



NSCA
COACHES
CONFERENCE 2022

JANUARY 6 – 8, 2022

San Antonio, TX & Online | 2.0 CEUs

#NSCAsCoaches22

CONFLICT OF INTEREST STATEMENT

I have no actual or potential conflict of interest in relation to this presentation.

From Strength Coach to Sport Scientist: Lessons from the Transition

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From Strength Coach to Sport Scientist: Lessons from the Transition

Background

- Lock Haven University – Athletic Training Student -> Recreation/Fitness Management
- LaSalle University – S&C Internship
- Bloomsburg University – Head S&C Coach/Research Assistant – MS in Exercise Science
- Dartmouth College – Asst S&C Coach
- Missouri State University – Asst Director of S&C
- University of Delaware – Asst S&C Coach -> Asst S&C Coach/Sports Analytics -> Director of Sport Science & Analytics

From Strength Coach to Sport Scientist: Lessons from the Transition

Coming together is a beginning,
Staying together is progress,
And working together is success.
- Henry Ford

From Strength Coach to Sport Scientist: Lessons from the Transition

The Beginning

- Microsoft Excel Workout Cards
- Understand your periodization
- Research your sport
- Learn to collaborate with Support Staff members

From Strength Coach to Sport Scientist: Lessons from the Transition

The Beginning

- Microsoft Excel Workout Cards
 - Vlookup
 - Round
 - Drop Lists
 - Auto Print (VBA)

DELAWARE STRENGTH & CONDITIONING														
SPORT	FIELD HOCKEY				Season	SPRING 2021								
	SQ & BP HEIGHT		Game Schedule				Load Tracker							
	SQUAT 25 BENCH 19						Day 1 Load 							
	Day 1		13-Apr		20-Apr		27-Apr		4-May					
	Relative Intensity		100%		100%		100%		100%					
Box	Tempo													
	Post Chain & Core Activation													
		%	Sets	Reps	%	Sets	Reps	%	Sets	Reps	%	Sets	Reps	
1a	Glute Ham Raise		2	5		2	5		2	5		2	5	
1b	Hurdles		2	6		2	6		2	6		2	6	
2a	MB SL Slams		3	3		3	3		3	3		3	3	
2b	Back Squat TABLET!!!!	70	1	5	75	1	8	80	1	6	75	1	8	
		80	1	5	90	1	6	95	1	6	90	1	8	
		95	1	5	100	1	5	110	1	6	100	1	8	
		100	3	4	110	3	5	110	3	3	115	3	5	
2c	DB RDL		4	5		3	6		4	6		2	6	

From Strength Coach to Sport Scientist: Lessons from the Transition

The Beginning

- Understand your periodization
 - Provides hard data on programming
 - Provides breakdown of what is needed to manage a competitive season
 - Provided proper return to play metrics
 - 50/30/20/10
 - Work to Rest Ratio

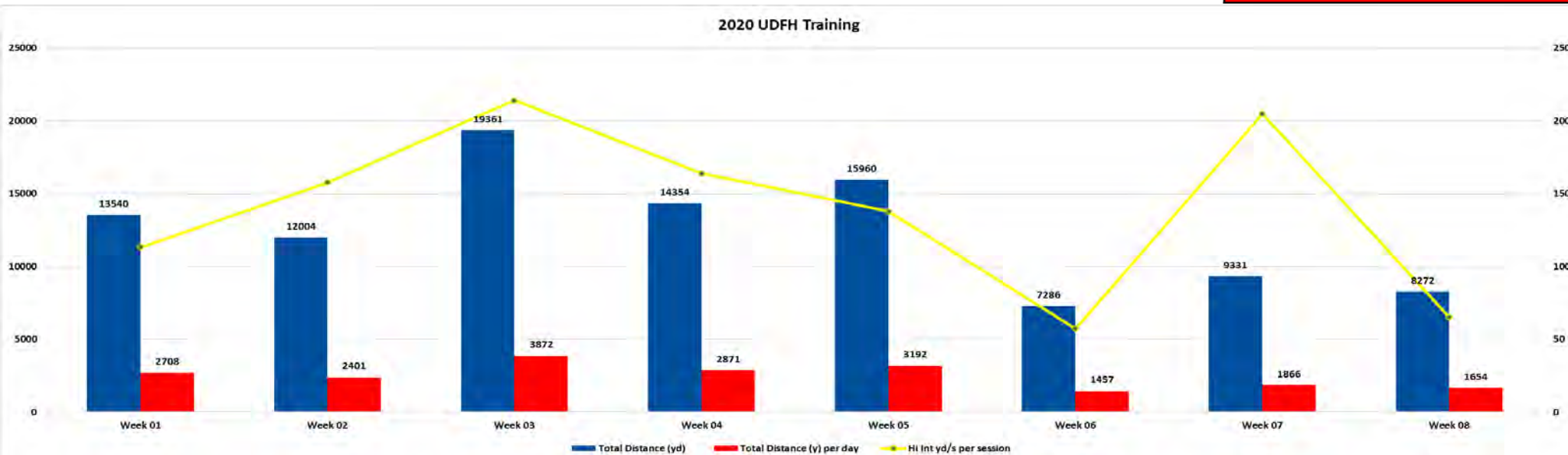
Training Load	9591										
Week 1	1827										
Week 2	2864										
Week 3	2403										
Week 4	2497										
Day 1	Week 1	Week 2	Week 3	Week 4	Day 2	Week 1	Week 2	Week 3	Week 4		
Reps	38	44	41	49	Reps	31	36	34	32		
Sets	17	16	17	15	Sets	19	19	17	17		
Intensity	100%	100%	100%	100%	Intensity	100%	100%	100%	100%		
Total	56	61	59	65	Total	51	56	52	50		
Day 1	Week 1	Week 2	Week 3	Week 4	Day 2	Week 1	Week 2	Week 3	Week 4		
Total	56	61	59	65	Total	51	56	52	50		

From Strength Coach to Sport Scientist: Lessons from the Transition

The Beginning

Start Here ->

Week	Hi Int (m) per Day	Hi Int (m/s) per day	Dist (m) per day	Hi Int (yd) per Day	Hi Int (yd/s) per day	Dist (yd) per day
Week 01	486	8	6845	531	9	7486
Week 02	181	3	3842	198	3	4202
Week 03	104	2	2476	113	2	2708
Week 04	144	2	2195	158	3	2401
Week 05	196	3	3541	214	4	3872
Week 06	150	2	2625	164	3	2871
Week 07	126	2	2919	138	2	3192
Week 08	52	1	1333	57	1	1457
Week 09	187	3	1706	205	3	1866
Week 10	60	1	1513	65	1	1654
Week 11	75	1	1662	82	1	1818
Week 12	91	2	1633	99	2	1786
Week 13	91	2	1716	99	2	1876
8 week Total	1019	17	18308	1114	2	20022

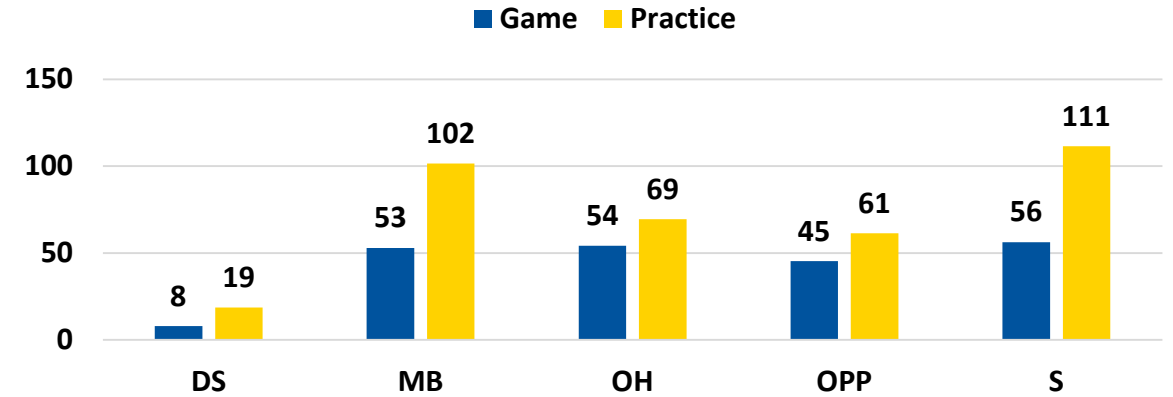


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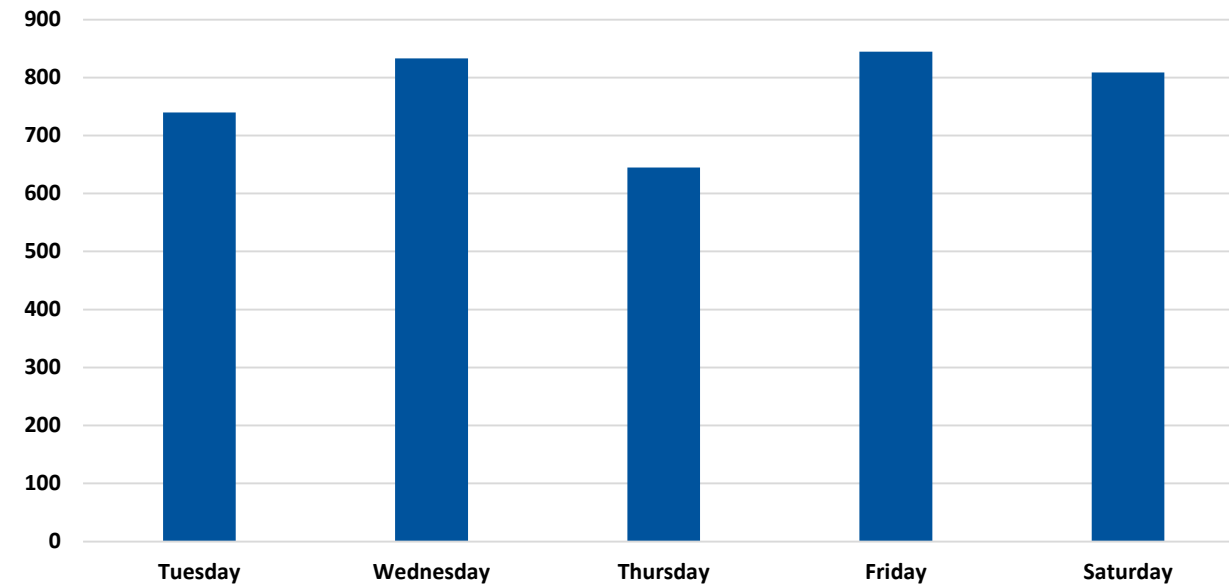
The Beginning

- Research your sport
 - Question
 - Movements
 - Coaches style of play
 - Energy pathways
 - Refine
 - Strengthen positive movement patterns
 - Strengthen weaknesses
- Provide understanding

Game vs Practice Average Jumps by Position Breakdown



Average Hi-Intensity Distance per Day of Practice



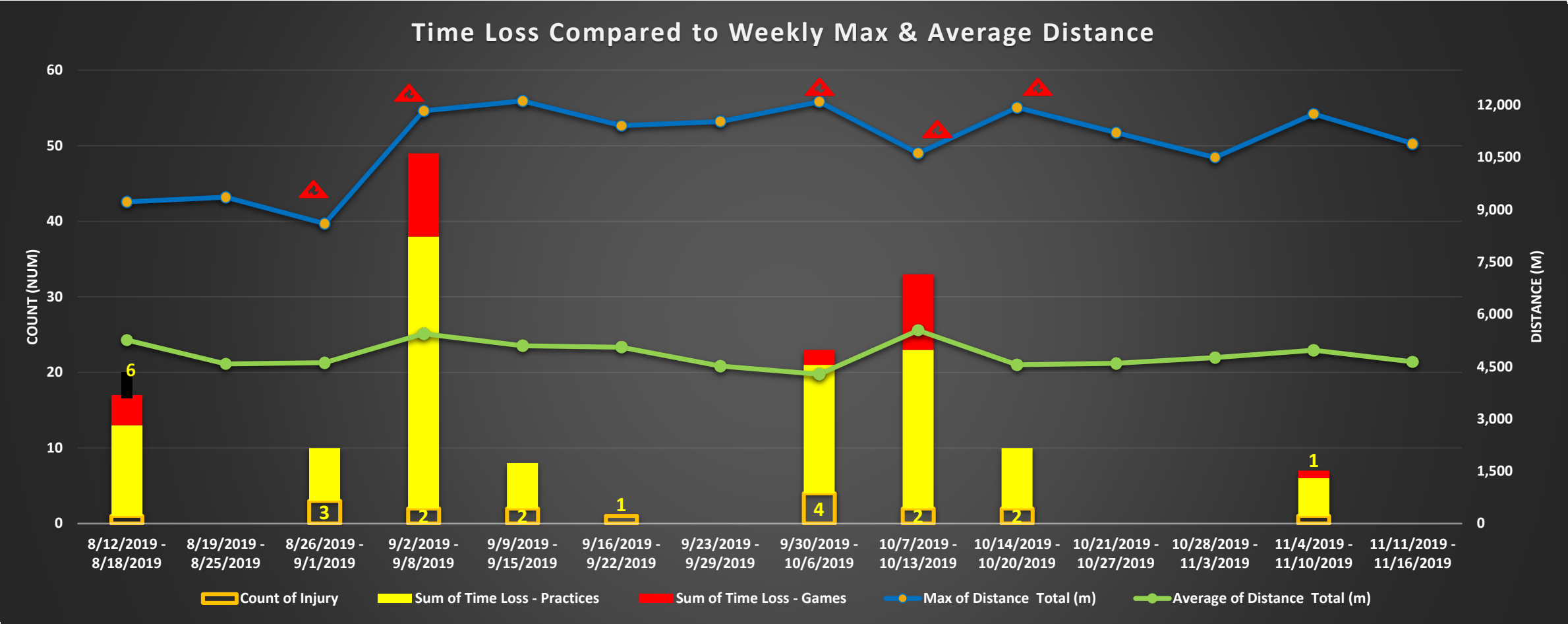
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The Beginning

- Learn to collaborate with Support Staff members
 - Time Loss/Injury Analysis
 - GPS data is used to assess any spikes in Volume/Intensity and correlates with Injury
 - Return to Play/Metabolics

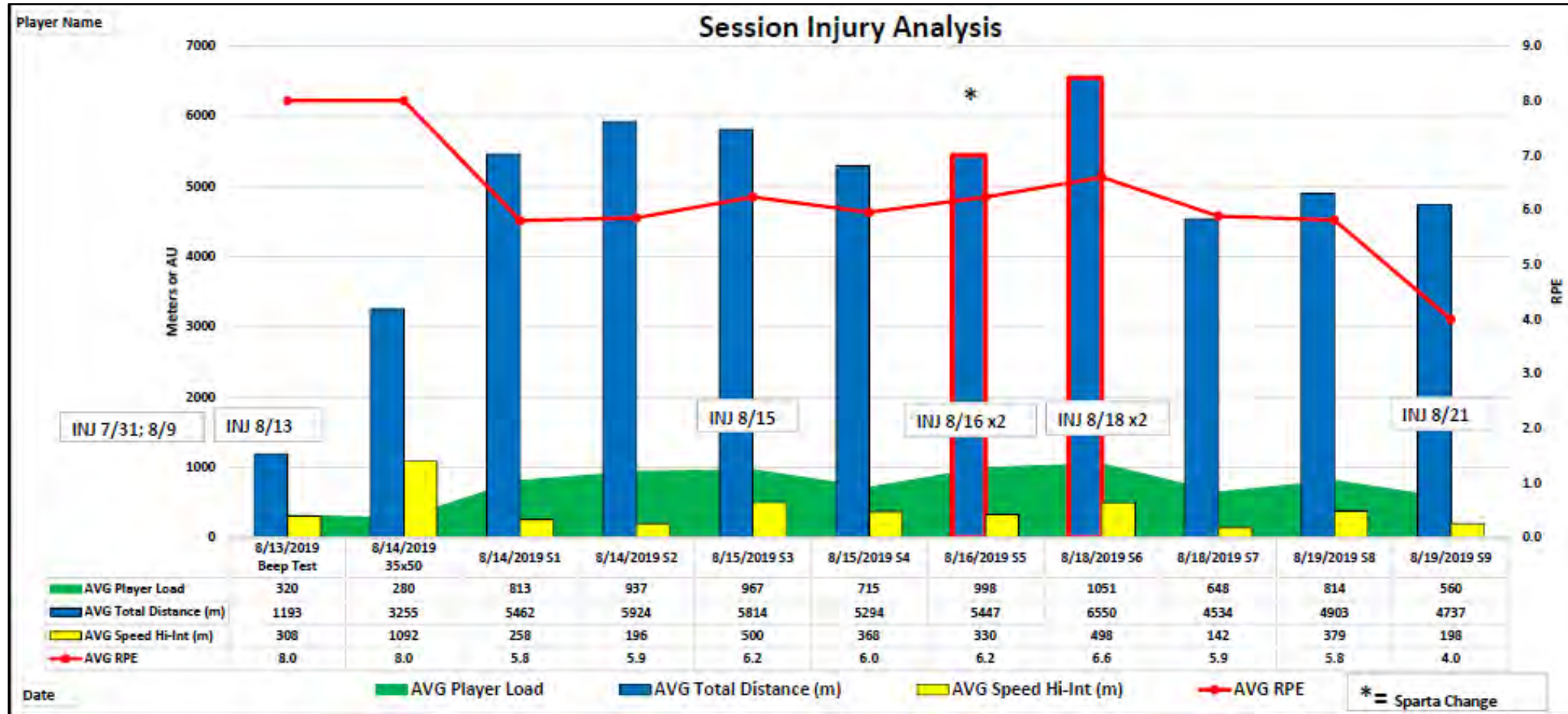
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The Beginning



From Strength Coach to Sport Scientist: Lessons from the Transition

The Beginning



From Strength Coach to Sport Scientist: Lessons from the Transition

The Progress

Analysis will never eliminate the risk in a decision, but it can reduce it.

- Benjamin C. Alamar

From Strength Coach to Sport Scientist: Lessons from the Transition

The Progress

- Monitor
- Data Management
- Data Visualization

From Strength Coach to Sport Scientist: Lessons from the Transition

The Progress

- Monitor
 - RPE
 - Wellness Survey
 - Minutes Played
 - Starters vs. Non-starters
 - Performance Tech data

WELLHEN Survey

- How did you feel when you woke up this morning?
 - Refreshed 0 - Exhausted 5 (6 point Likert scale)
- Please rate your hydration based on the color of your urine this morning
 - An eight-point urine color chart is provided with the question
- Did you feel hunger/lack of energy/lack of focus during athletic sessions you participated in yesterday?
 - No hunger, energy, and/or focus issues 0 - starving, sluggish, and/or totally distracted 5 (6 point Likert scale)
- Are you currently experiencing muscle soreness?
 - No Soreness 0 - Can't Move 5 (6 point Likert scale)
- STRESS is defined here as the amount of perceived mental or emotional difficulty you experience while meeting your typical daily responsibilities.**

How capable do you feel TODAY to manage your daily responsibilities with ease?

 - 5 - Not capable at all
 - 4 - Minimally capable
 - 3 - Somewhat capable
 - 2 - Mostly capable
 - 1 - Very capable
 - 0 - Completely capable

The UD Helpline # and email will be the first resource you receive from answering this question.

Mark all the activities you participated in YESTERDAY

- Checkbox system for practice, game, lift, conditioning, recovery lift, rehab/treatment, individuals, travel day, off day, VCAT, other

Anything else you feel is important for us to know today related to the previous questions?

SESSION RPE	
Maximum Exertion	10
Very Hard	9
Extremely Hard	8
Hard	7
Challenging	6
Somewhat Hard	5
Moderate	4
Easy	3
Very Easy	2
Rest	1

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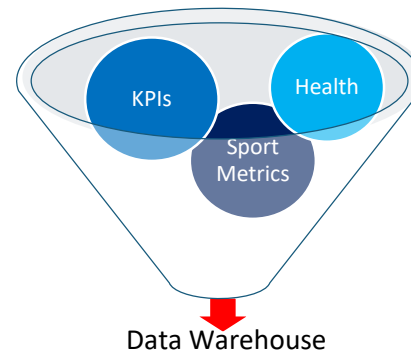
The Progress

- Force Plates
 - Provides movement trends
 - Fatigue scan
- GPS
 - Return to Play/Sport
 - Distance/Speed/Impacts Metrics
- 3D-camera technology
 - Velocity (m/s)
 - Power (watts)
 - Minimal Velocity Threshold
- Wellness Survey
 - “Pulse” of athlete and real-time data implementation

From Strength Coach to Sport Scientist: Lessons from the Transition

The Progress

- Data Management
 - Standardization – consistent recording of data (names, dates, exercises)
 - Centralization – access to relevant data efficiently (consistency & accuracy)
 - Integration – process multiple sets of data for repeated collection (snapshot view)



The Progress

- # UNIVERSITY OF DELAWARE ATHLETE MANAGEMENT SYSTEM
- | Name
Team | | Report Date
11/19/2020 | Date
Sep 28 - Nov 20, 2020 | Current Readiness %
98% | 7 Day AVG Readiness %
97% | Student-Athlete Flagging System | | | | | | | |
|------------------------|----|-------------------------------------|-------------------------------|---|------------------------------|---------------------------------|---------------|------------------|-----------------|----------------|----------------|-----------|---------|
| Position
Defense | FH | | | | | ATC | | Sleep Quality | Muscle Soreness | Sp. Psych | Fuel Test | Fuel Test | OVERALL |
| Class Year
Freshmen | | | | | | Sleep Quality | Stress | Hydration Level | Nutrition | Nutrition | Nutrition | Nutrition | |
| Injury Status
N/A | | | | | | ACWR | Training Load | Current Report | 1.0 | 1.0 | 2.0 | 3.0 | 1.0 |
| | | Sparta Date
Sep 30 - Nov 1, 2020 | | <div style="background-color: #0056b3; color: white; padding: 5px; font-weight: bold;">1.5</div> <div style="background-color: #0056b3; color: white; padding: 5px; font-weight: bold;">1100</div> <div style="background-color: #0056b3; color: white; padding: 5px; font-weight: bold;">Monotony</div> <div style="background-color: #0056b3; color: white; padding: 5px; font-weight: bold;">Strain</div> <div style="background-color: #0056b3; color: white; padding: 5px; font-weight: bold;">1.5</div> <div style="background-color: #0056b3; color: white; padding: 5px; font-weight: bold;">0.32</div> | | 7 Day AVG | | 2.0 | 0.5 | 2.0 | 3.2 | 0.3 | 1.6 |
| | | 2 Week AVG | | | | 2.5 | 0.8 | 2.7 | 3.0 | 0.8 | 1.7 | | |
| | | 30 Day AVG | | | | 2.0 | 0.6 | 2.8 | 3.1 | 0.5 | 1.8 | | |
| | | AVG Total | | | | 2.3 | 1.1 | 2.1 | 2.9 | 0.5 | 1.8 | | |
| | | Sparta Group | | | | MSK Score | Load Variable | Explode Variable | Drive Variable | Drive Variable | Drive Variable | | |
| | | | | | | | | | | | | | |
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From Strength Coach to Sport Scientist: Lessons from the Transition

The Success

Success is no accident.

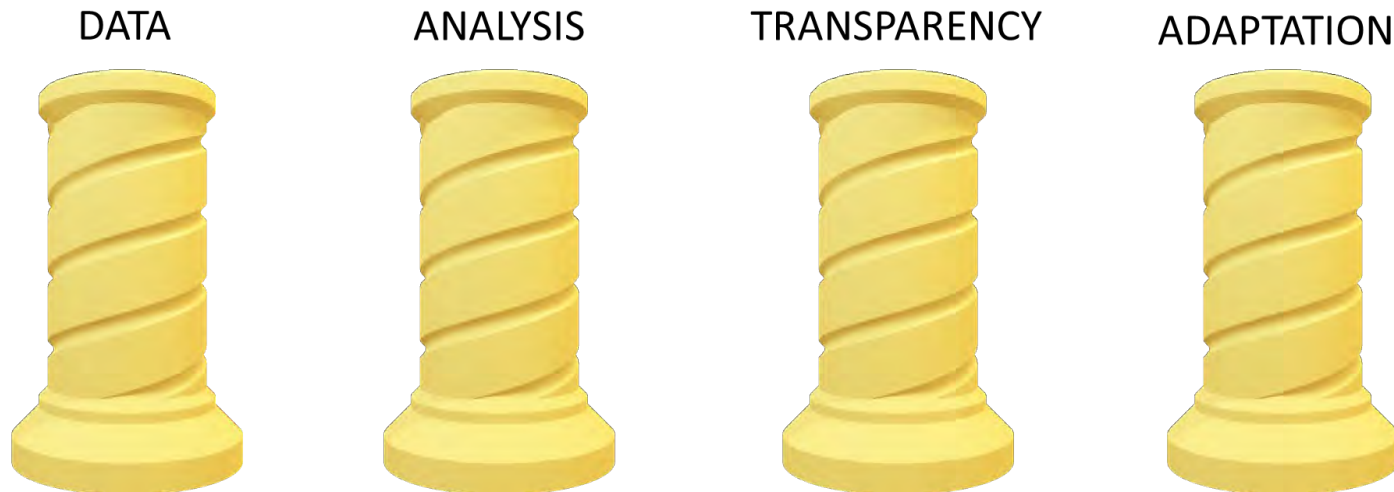
It is hard work, perseverance, learning, studying, sacrifice and most of all, love of what you are doing or learning to do.

- Pele

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The Success

4 PILLARS OF SPORTS SCIENCE & ANALYTICS DEPARTMENT



From Strength Coach to Sport Scientist: Lessons from the Transition

The Success

- Successful implementation of Performance Tech
- Best Practices in Strength & Conditioning & Sport Science
- Best Practices to collaborate with Sport Performance team & Sport Coach staff

Less Silos & More Farms!

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The Success

- Successful implementation of Performance Technology
 - Educate
 - Consistency
 - Decrease Bias
 - Data Informed > Data Driven

From Strength Coach to Sport Scientist: Lessons from the Transition

The Success

- Best Practices in Strength & Conditioning & Sport Science
 1. Focus on athlete holistically
 2. Tangible data
 3. Fast & Simple communication
 4. Provide context to prevent failure

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The Success

- Best Practices to collaborate with Sport Performance team & Sport Coach staff
 1. Ask yourself: “If I was a coach what would I need to know?”
 2. Provide analysis on:
 - Where we have been
 - Where we are going
 - Response to the load (i.e. conditioning, lift, practice, game, etc)
 - What they were trying to achieve during session
 3. Consistency & Compliance
 4. Modify and Adapt practice plans, return to play, conditioning/lift
 - Use words

Data should not be classified as the competitive advantage, but how we utilize the data in our decision making!

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Thank you!!

Questions??

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🐦 @Coach_Raz26