2L	2R	2	10	74	11.0	8.2	-2.8	2960
9	2L	2R	0	10	0	8.2	0.0	-8.2	0

Reverse Oil Total:

10.64 mL

Reverse Boards Crossed:

266 Boards

- Length of the Oil Pattern (medium - 39 ft)
 - Gives us an idea where to play
 - 39-31 = Board 8 for breakpoint
- 2 to 2 Loads
 - The more 2 to 2 loads means play more difficult
- The total volume of the Oil Pattern
 - 18.76ml = Low volume (weaker covers & layouts)

Phantom 2



Oil Pattern Distance: 40 Feet
Forward Oil Total: 10.65 mL
Forward Boards Crossed: 333 Boards

Reverse Brush Drop: 35 Feet
Reverse Oil Total: 11.35 mL
Reverse Boards Crossed: 227 Boards

Oil Per Board: 50 uL
Volume Oil Total: 28 mL
Total Boards Crossed: 560 Boards

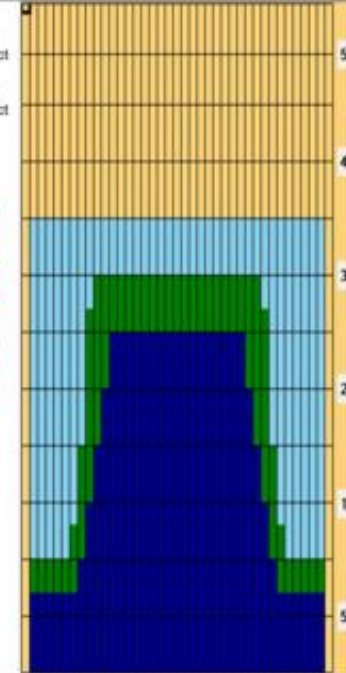
#	Start	Stop	Loads	Speed	Crossed	Start	End	Feet	T.Oil
1	2L	2R	4	18	148	0.0	7.6	7.6	7400
2	8L	8R	1	18	25	7.6	30.1	2.5	1250
3	9L	9R	2	18	46	10.1	15.2	5.1	2300
4	10L	10R	2	18	42	15.2	20.3	5.1	2100
5	11L	11R	2	18	38	20.3	25.4	5.1	1900
6	12L	12R	2	18	34	25.4	30.5	5.1	1700
7	2L	2R	0	22	0	30.5	40.0	9.5	0

Conditioner:
Type In or Select
One

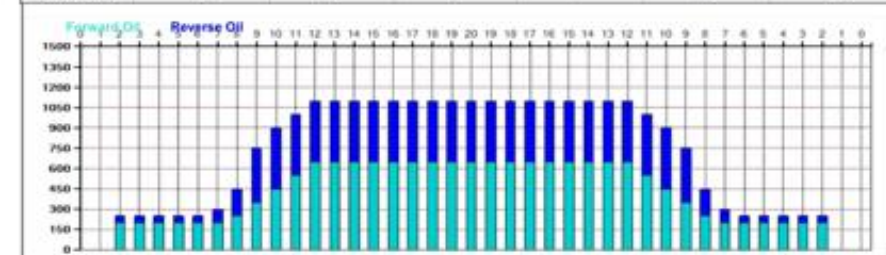
TransferType:
Type In or Select
One

Forward
Reverse
Combined
Buff

#	Start	Stop	Loads	Speed	Crossed	Start	End	Feet	T.Oil
1	2L	2R	0	30	0	40.0	35.0	-5.0	0
2	10L	10R	1	22	21	35.0	31.9	-3.1	1050
3	9L	9R	4	22	92	31.9	19.5	-12.4	4600
4	8L	8R	2	22	90	19.5	13.3	-6.2	2500
5	7L	7R	1	22	27	13.3	10.2	-3.1	1350
6	2L	2R	1	18	37	10.2	7.7	-2.5	1850
7	2L	2R	0	10	0	7.7	0.0	-7.7	0



Item	3L-7L 18L-18R	8L-12L 18L-18R	13L-17L 18L-18R	18L-18R 17R-13R	18L-18R 12R-8R	18L-18R 7R-3R
Description	Outside Track/Middle	Middle Track/Middle	Inside Track/Middle	Middle-Inside Track	Middle/Middle Track	Middle-Outside Track
Track Zone Ratio	4.23	1.31	1	1	1.31	4.23



Wellness Skills

1. Sleep

2. Eat

3. Move

Other Building Skills

1. Classroom

- Learn – Practice - Master

2. Practice plan

3. 86,400

4. Mudita

5. ARETE

Daily Practice Plan Date: _____

Purpose of the day: _____

How will you know you succeeded? _____

What is your inspiration for the day? _____

Plan for the day: _____

What do you believe about yourself or your game right now? _____

3 things you did well today:

1. _____
2. _____
3. _____

3 things you struggled with today:

1. _____
2. _____
3. _____

3 things you learned about yourself or will improve?

1. _____
2. _____
3. _____

Other thoughts: _____

Rate yourself:

Physical										
0	10	20	30	40	50	60	70	80	90	100
<div style="border-top: 1px solid black; height: 10px; width: 100%;"></div>										
Terrible									Awesome	

Mental										
0	10	20	30	40	50	60	70	80	90	100
<div style="border-top: 1px solid black; height: 10px; width: 100%;"></div>										
Terrible									Awesome	

MUDITA

- Develops a Team mindset vs Individual
- Having vicarious JOY for your teammate
- Coach Patrick Murphy – Alabama

ARETE

- Being the best version of yourself moment to moment to moment

Questions?

