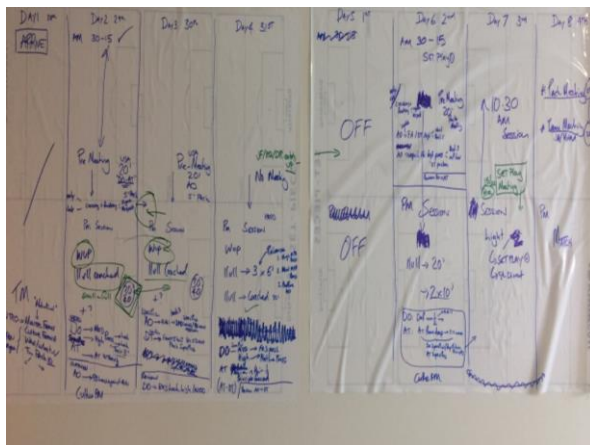


INTEGRATING PHYSICAL DEVELOPMENT WITHIN TEAM SPORT TACTICAL PERIODIZATION

CESAR MEYLAN, PhD, CSCS
Canadian Sport Institute Pacific
Canadian Soccer Association



4 Corners approach



Behaviors



Know you, show you

Right lens, right time, right comms

End in mind, now



Expectations

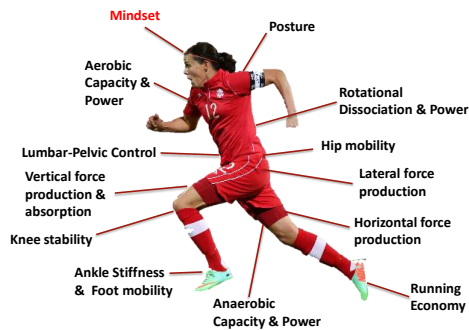


Between The White Lines: Maximizing Return on Training Investment

1. Seek to understand before being understood
2. Build evidenced based training principles
3. Monitor with accuracy
4. Optimize communication lines
5. Fill in the empty buckets



The Footballer as an athlete



Technical		Physical		Mental	
Primary	Rating	Primary	Rating	Primary	Rating
Dribbling	85+	2m Acceleration	85+	Attacking Mindset	90+
Receiving - back to goal	85+	30m Speed	95+	Defensive Mindset	80+
Receiving - in behind	85+	10m Speed	95+	Creativity	85+
Receiving - between lines	85+	Power/Explosiveness	95+	Anticipation	85+
Receiving - off a switch	90+	Strength	95+	Determination	90+
Single touch turns	90+	Speed/Endurance	90+	Aggression	90+
Multiple touch turns	85+	Endurance	80+	Balance	80+
Touch to make	85+	Agility	85+	Composure	85+
Crossing Accuracy	90+	Jump Reach	80+	ATT Decision accuracy	85+
Crossing skills	90+	Balance	80+	DEF Decision accuracy	80+
Running with the ball	95+	Height	80+	Individual Positioning	90+
Individual Movement	95+			Team Positioning	80+
Combined Movement	85+			Work Rate	85+
Shooting top of box	85+			Concentration	80+
Shooting on the run	90+			Tactical Awareness	80+
Finishing in the box	90+				
Shooting accuracy	90+				
Attacking Headers	85+				
Defensive Headers	75+				
Passing accuracy	80+				
1 touch passing	85+				
Creative passing	80+				
Diagonal passing	80+				
Interception Passes	80+				
Pressing	85+				
Intercepting	80+				
Tackling	80+				
Tracking	80+				

Descriptor	Key Stats GMS T1 L1-2-3	Players
<p>The power winger is extremely direct and uses world class pace at every opportunity to threaten the line behind with or without the ball. This player is aggressive with an attacking mindset exploiting opportunity through movement to receive and turn to run at defenders or into space with the ball. Uses pace, power and aggression to be 1st to the ball and can impose themselves defensively in pressing, back pressing and supporting team compactness. Has exceptional 1 touch turning ability and high quality turning, crossing, finishing and passing ability while travelling at full pace. Can assume the R position and takeover basic 2/3 FB responsibilities.</p>		
<p>Technical</p> <ul style="list-style-type: none"> Goal Scoring Ratio: 1:3 AVP's receive in front: 3+ AVP's receive behind: 7+ AVP's create: 7+ AGP: 10+ Total Turns: 3+ Feed Pass Completion: 70% Crossing: 4+ Shots: 2+ Successful ATT Dribbles: 3 		
<p>Power</p> <p>Running at players</p> <p>Aggression</p> <p>Direct</p> <p>Crossing</p> <p>Shooting</p> <p>High Pace</p>		
<p>Power Winger 7/11</p> <p>Rose Prince Dykes Lemontagne</p>		

From the *WHY* to the *HOW*

Physical performance within the context of football:

"The ability to dominate the direct opposition while also applying all principles of the game for 90+ min."

WHY?



Physiological and Biomechanical Qualities to Perform (What?)

Physical Testing

Training Methods (How & When?)

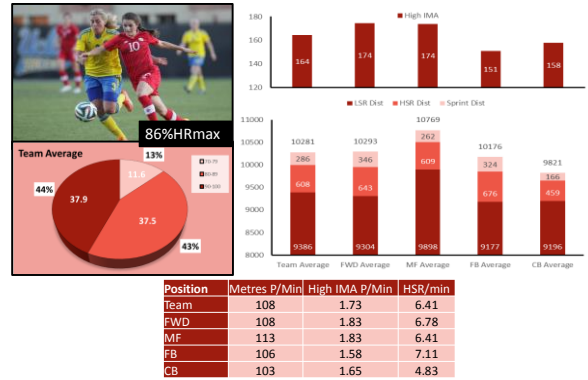
Integration (key driving principles and sub-principles)

Supportive mechanisms (Game Readiness)

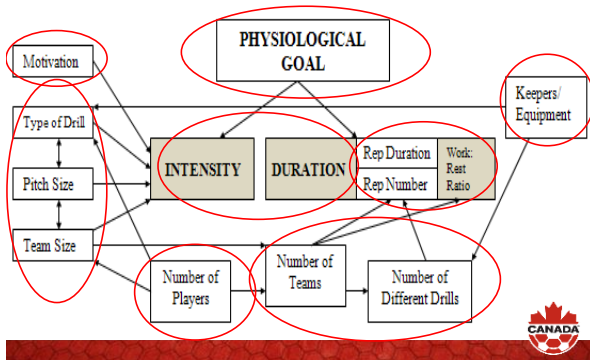
- Nutrition-Hydration
- Recovery & Sleep
- Return to play
- Special interventions
- Priming



What does the game gives you?



ROTI: Physical Development Within Football

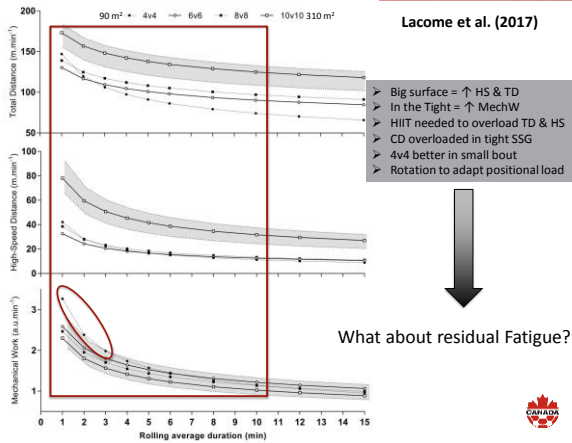


ROTI: Tactical Periodization



Delgado-Bordonau, 2012





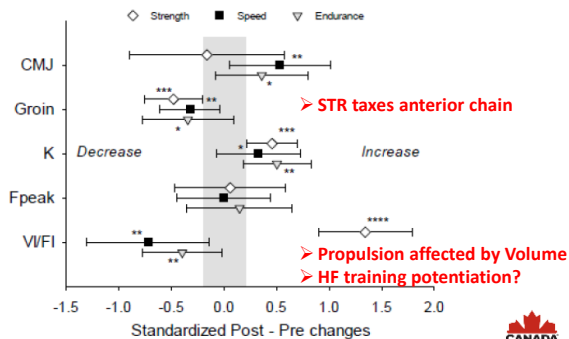
What about residual fatigue?

	Strength	Endurance	Speed
Duration (min)	81	93	75
Total Distance	4370 ± 193	7794 ± 598	5298 ± 420
Total Distance (m/min)	54 ± 2	84 ± 6	71 ± 6
Distance >19.8 km/h (m)	51 ± 12	73 ± 52	408 ± 106
Distance >25.2 km/h (m)	0 ± 0	5 ± 9	91 ± 28
Peak Speed (km/h)	23.3 ± 0.9	25.0 ± 1.9	29.7 ± 1.5
Mechanical work (A.U)	49 ± 7	47 ± 11	50 ± 9
Mechanical work (A.U/min)	0.6 ± 0.1	0.5 ± 0.1	0.7 ± 0.1
Trimps (A.U)	463 ± 54	584 ± 49	436 ± 43
Time >90% HRmax	9 ± 12	16 ± 8	10 ± 8
RPE (A.U)	5.8 ± 0.9	5.7 ± 1.2	5.8 ± 0.8

Buchheit, 2017



What about residual fatigue?

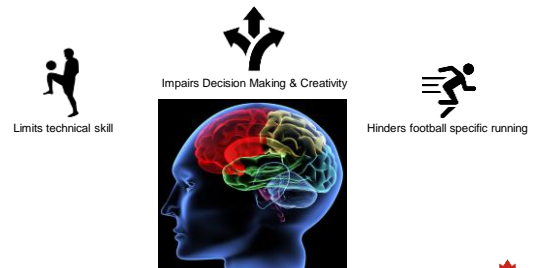


Buchheit, 2017



The Impact of Mental Fatigue

Mental Fatigue Impairs Physical & Technical Performance



Courtts, 2016



The Impact of Mental Fatigue

How Coaches Can **Positively** Impact Mental Fatigue



Vary the cognitive load in SSG



Create time constraints on objectives



Vary pitch size to force faster decision making

Last SSG: play until there is a winner



Coutts, 2016

The Matrix

WHY?	Four Characteristics of the Game
WHAT?	Training Emphasis Days
WHEN?	Periodization of Specific Session
HOW?	Specifics of the Session Content
HOW?	Content Manipulation
WHAT?	System Overload
WHAT?	Energy Pathways

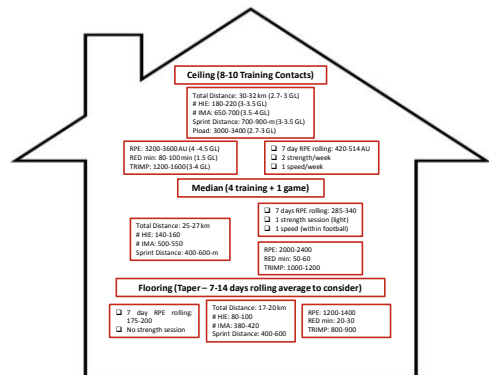
GENERIC

SPECIFIC

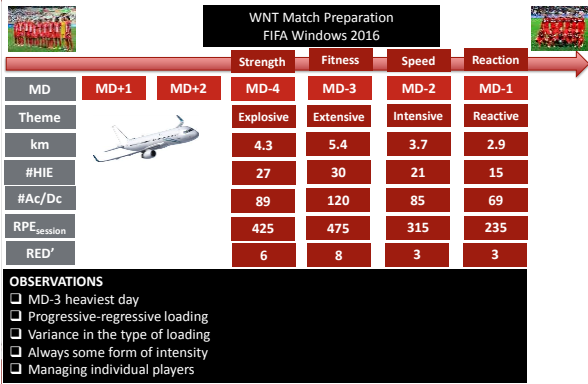


What principles of integration do you use in your environment?

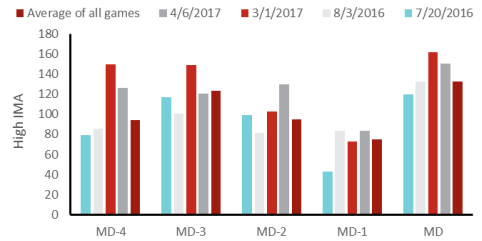
Ceiling-Flooring Concept



WNT Match Build-up



WNT Match Build-up

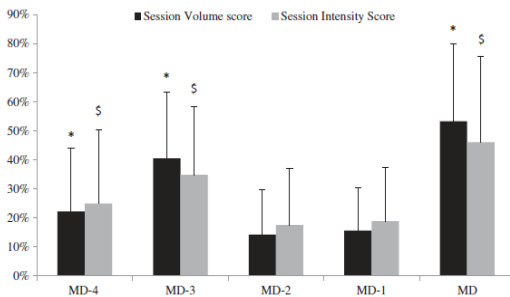


WHO IS THE BIGGEST INFLUENCER?

- Explicit vs. Implicit
- Cognitive loading
- Match Realistic



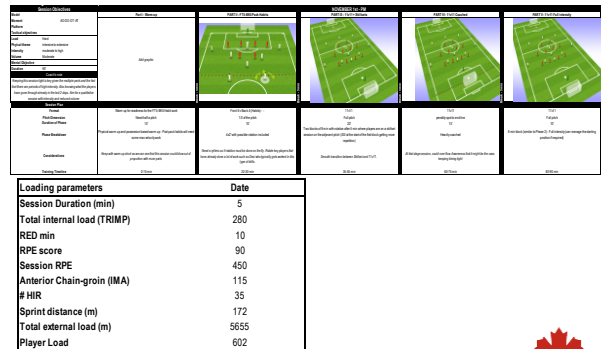
Professional Match Build-up



Owen, 2017



The Session Plan



Communication Pre-Training

OVERVIEW

- Limited volume
- Stride opening @ sub-intensity (80%)
- Prehab Warm-up

SPECIFICS

- Manage fragile players
- < 3 Km
- < 20 HIR's
- < 8-10 reps @ near max intensity

DON'T

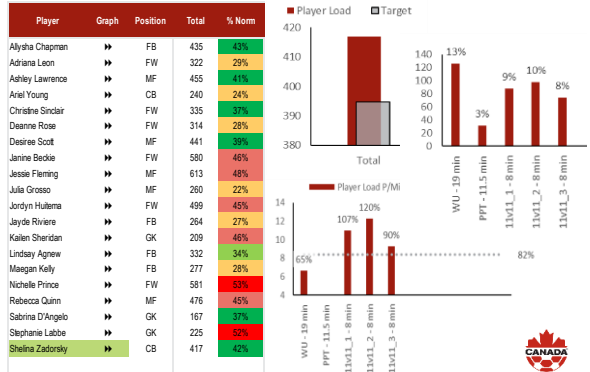
- Multiple transition
- Large distances
- Deceleration (triple movements)
- Extensive Amount of Striking

Session Plan

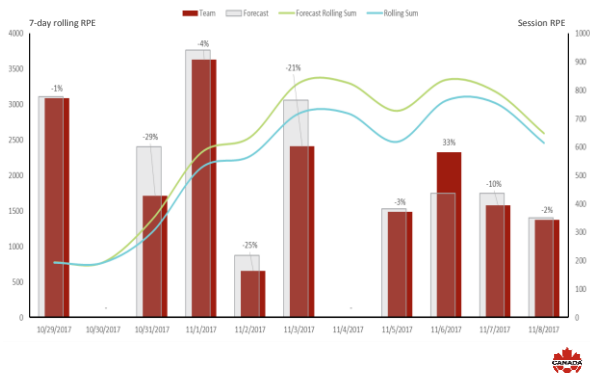
1. WU 20'
2. UNIT work 6'
3. 11v9 (3/4 field) PPT 15-20'
 - a. AO: FB shallow x 3
 - b. DO: The Lock x 2
 - c. DO: FR3 Press x 2
4. Set Play 10'



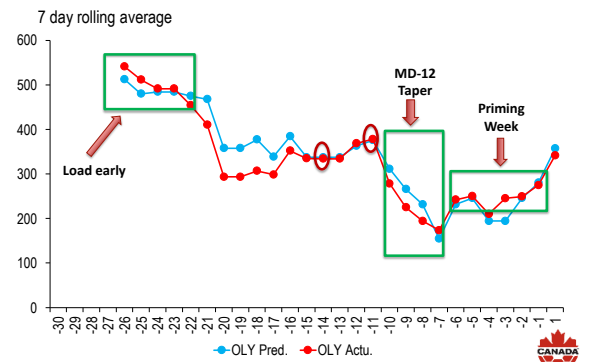
Live Communication



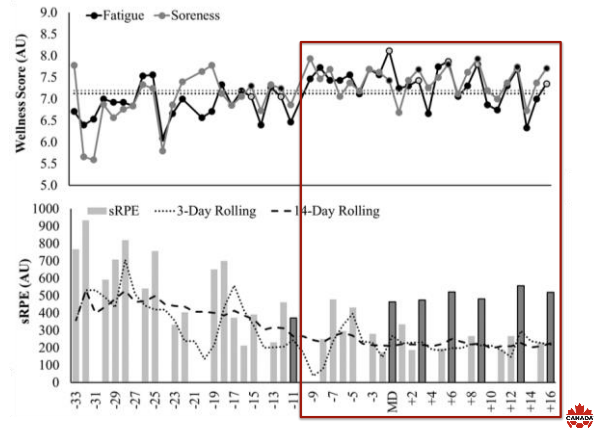
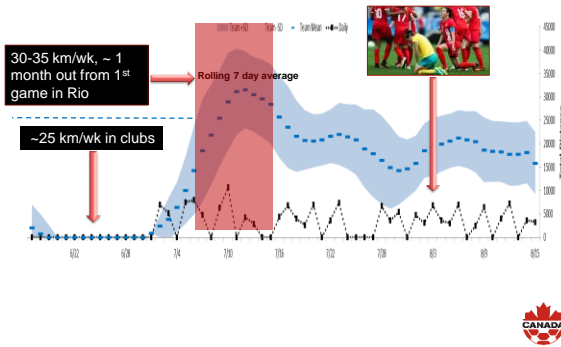
Forecasting vs. Actual



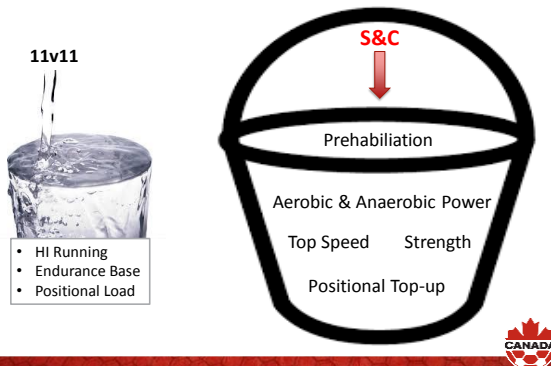
Forecasting Training Load



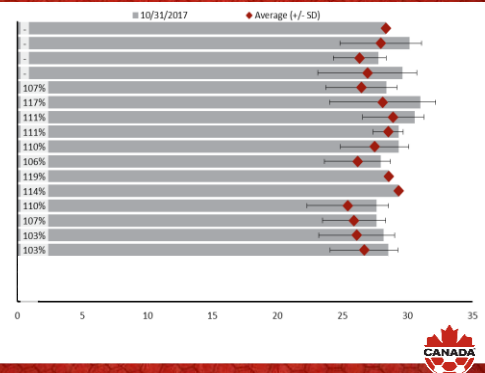
Following the plan



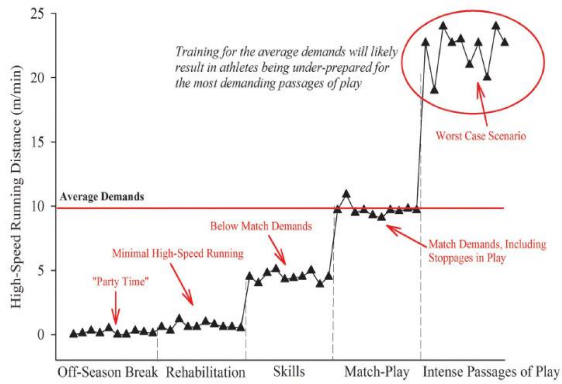
Filling up the right buckets



Filling up the buckets



Worst Case Scenario Concept (Gabbett, 2016)

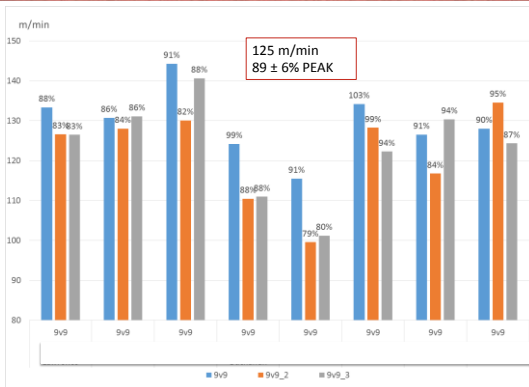


Worst case scenario training

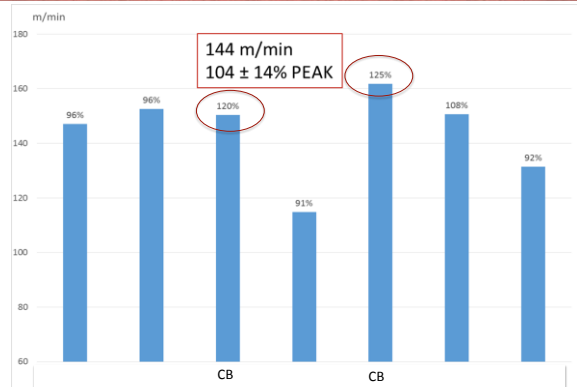
	Match (\pm SD)	Peak ₅ (\pm SD)	% Difference
TD ($\text{m}\cdot\text{min}^{-1}$)	108	144	30%
HSR ($\text{m}\cdot\text{min}^{-1}$)	9.4	24.7	162%
Accel ($\text{count}\cdot\text{min}^{-1}$)	1.80	3.29	83%
PLoad ($\text{AU}\cdot\text{min}^{-1}$)	11.5	15.5	35%



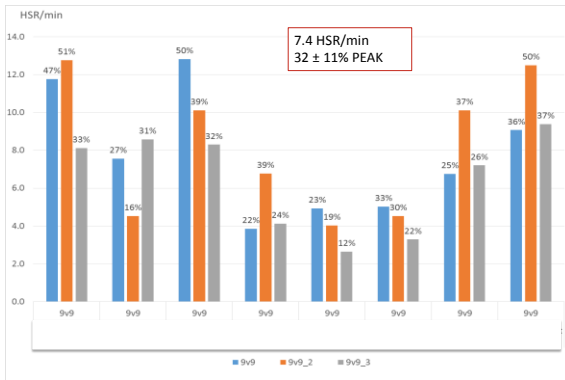
Simulating Worst Case Senario: Distance



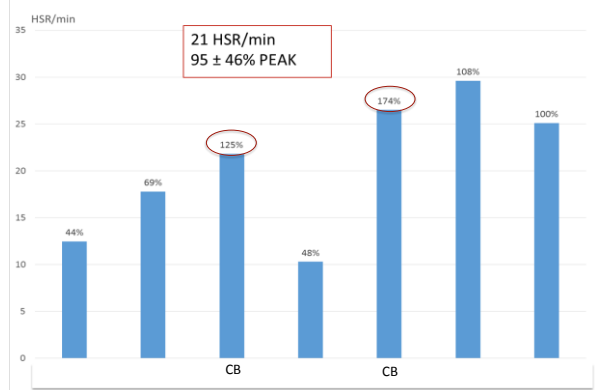
Simulating Worst Case Senario: Distance



Simulating Worst Case Senario: HSR



Simulating Worst Case Senario: HSR



Asking the right questions

WANT TO SEE MY REPORT, COACH?

SPORT SCIENCE REPORTING IN THE REAL WORLD

ASPETAR SPORTS MEDICINE JOURNAL

– Written by Martin Buchheit, France



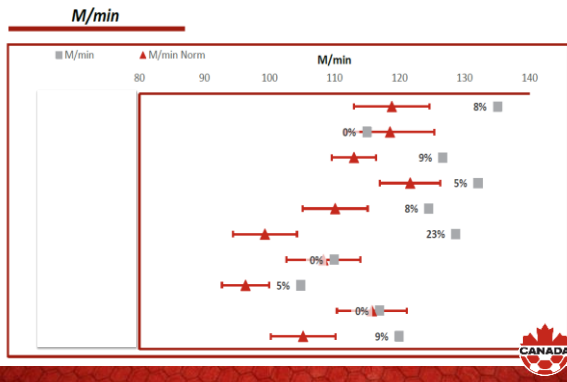
Match report example

Overall Team and Positional Performance

	M/min		HSR Efforts/min		High IMA/min	
	Today	Norm	Today	Norm	Today	Norm
ALL	121	↑ 110	0.80	↑ 0.65	2.04	→ 1.98
FWD	125	↑ 111	0.97	↑ 0.75	2.07	→ 2.15
MF	128	↑ 113	0.76	↑ 0.63	2.28	↑ 2.08
FB	118	↑ 108	0.89	↑ 0.68	1.78	↑ 1.69
CB	107	↑ 103	0.60	↑ 0.46	1.78	→ 1.84
Colour key	Very Large	Large	Moderate	Small	Trivial	



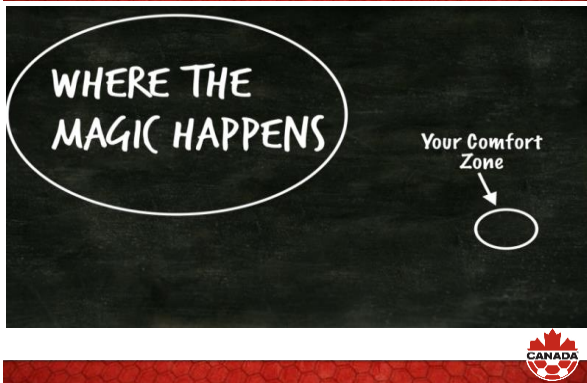
Match Report Example



Applying a growth mindset



Applying a growth mindset



Improvement Ideas

- 1 Know your sport**
Are you informed of the demand of your sport?
 - 2 Work Collaboratively**
Who does the objectives of others impact your outcome?
 - 3 Your Own Reality**
What drill can you categories to inform loading?
 - 4 Have a Plan "B"**
What if you cannot achieve what is needed?
- CANADA

