

TRAINING LOAD & RECOVERY IN COLLEGE BASKETBALL



CSCC_a

SEAN CONATY

MS, SCCC, CSCS, USAW, USATF, CISSN, Pn1



INTRODUCTION

CSCC_a



FIRSTBEAT

FE





ATHLETE MONITORING

MY **VIEW** ON MONITORING
HAS EVOLVED...



TRAINING IS MONITORING

**ANTHROPOMETRIC
ASSESSMENT**



**MOVEMENT
EVALUATION**



**PERFORMANCE
METRICS**



ALLOSTATIC LOAD

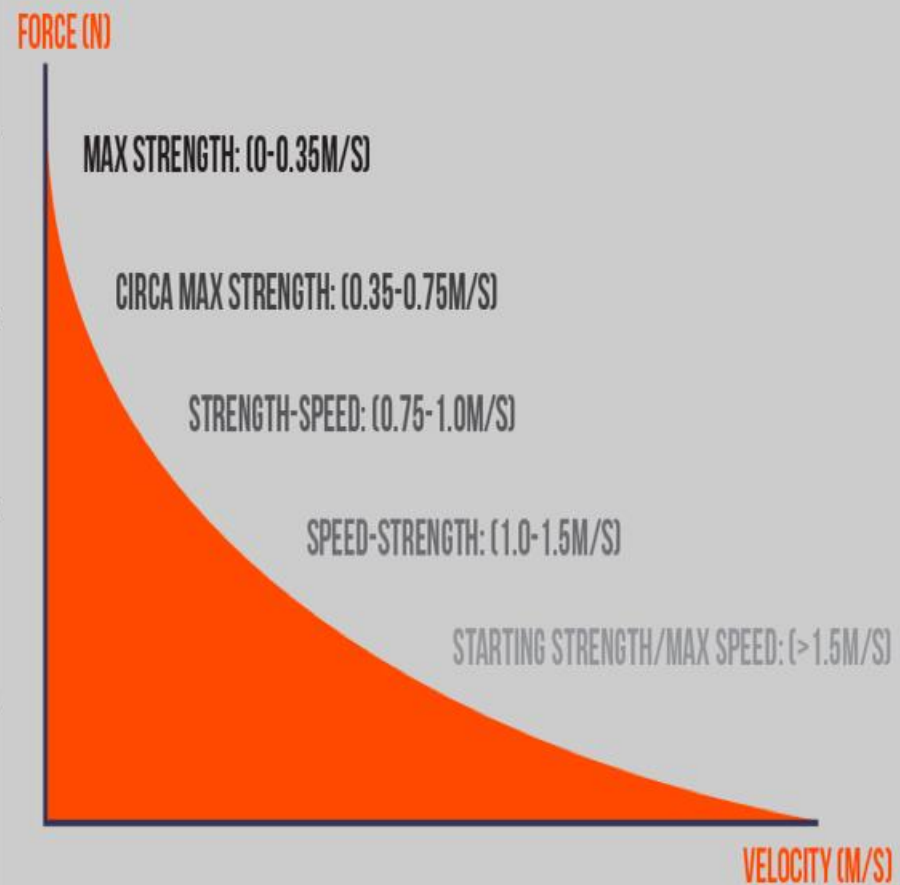


MANAGE STRESS

AUTOREGULATION

HEART RATE & VELOCITY BASED TRAINING

GOAL OF TRAINING	WORKOUT	TRAINING EFFECT
MAXIMAL AEROBIC FITNESS	CONSTANT PACE / INTERVAL 2:1	TE 3.5 - 5.0 AEROBIC 70% / ANAEROBIC 30%
AEROBIC RECOVERY	LOW INTENSITY / LONG DURATION	TE 1.5 - 2.5 AEROBIC 100% / ANAEROBIC 0%
SPEED, STRENGTH, POWER	SHORT SPRINT / LONG RECOVERY 1:4	TE 1.5 - 2.5 AEROBIC 30% / ANAEROBIC 70%
AEROBIC POWER	SHORT/MEDIUM DURATION INTERVALS 1:2	TE 3.5 - 5.0 AEROBIC 30% / ANAEROBIC 70%





IDENTIFY THE PROBLEM

THEN ASK ADDITIONAL QUESTIONS BEFORE YOU BEGIN

1. CAN WE GET CLEAN DATA?
2. CAN WE GET CONSISTENT DATA?
3. WHAT RESOURCES DO WE HAVE?
4. WHAT ARE THE LOGISTICS?

THIS CREATES A PROCESS...



THE PROCESS

COLLECT

REVIEW

REPORT

RECALIBRATE



STEP 1

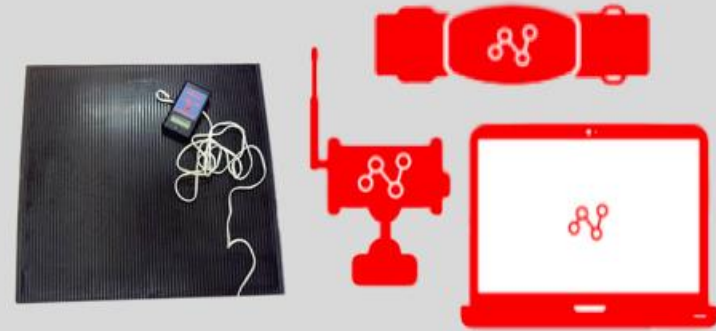
COLLECT



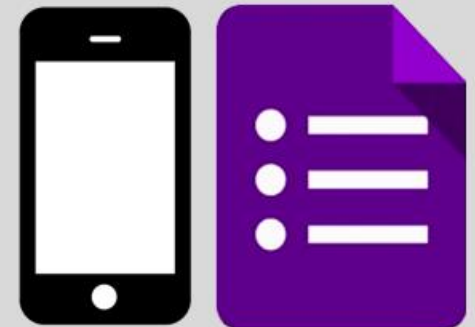
WHAT TYPE OF DATA?



OBJECTIVE DATA



SUBJECTIVE DATA



WELLNESS QUESTIONNAIRE



SUBJECTIVE

RECOVERY DATA

1. SLEEP QUANTITY
2. SLEEP QUALITY
3. NUTRITION QUANTITY
4. NUTRITION QUALITY
5. HYDRATION
6. MOOD
7. STRESS
8. FATIGUE
9. MUSCLE SORENESS
10. PAIN IDENTIFICATION

HOW IS YOUR CURRENT ENERGY LEVEL?

1	2	3	4	5
Feeling Exhausted				Very Fresh

1 2 3 4 5

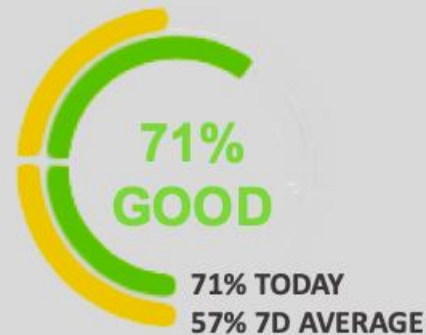


HEART RATE VARIABILITY



OBJECTIVE READINESS DATA

1. QUICK RECOVERY TEST
2. QRT 7 DAY AVERAGE
3. RESTING HR
4. RMSSD



LIFESTYLE ASSESSMENT



OBJECTIVE

RECOVERY DATA

1. 24 HOUR STRESS RECOVERY BALANCE



2. OVERNIGHT RECOVERY



COUNTERMOVEMENT JUMP



OBJECTIVE

READINESS DATA

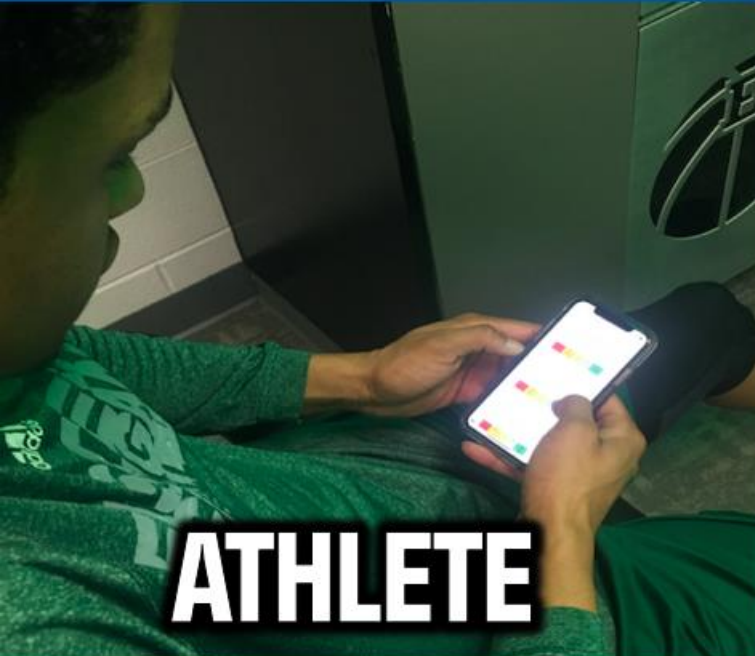
- 1. COUNTERMOVEMENT JUMP**
- 2. NON-COUNTERMOVEMENT JUMP**
- 3. DROP JUMP**



SESSION R-RPE

SUBJECTIVE

TRAINING LOAD DATA

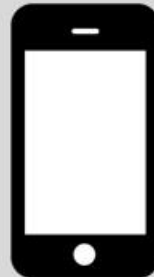


ATHLETE



COACH

- 1. ATHLETE-sRPE**
- 2. COACH-sRPE**



HOW DIFFICULT WAS PRACTICE TODAY?

1	2	3	4	5	6	7	8	9	10
VERY LIGHT	EASY	MODERATE	HARD	REALLY HARD	REALLY HARD	REALLY HARD	REALLY HARD	REALLY HARD	TOTAL PRACTICE

1 2 3 4 5 6 7 8 9 10
○ ○ ○ ○ ○ ○ ○ ○ ○ ○

TRAINING LOAD

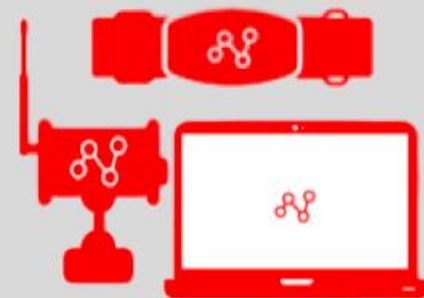
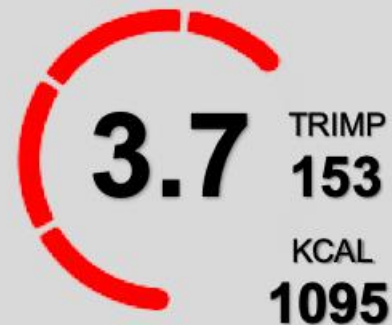


OBJECTIVE

TRAINING LOAD DATA

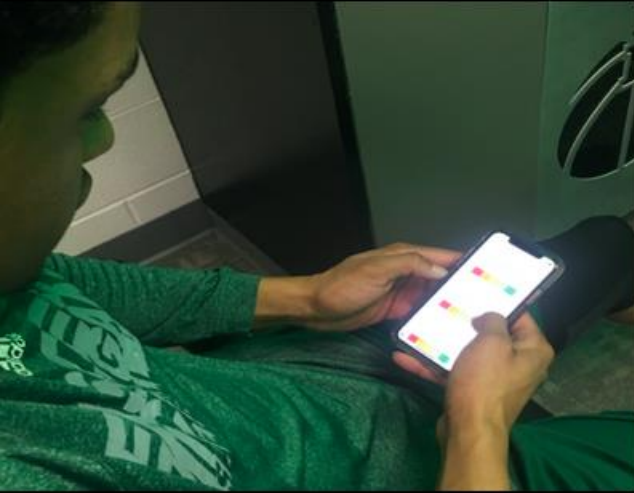
- 1. TRAINING EFFECT**
- 2. TRIMP**
- 3. CALORIES**
- 4. HR ZONES**

TRAINING EFFECT



MAKE IT DAILY! MAKE IT EASY!

1. SWQ



2. GRAB BELT



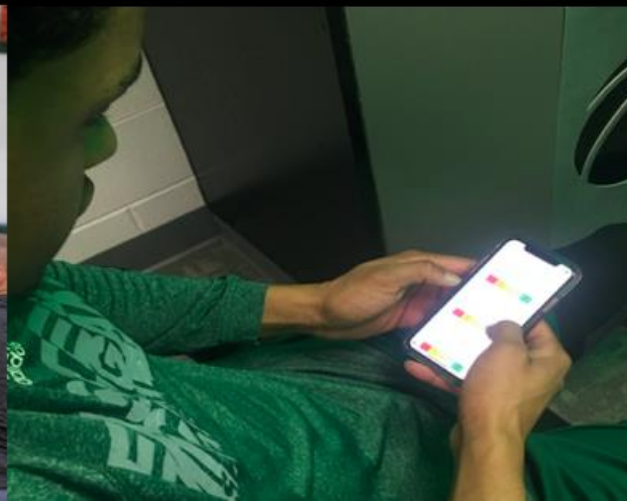
3. QRT



4. INTERNAL LOAD



5. S-RPE



6. LEAVE BELT



MONITORING SCHEDULE

IN-SEASON MONITORING SCHEDULE

SUNDAY

MONDAY

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SATURDAY

LIGHT
PRACTICE

MODERATE
PRACTICE

GAME

OFF

HARD
PRACTICE

LIGHT
PRACTICE

GAME

DAILY MONITORING

SWQ

SWQ

SWQ

SWQ

SWQ

SWQ

SWQ

QRT

QRT

QRT

QRT

QRT

QRT

T.E

T.E

T.E

T.E

T.E

T.E

TRIMP

TRIMP

TRIMP

TRIMP

TRIMP

TRIMP

CALORIES

CALORIES

CALORIES

CALORIES

CALORIES

CALORIES

A-SRPE

A-SRPE

A-SRPE

A-SRPE

C-SRPE

C-SRPE

C-SRPE

C-SRPE

BI-WEEKLY / WEEKLY MONITORING

CMJ

CMJ

BW

GAME ANALYTICS

GAME ANALYTICS

MAKE MONITORING PART OF THE TRAINING PROCESS!

EASTERN M. BASKETBALL

PRE-LIFT

WEIGH IN (RECORD WEIGHT ON COMPUTER)

A SERIES

BB RACK PULL 4x3

JUMP MAT 3x3e

(RECORD HT ON COMPUTER)

BN LEG LOWER 3x6e

POST-LIFT

POST-PRACTICE RPE (FILL OUT ON PHONE)

B SERIES

DB HK PRESS (ISO ROW) 3x6

CB HK ROW (ISO PRESS) 3x6e

LAT STEP UP 3x5e 3111

C SERIES

CB CHOP 1x10e

CB REACH & ROW 1x6e

ROT SQUAT 1x8e

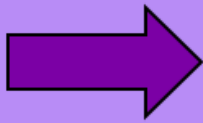
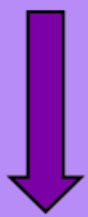
STEP 2

REVIEW



THE REVIEW PROCESS

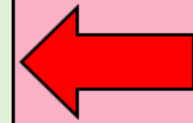
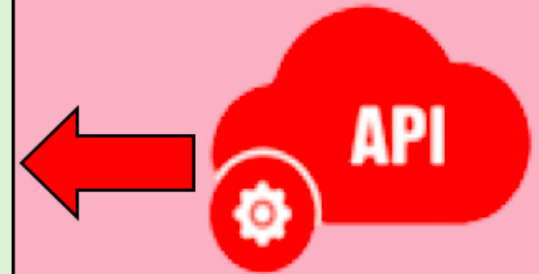
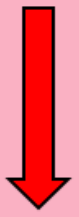
SUBJECTIVE DATA



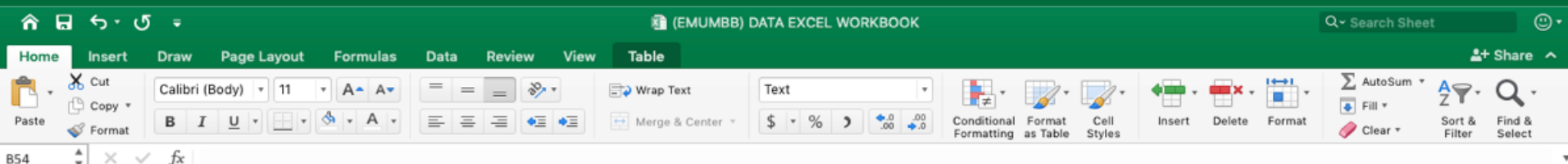
DATA DASHBOARD



OBJECTIVE DATA



EXCEL DASHBOARD



TIPS TO GET STARTED

1. CREATE SEPARATE SHEET FOR EACH DATA SET
2. ATHLETE NAMES FORMATTED THE SAME ON ALL
3. CONVERT TIME STAMP TO DATE (CTRL + F) + REPLACE ALL (SPACE + *)
4. =WEEKDAY FUNCTION
5. VLOOKUP FUNCTION
6. INDEX & MATCH FUNCTION (THREE WAY LOOK UP)
7. TABLES & FILTERS

10/26/2018		10:37:43	10:40:35	0:02:52	98	50.00%	102	52.00%	93	47.00%
10/26/2018		10:37:35	10:40:34	0:02:59	95	47.00%	102	51.00%	89	44.00%
10/26/2018		10:37:35	10:40:36	0:03:01	72	36.00%	80	40.00%	67	34.00%
10/26/2018		10:37:45	10:40:35	0:02:50	94	45.00%	99	48.00%	91	44.00%
10/26/2018		10:37:35	10:40:35	0:03:00	92	44.00%	103	50.00%	84	41.00%
10/26/2018		10:37:35	10:40:35	0:03:00	82	42.00%	86	44.00%	78	40.00%
10/26/2018		10:37:35	10:40:35	0:03:00	87	42.00%	96	47.00%	76	37.00%
11/1/2018		15:05:41	15:08:41	0:03:00	63	32.00%	71	36.00%	58	29.00%
11/1/2018		15:05:44	15:08:44	0:03:00	66	32.00%	73	36.00%	56	29.00%

REVIEW THE DATA

1. CONTEXT

- TEAM
- GROUP
- INDIVIDUAL

2. TRENDS

- ACUTE vs. CHRONIC
- SUBJECTIVE vs. OBJECTIVE
- PHYSIOLOGICAL vs. GAME DATA

CONTEXT

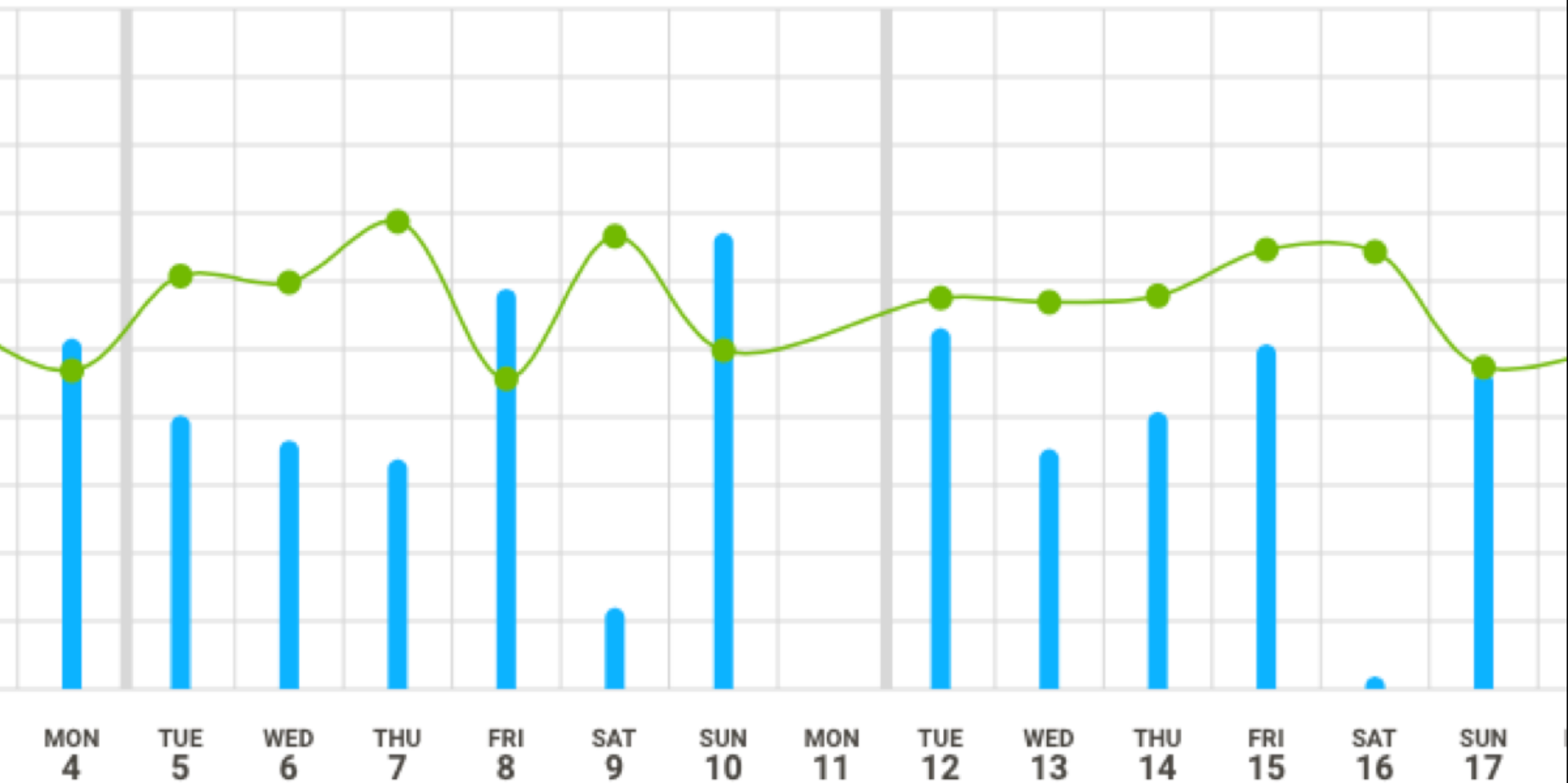
TEAM TRAINING LOAD

CONFERENCE IN-SEASON TRIMP NORMS



CONTEXT

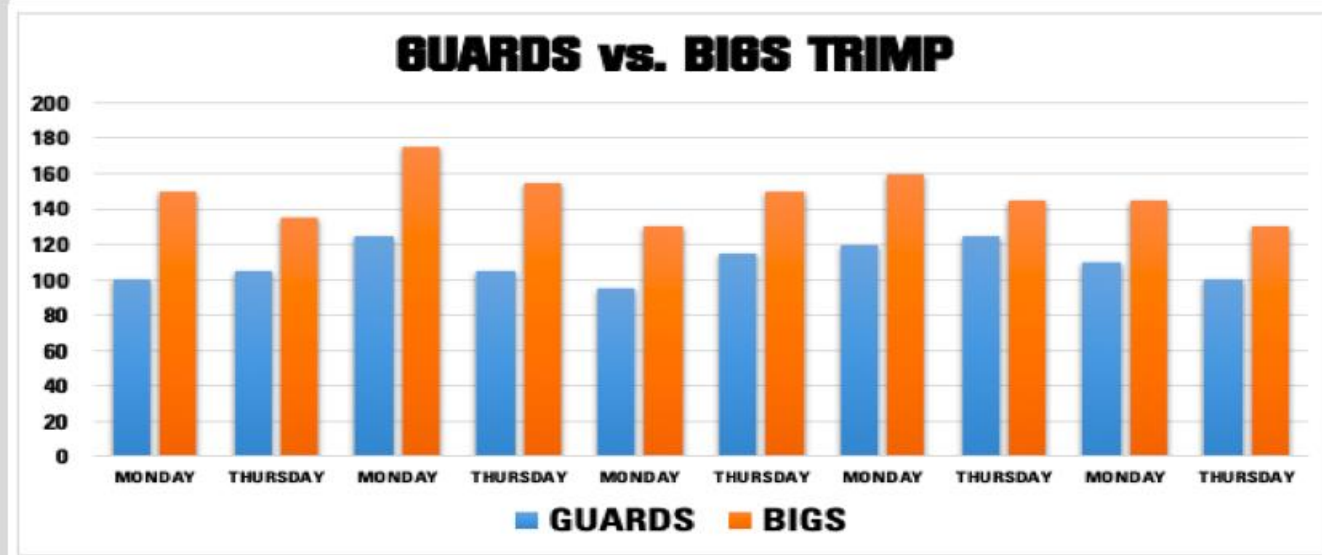
TEAM RECOVERY



CONTEXT

GROUP (POSITION & PLAYING TIME)

TRAINING LOAD



RECOVERY

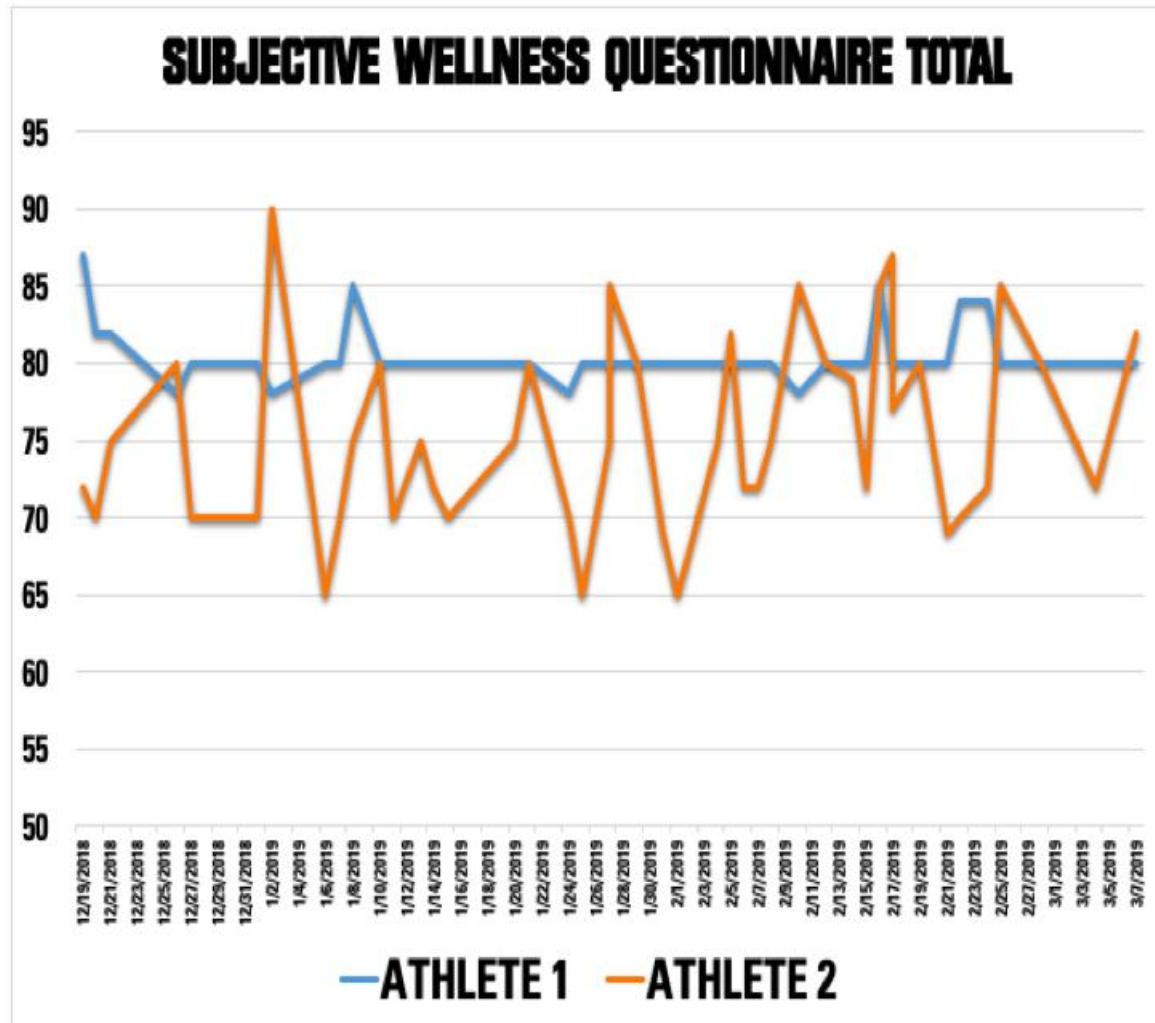


CONTEXT

INDIVIDUAL

**MUST ACCOUNT
FOR
INDIVIDUAL VARIANCE**

STOPLIGHT APPROACH	Z-SCORE
GREEN	> .5
GRAY	.5 <-> -.5
YELLOW	-.5 <-> -1.5
RED	< -1.5



ATHLETE PROFILE

SCHOOL

EASTERN MICHIGAN

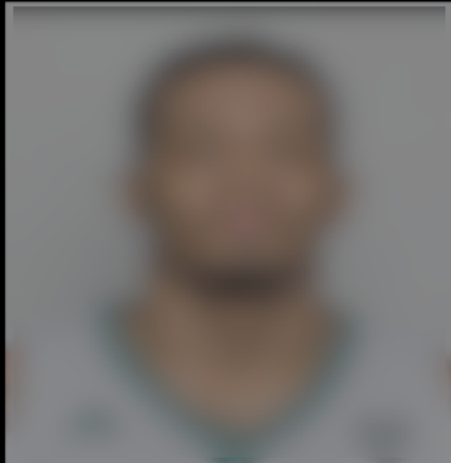
TEAM

MEN'S BASKETBALL

ATHLETE PROFILE

ATHLETE

LAST, FIRST



ANTHROPOMETRIC

	APRIL '17	AUG '17
HT	6'9	
WING SPAN	7020	
WT	215.0	245.0
FFM	191.35	218.05
BODY FAT%	11.0%	11.0%
RESTING HR	67	55

FMS TOTAL

MOVEMENT

	APRIL '17	AUG '17
FMS TOTAL	18	20
THOMAS TEST (L/R)	F	P
	P	P
HK ANKLE (L/R)	32	35
	35	38

PERFORMANCE

	APRIL '17	AUG '17	APRIL '17	AUG '17
VERT. JUMP	29.0	33.5	SQUAT	275
MAX VJ 2FT	34.5	36.5	BENCH PRESS	215
MAX VJ 1FT	31.5	34.5	3RM CHINUP	25
BROAD JUMP	8'5	9'8	3MIN DRILL	20
LANE AGILITY	11.65	11.34	3/4 COURT SPRINT	3.43
SHUTTLE	3.25	3.12		3.34

YEAR

POSITION

YR. POS.

NUMBER

#

READINESS

SWQ	QRT	CMJ
11/18/2017	11/17/2017	11/15/2017

80

65%

23.0

TRAINING LOAD

sRPE	INTERNAL LOAD	GAME DATA
11/18/2017	11/18/2017	11/18/2017

540

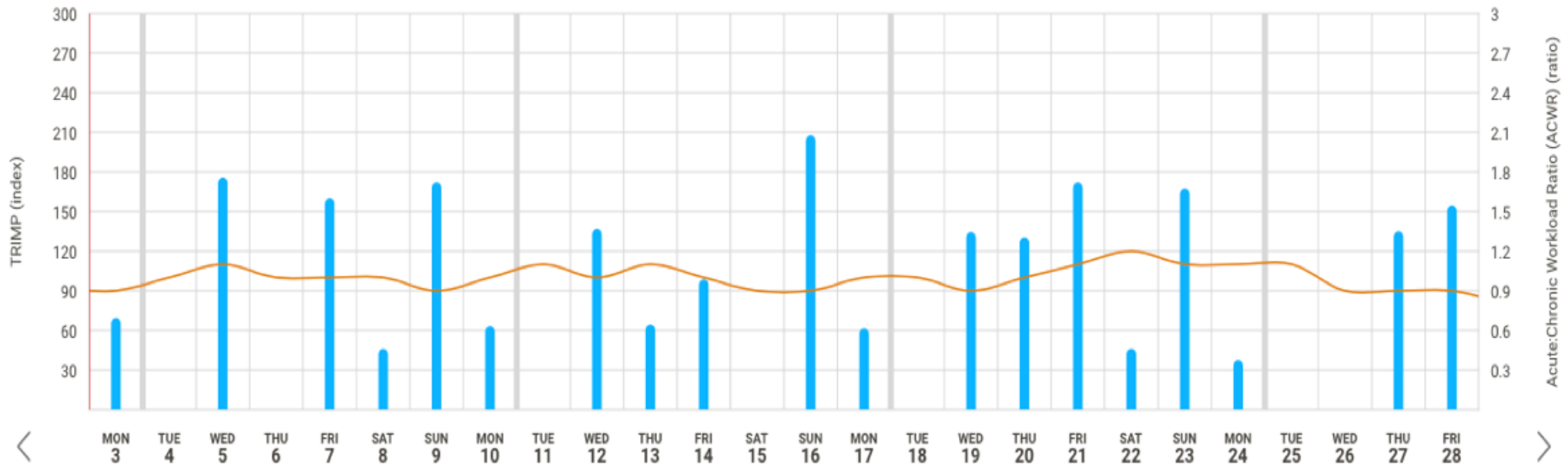
4.1

36

SLEEP QUANT	2	QRT	65%	CMJ	23.0	7D AVG	1790	T.E	4.1	MINUTES	36
SLEEP QUAL	3	7D QRT	70%	NCMJ	22.8	28D AVG	1650	TRIMP	250	+/-	12
NUTRITION	3	RMSSD	70	DJ	24.2	C-sRPE	720	7D TRIMP	750	PTS	22
HYDRATION	4	AVG HR	58			7D AVG	1950	28D TRIMP	800	REB	20
STRESS	3	MIN HR	55			28D AVG	1785	CALORIES	2501	ASSISTS	3

TRENDS

ACUTE TO CHRONIC WORKLOAD



TOO FAST OF AN INCREASE IN TRAINING LOAD OR TOO FAST OF A DECREASE IN TRAINING LOAD IS CORRELATED WITH INCREASED INJURY RISK

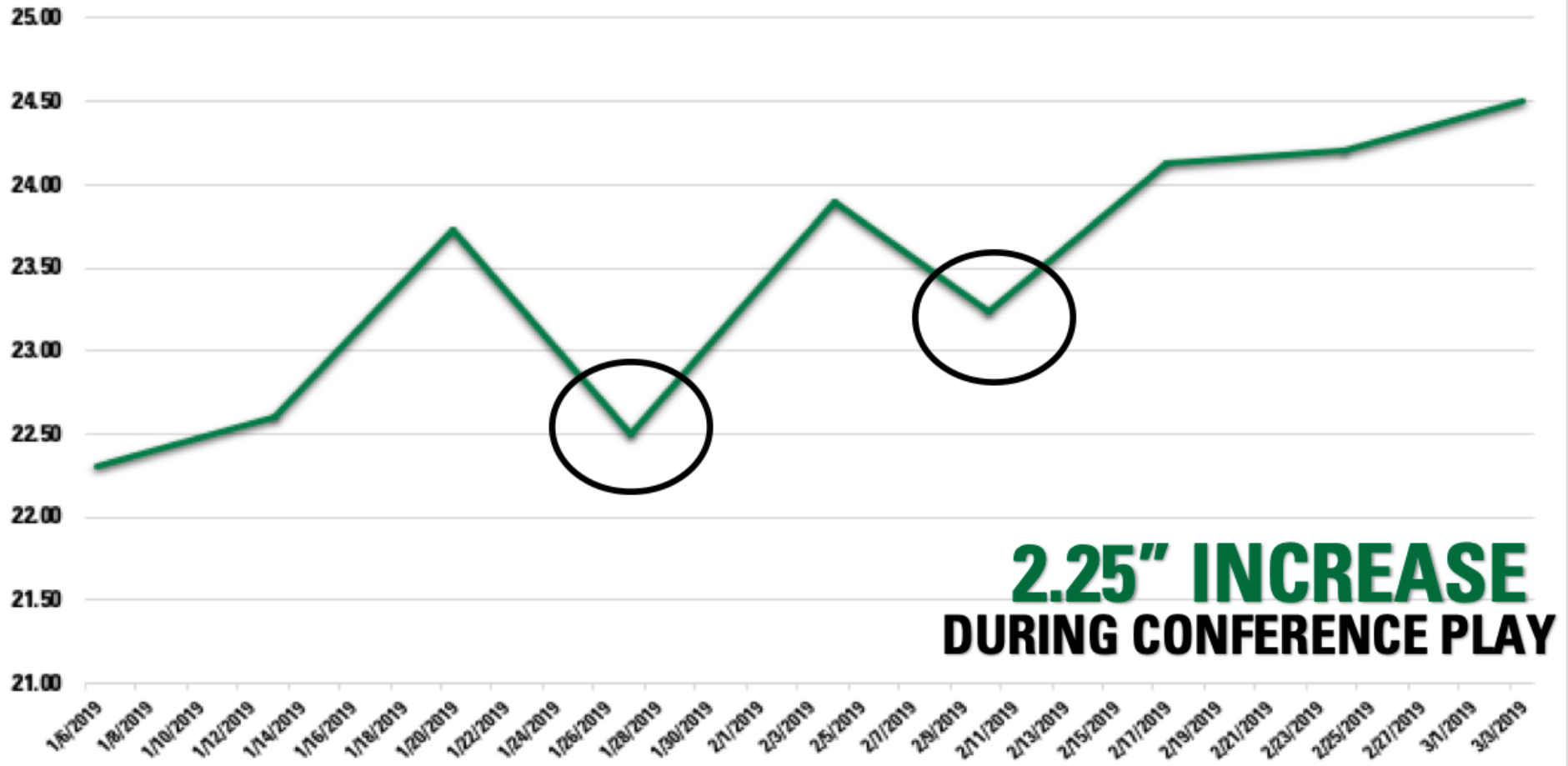


**SWEET SPOT
.8 - 1.3**

TRENDS

WHERE ARE WE TRENDING?

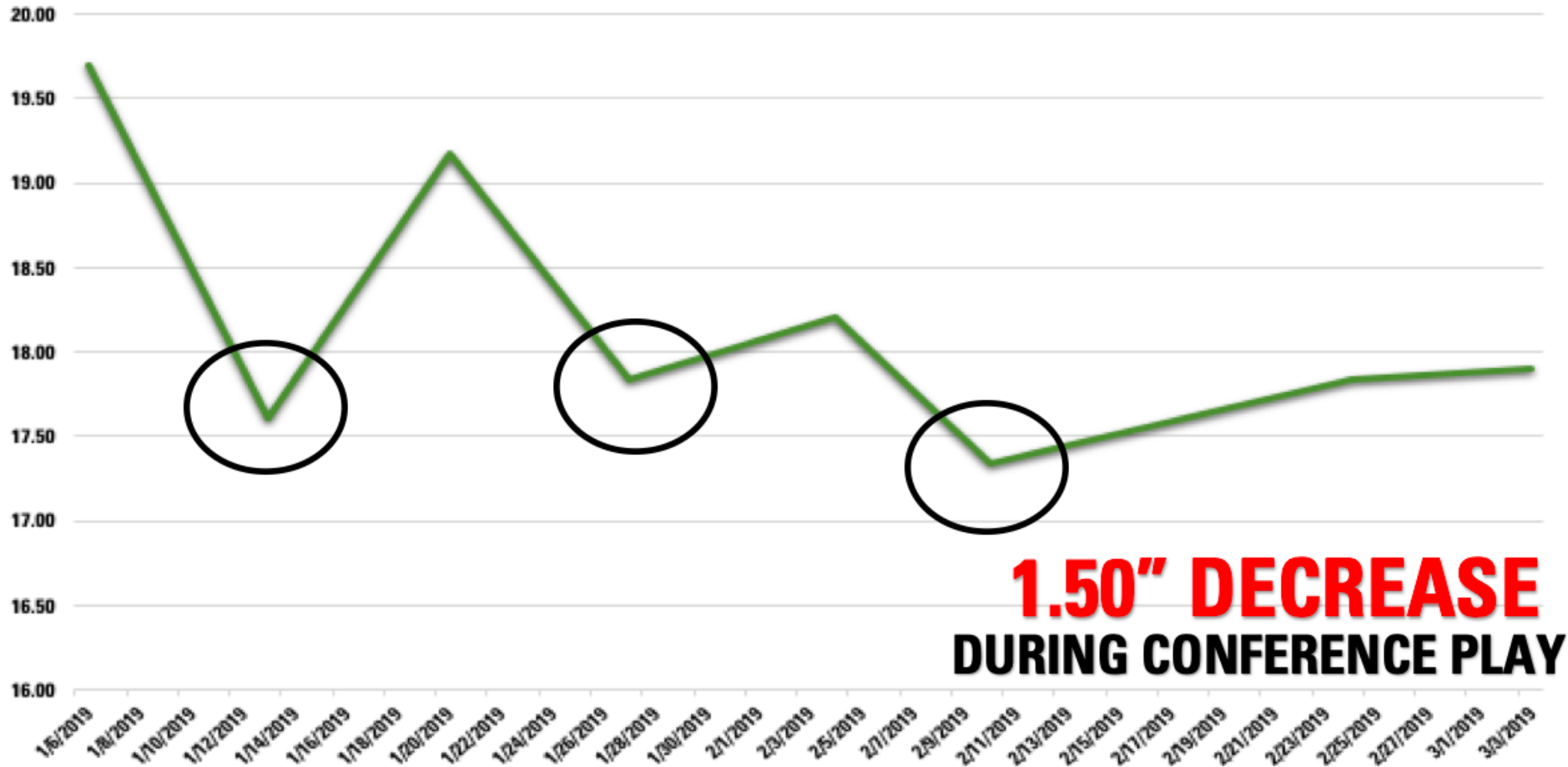
ATHLETE 1: CMJ CONFERENCE PLAY TREND



TRENDS

WHERE ARE WE TRENDING?

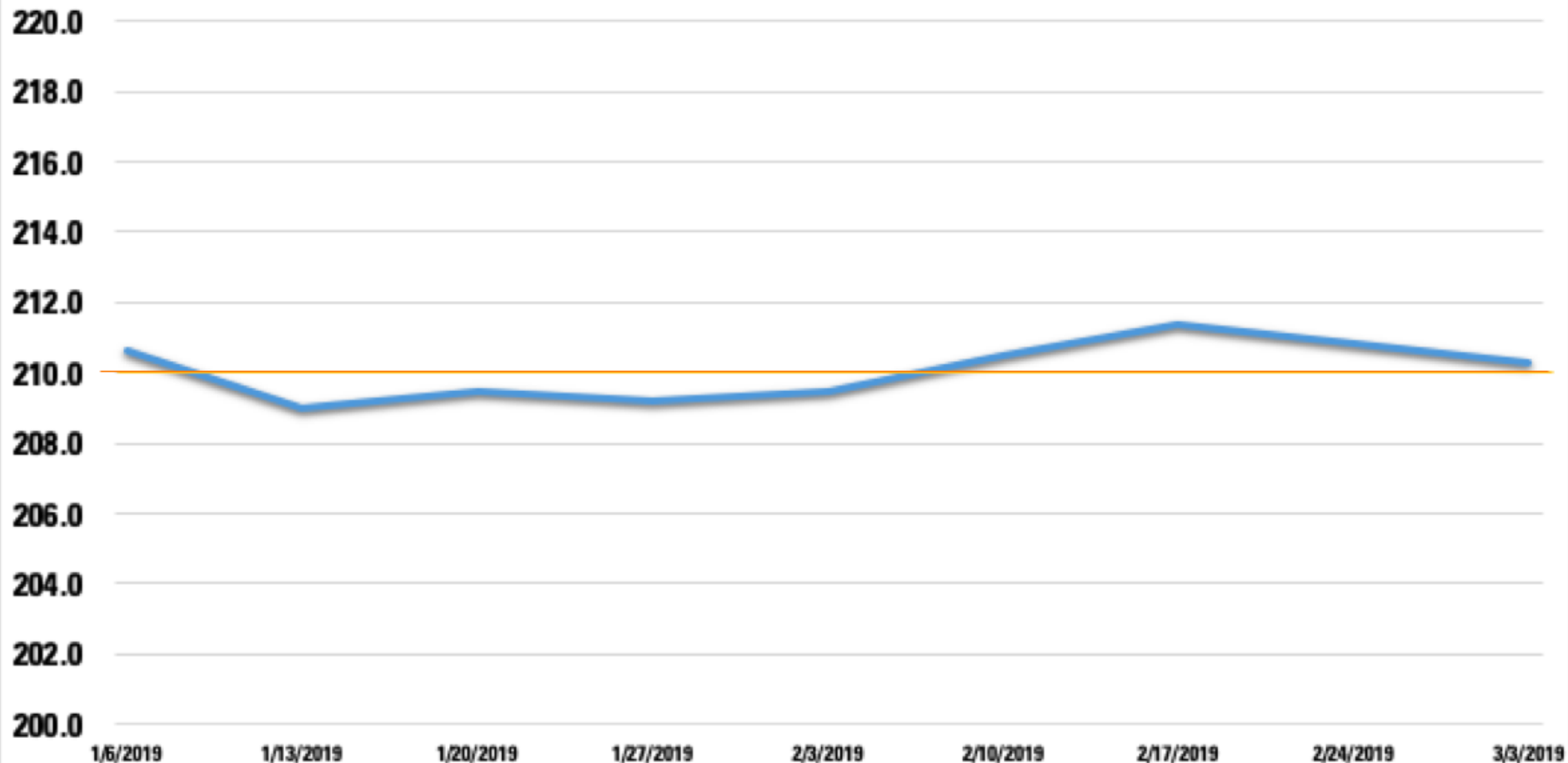
ATHLETE 2: CMJ CONFERENCE PLAY TREND



TRENDS

WHERE ARE WE TRENDING?

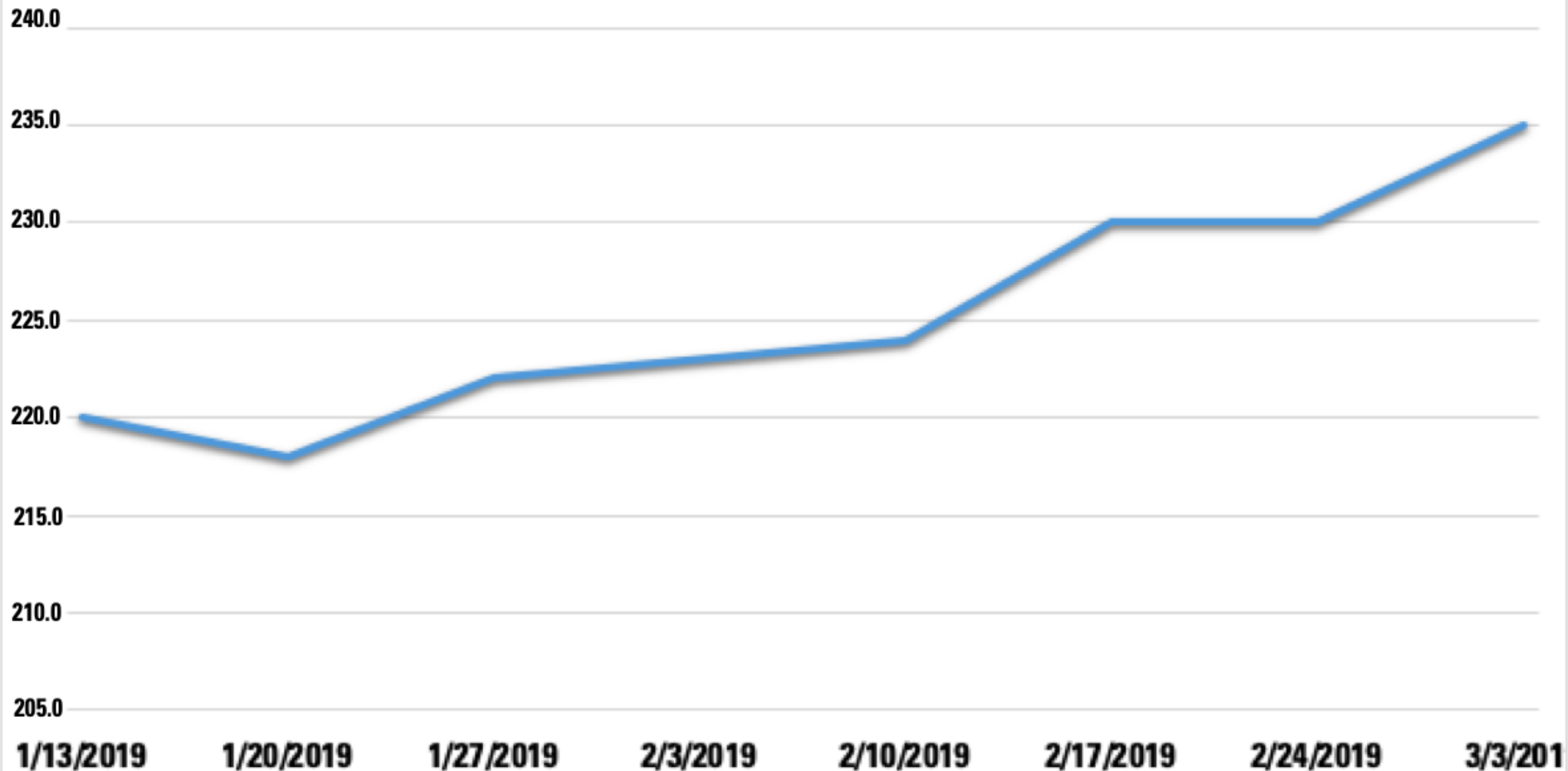
ATHLETE 1: CONFERENCE PLAY BODY WEIGHT



TRENDS

WHERE ARE WE TRENDING?

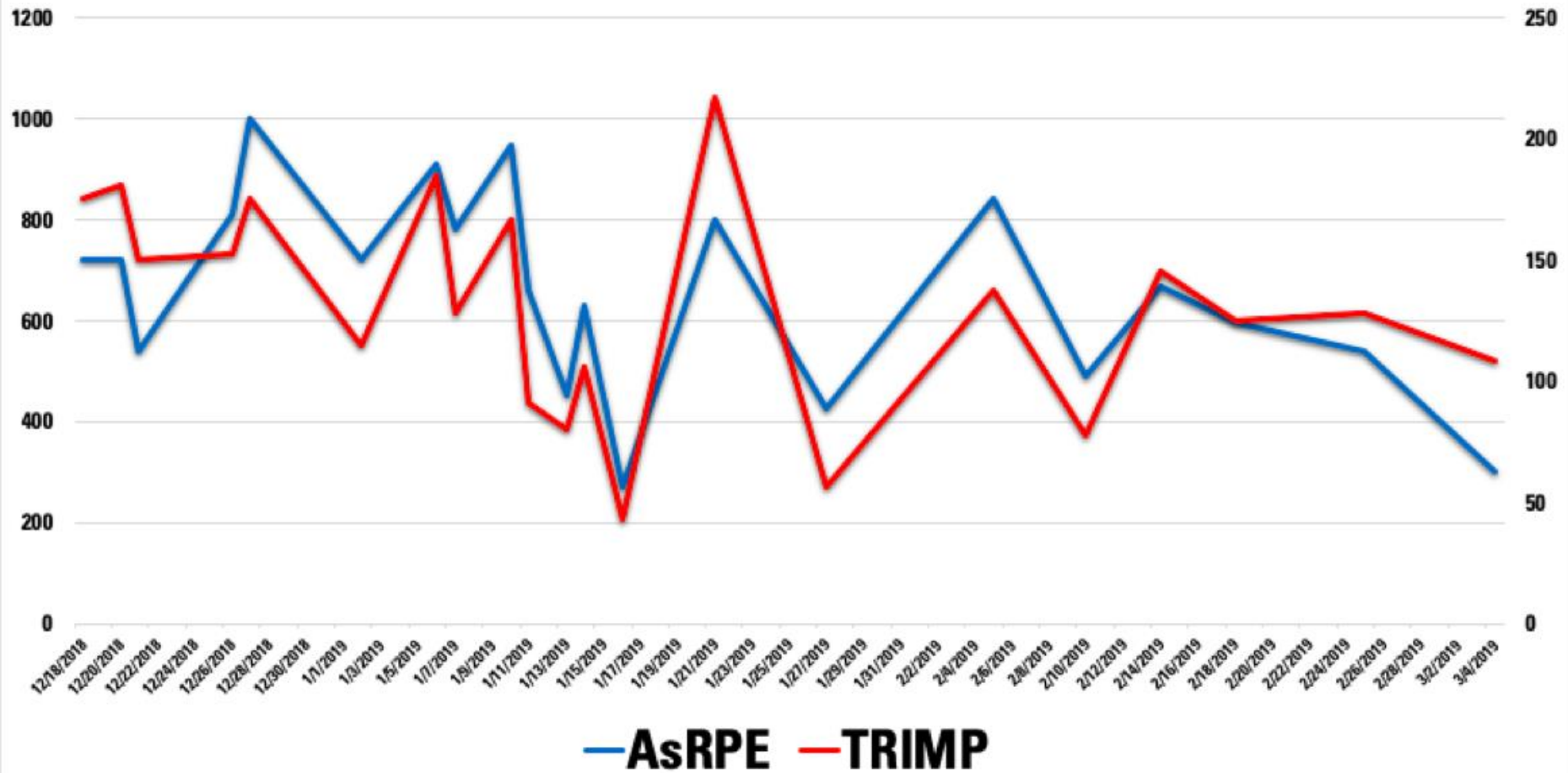
ATHLETE 2: CONFERENCE PLAY BODY WEIGHT



TRENDS

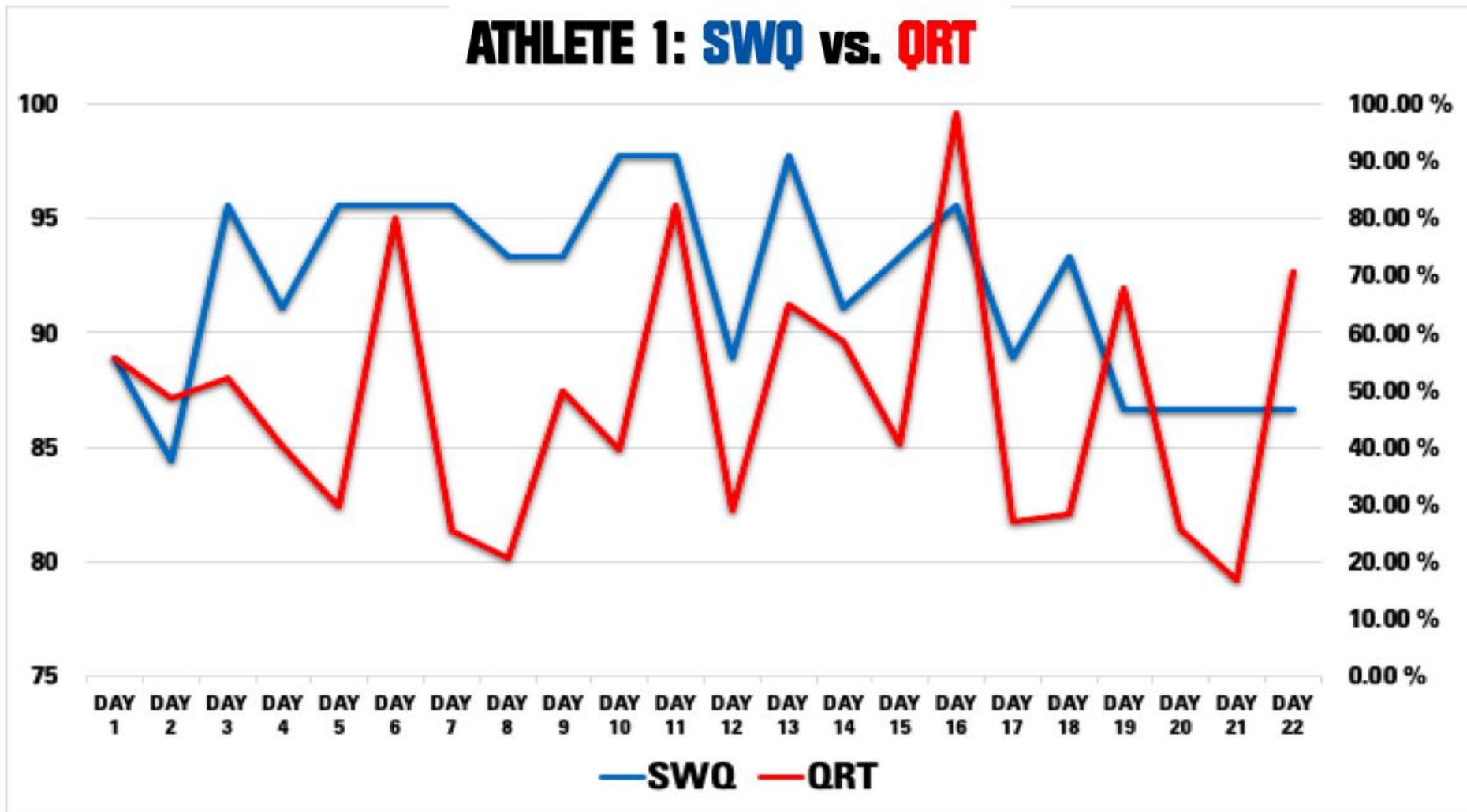
OBJECTIVE DATA vs. SUBJECTIVE DATA

AsRPE vs. TRIMP



TRENDS

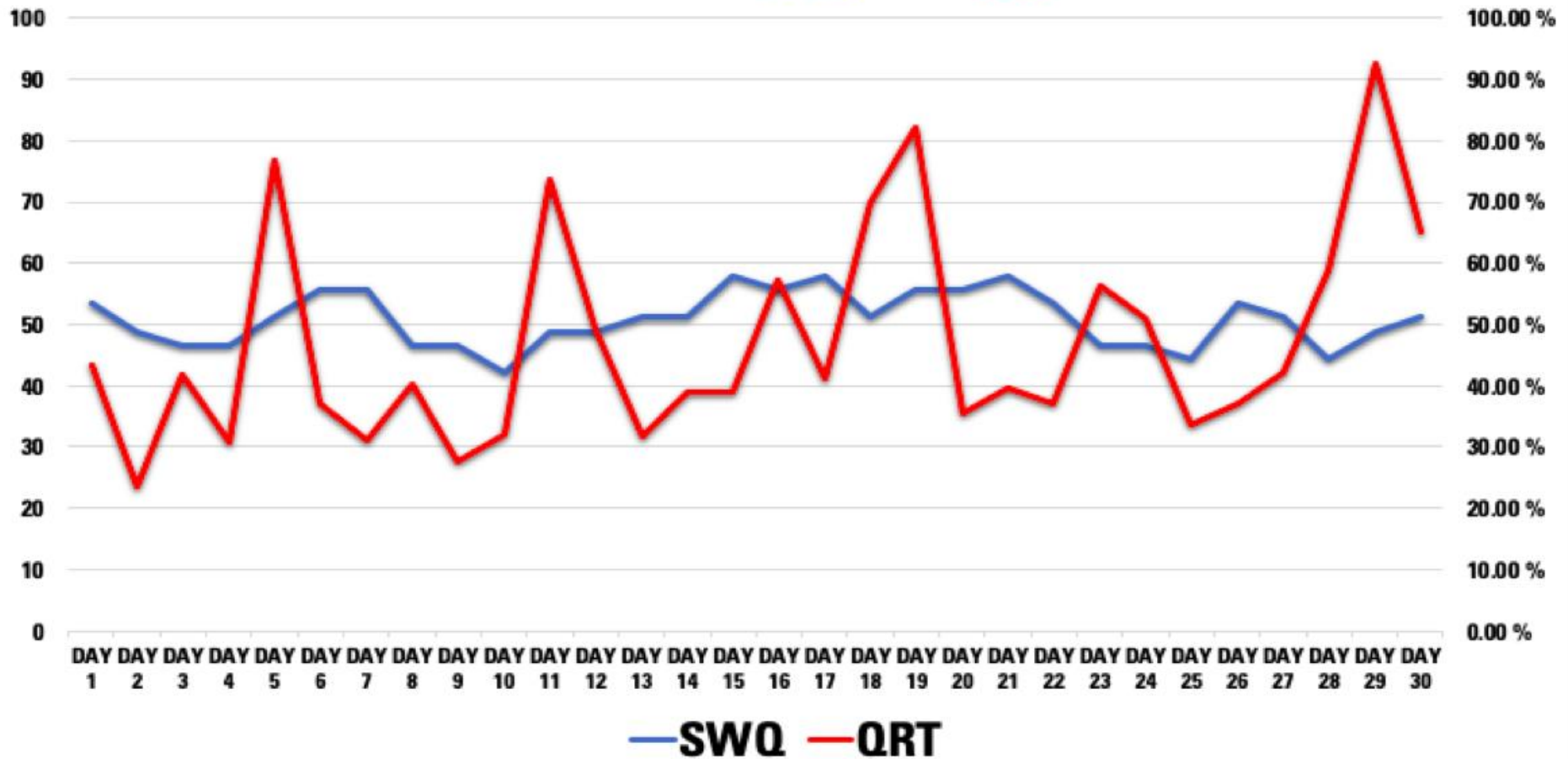
OBJECTIVE DATA vs. SUBJECTIVE DATA



TRENDS

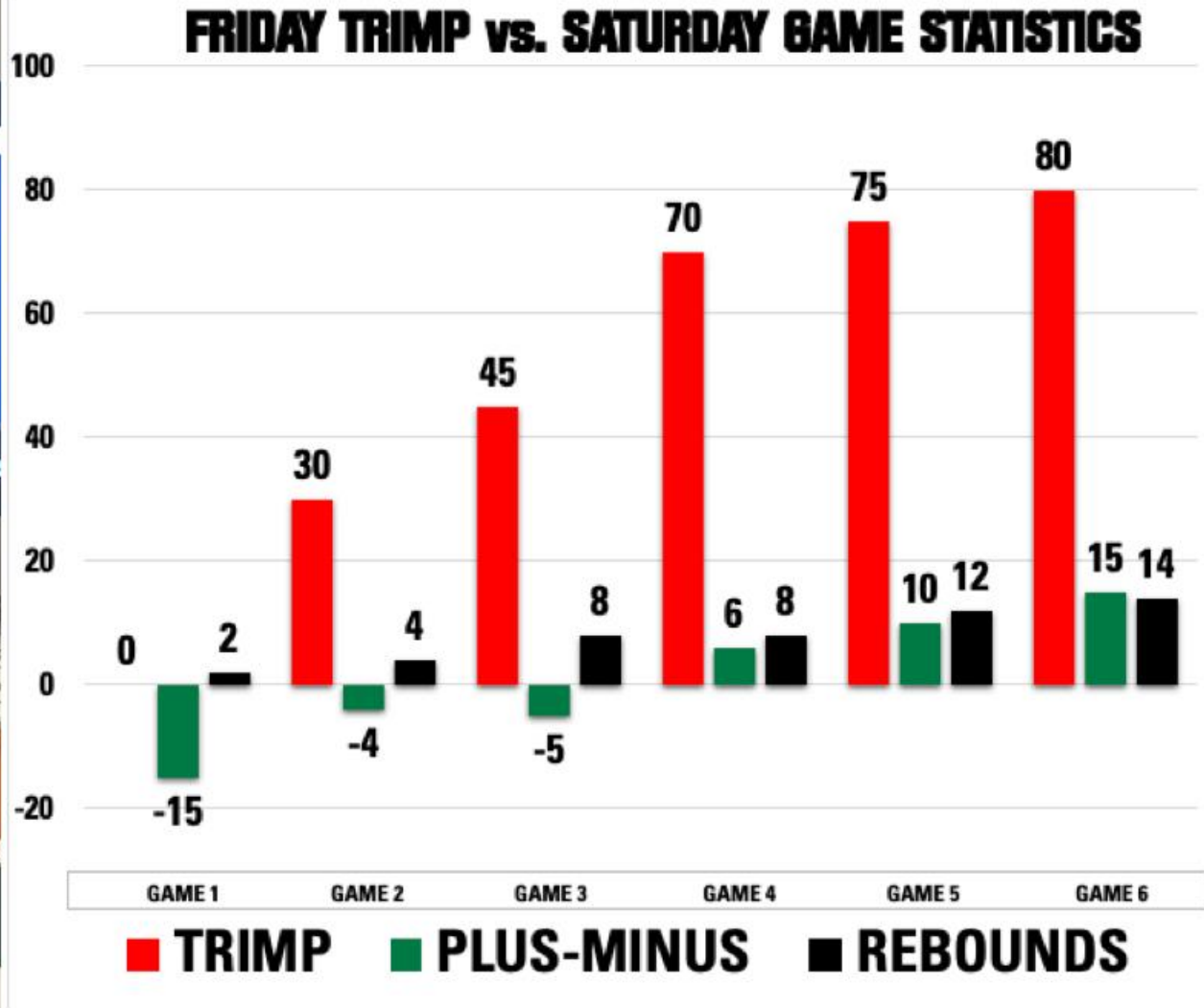
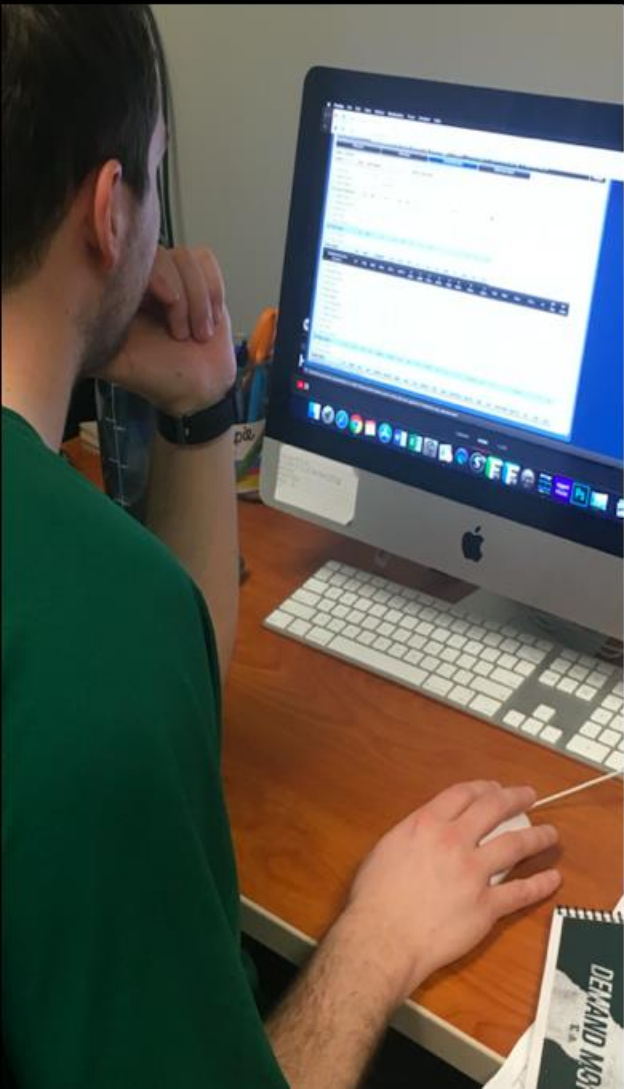
OBJECTIVE DATA vs. SUBJECTIVE DATA

ATHLETE 2: SWQ vs. QRT



TRENDS

PHYSIOLOGICAL DATA vs. PERFORMANCE DATA



STEP 3

REPORT



REPORT

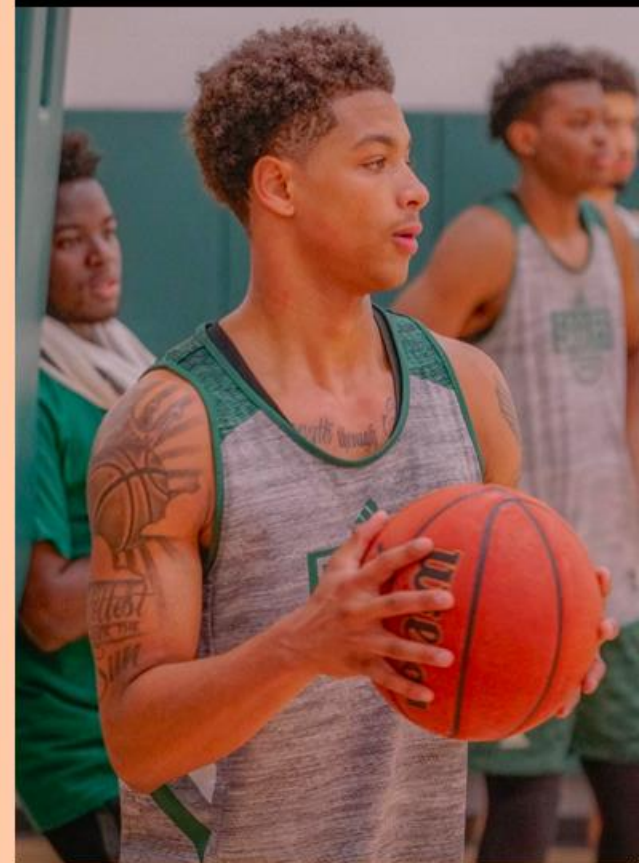
COACHING STAFF



SPORTS MEDICINE

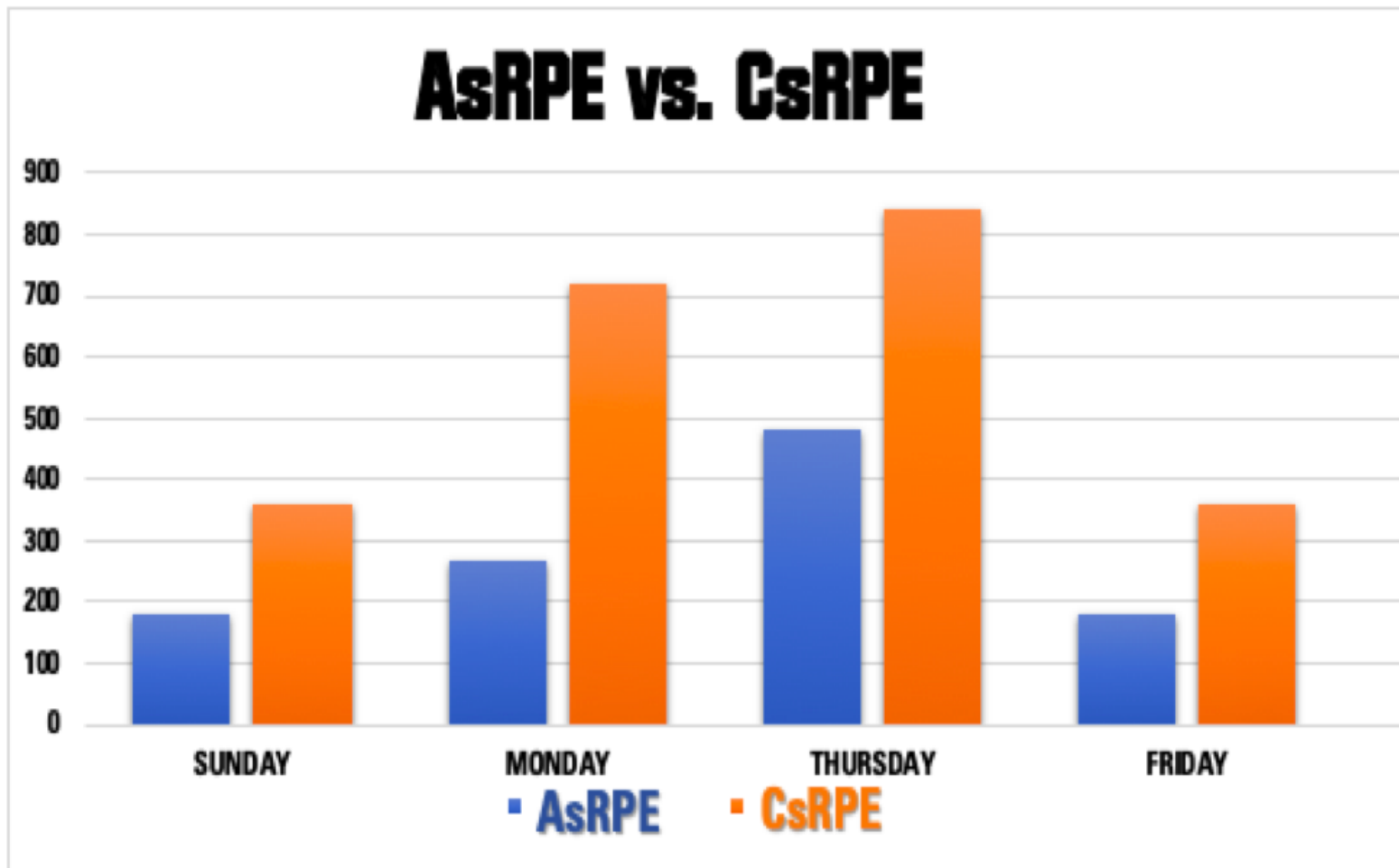


ATHLETES

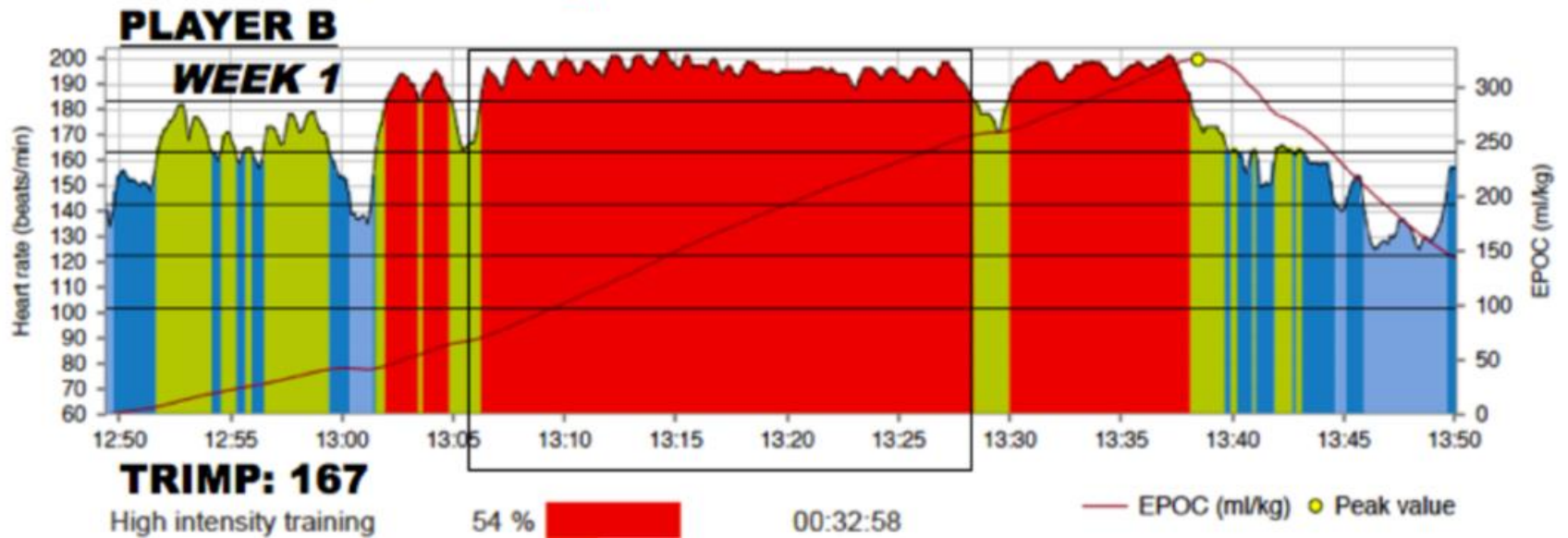
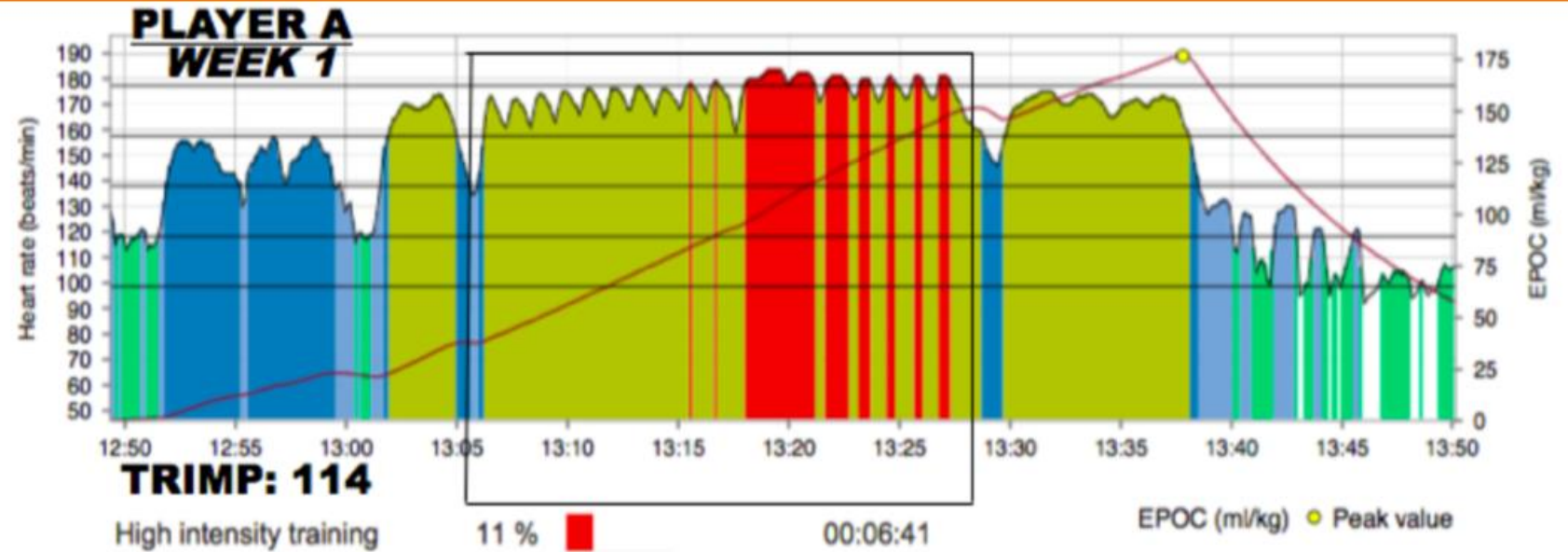


COACHING STAFF

ARE WE GETTING THE RESULTS WE EXPECTED?

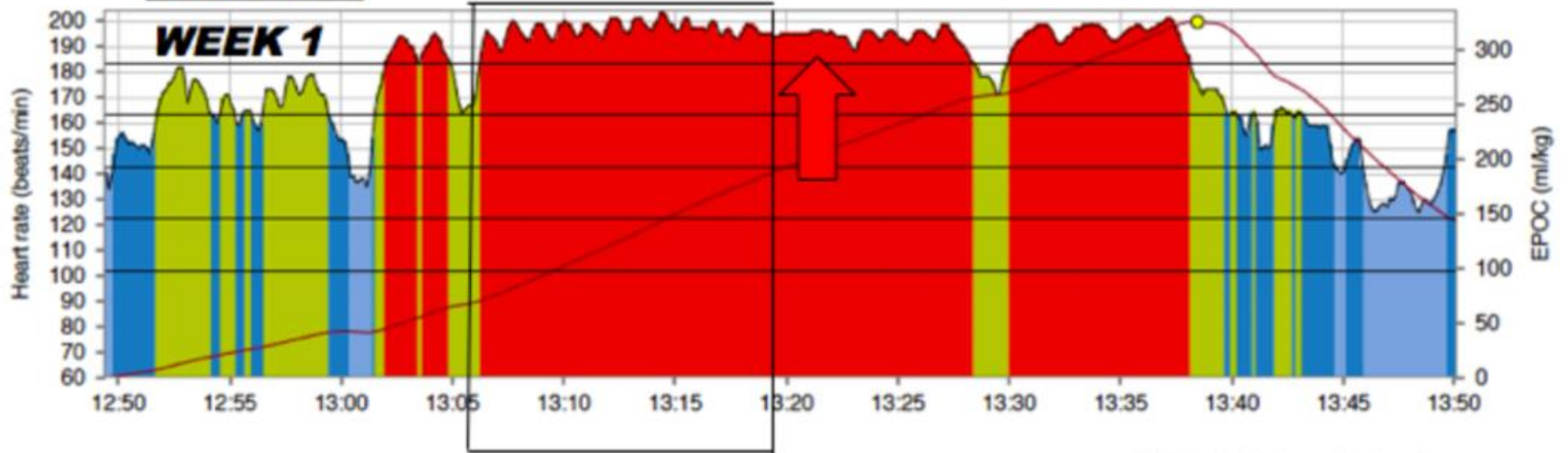


COACHING STAFF

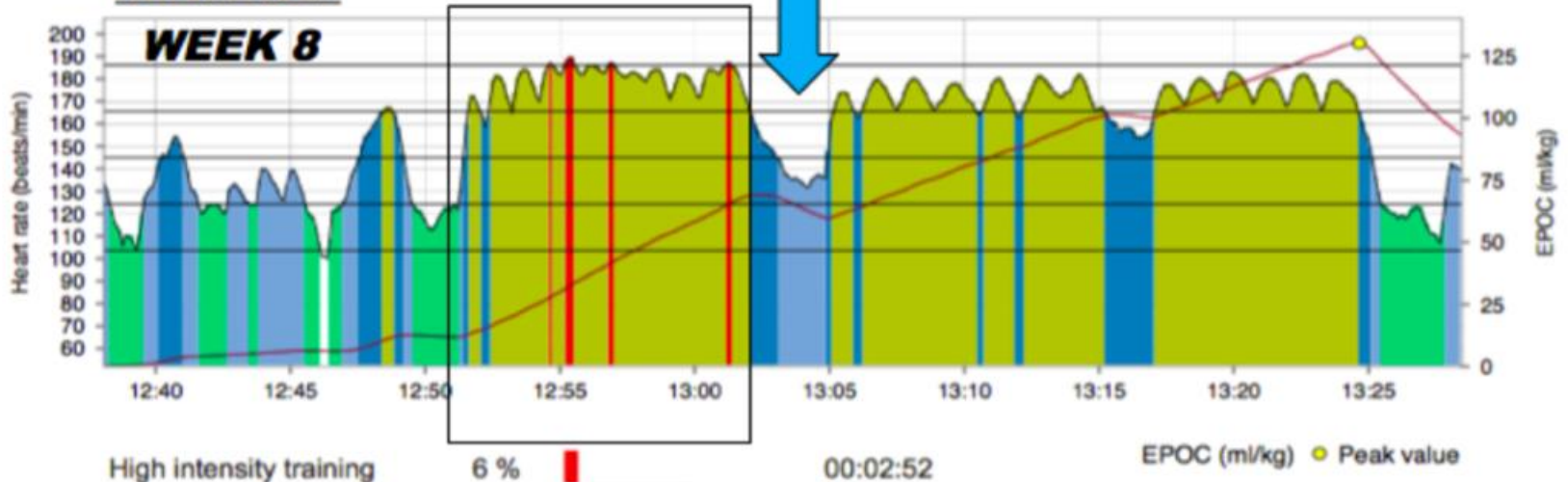


COACHING STAFF

PLAYER B



PLAYER B



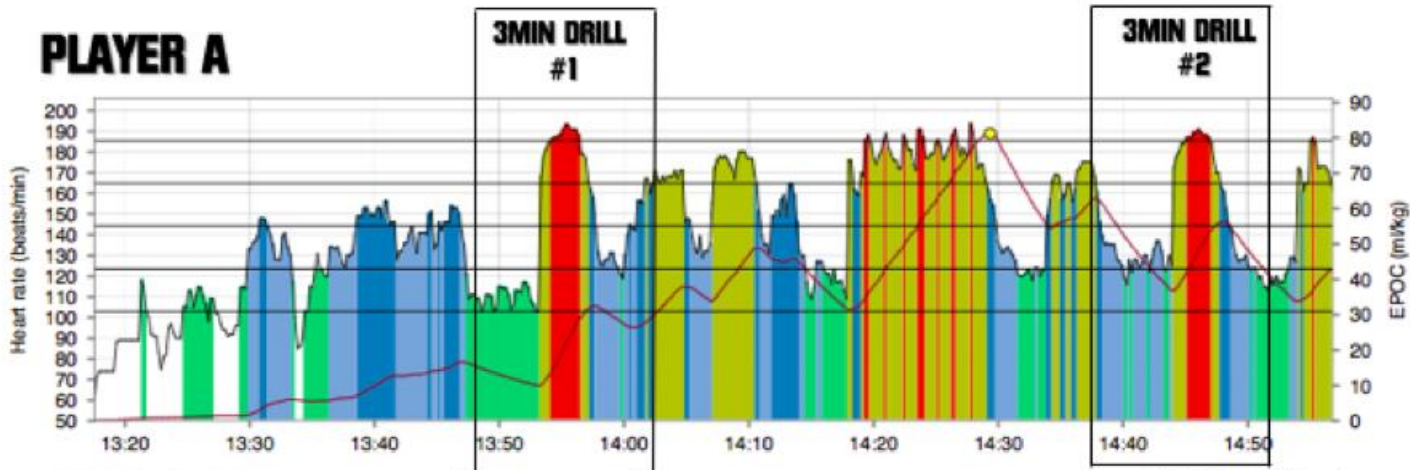
COACHING STAFF

EASTERN
M. BASKETBALL

3MIN DRILL COMPARISON

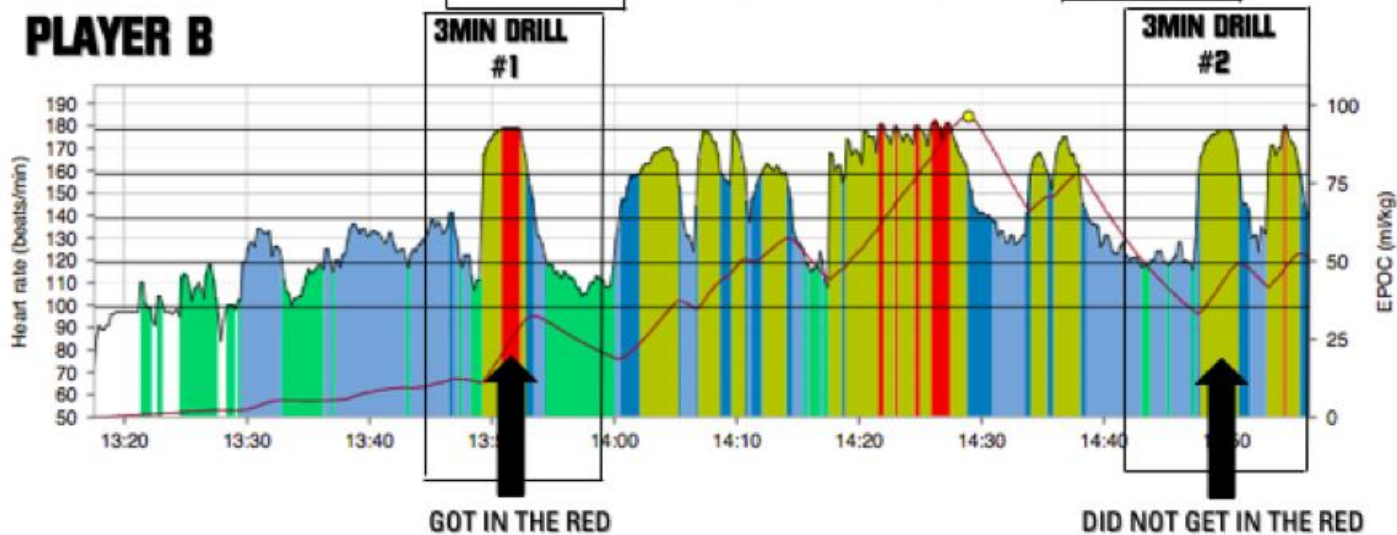
FIRSTBEAT

PLAYER A



PLAYER A is able to replicate the same level of intensity late in the session, as he did earlier in the session. Even under fatigue this athlete is able to put forth the required effort.

PLAYER B



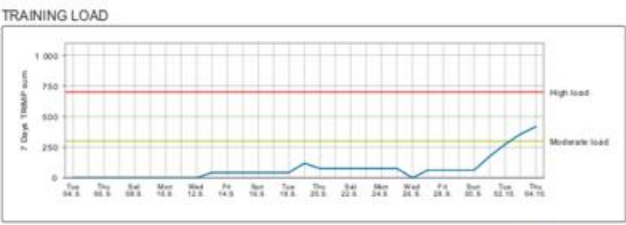
PLAYER B is unable to replicate the same level of intensity late in the session as he did earlier in the session. He did not put forth as much effort when under fatigue.

SPORTS MEDICINE

FIRSTBEAT REPORT

PAIN IDENTIFICATION

DAILY INTERACTIONS



	SLEEP QUANT	SLEEP QUAL	NUTRITION	NUTRITION	HYDRATION	MOOD	STRESS	FATIGUE	MUSCLE	PAIN
4	4	4	3	4	4	5	5	4		
4	4	4	3	4	4	4	3	5	Left knee	
2	3	3	3	3	3	4	3	3		
5	4	4	3	4	4	4	4	4	4	Back
4	4	4	4	4	4	3	3	3	3	Right hip
4	5	3	3	4	4	3	3	3		
4	4	4	4	4	4	5	5	5		
5	4	4	3	4	4	5	5	4		
4	4	3	3	4	4	4	4	3		
4	5	4	4	5	5	5	5	4		
3	3	3	3	3	3	3	3	3		
4	5	3	3	3	5	2	4	4		
3	3	3	4	4	4	4	4	4		
3	4	4	4	4	3	4	4	4		
5	4	5	5	5	4	4	4	4	3	Left Knee
2	2	3	3	4	5	4	4	4		
1	2	2	2	3	2	3	2	3		
3	3	5	5	3	3	3	4	3	3	Left knee
2	3	4	3	5	4	3	3	2	3	Right hip
3	3	3	3	3	3	3	3	3		
5	3	4	4	4	4	4	4	5	3	Back
3	3	3	3	3	4	4	3	2	3	Knee back
3	5	3	3	4	3	2	3	1		
3	4	4	3	3	3	4	2	3	3	Left knee & left index finger
3	4	4	4	3	3	4	4	4		
3	4	5	4	3	4	5	3	3		
4	4	4	4	4	5	4	4	4		
4	4	4	4	4	5	4	4	4		
3	4	2	2	3	3	5	3	3	3	Left knee left index finger
3	3	3	3	3	3	4	3	4		
4	5	2	2	3	5	5	4	3		
3	4	5	4	4	4	3	5	3	5	Right hip
3	3	5	4	3	3	4	3	4	3	Left knee
5	3	4	3	5	3	3	3	1		
4	4	4	3	4	4	5	4	4		
4	4	4	4	3	4	4	3	3	3	Back
1	4	3	3	3	4	5	2	3	3	Left knee left index finger
3	3	4	4	3	5	5	4	4		
3	3	3	3	4	4	4	4	2		
4	4	4	4	3	4	4	4	4	4	Back
3	4	4	3	3	4	5	3	4		



ATHLETES

DATA SHOULD LEAD TO MORE CONVERSATIONS AND PERSONAL INTERACTIONS

RECOVERY

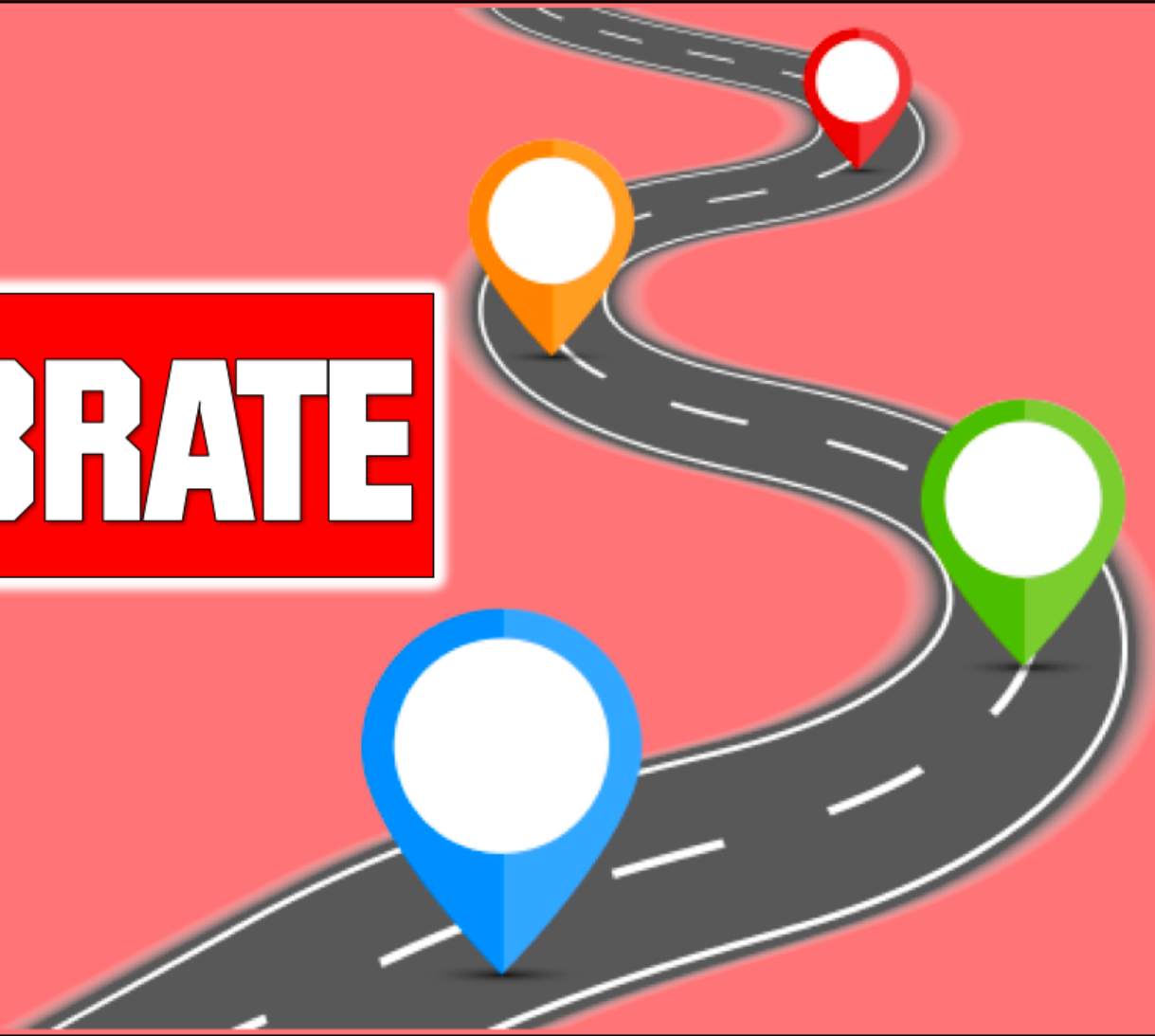


TRAINING LOAD



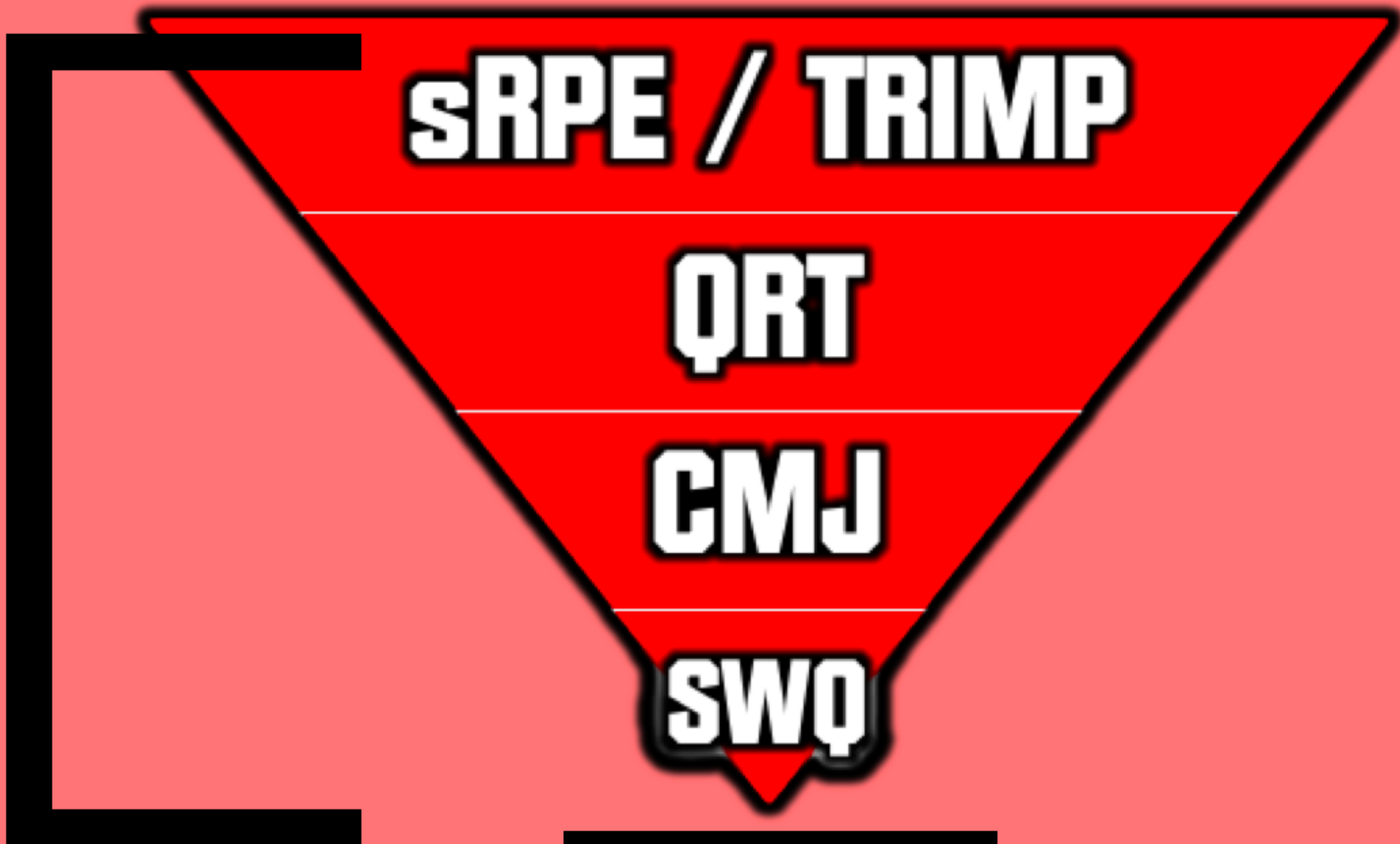
STEP 4

RECALIBRATE



RECALIBRATE

CONVERSATIONS



RECALIBRATION

WEIGHT-ROOM INTERVENTION

ATHLETE OWNERSHIP

COACHING IS TEACHING

1. VOLUME & INTENSITY

REDUCE VOLUME OR INTENSITY?

CONVERSATION DRIVES THE DECISION

GREEN

NORMAL PROGRAM

YELLOW

REDUCE INTENSITY

RED

REDUCE VOLUME & INTENSITY



2. MODALITY

3. RECOVERY LIFT

RECOVERY LIFT

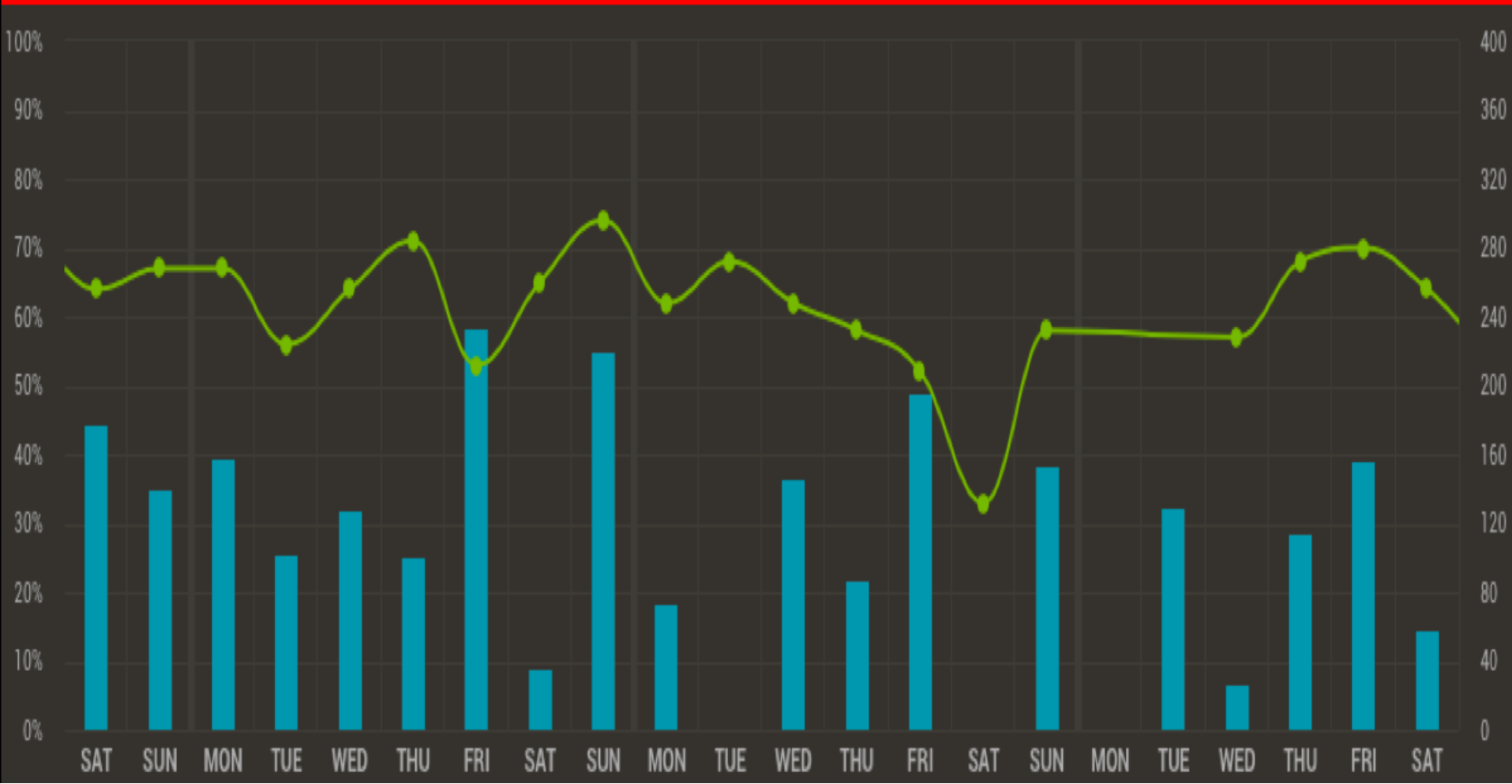
CATEGORY	EXAMPLE	SETS x REPS
BREATHING	QUADRUPED BREATHING	3x 5 BREATHS
CIRCULATORY	JUMP ROPE / BIKE	x10-15min (75-85% HRmax)
STRENGTH	RACK PULL	3x 3-5
RECOVERY	FOAM ROLL / MOBILITY	x5-10min

4. RECOVERY DAY



BASKETBALL INTERVENTION

TRAINING LOAD INTERVENTIONS vs. TRAINING LOAD PRESCRIPTION



INTERVENTIONS

SESSION DETAILS



00:05:04
DURATION

85 BPM
AVERAGE HR

81 BPM
MINIMUM HR

35
RMSSD

SESSION DETAILS



00:05:04
DURATION

86 BPM
AVERAGE HR

84 BPM
MINIMUM HR

30
RMSSD

SESSION DETAILS



00:05:05
DURATION

68 BPM
AVERAGE HR

62 BPM
MINIMUM HR

78
RMSSD

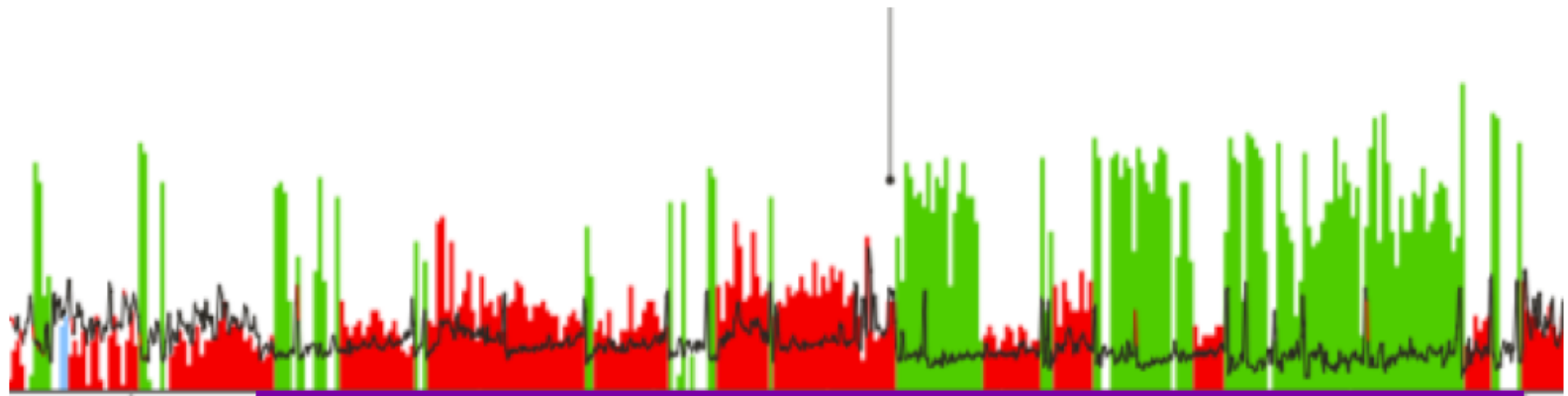
ARE THE INTERVENTIONS WORKING?





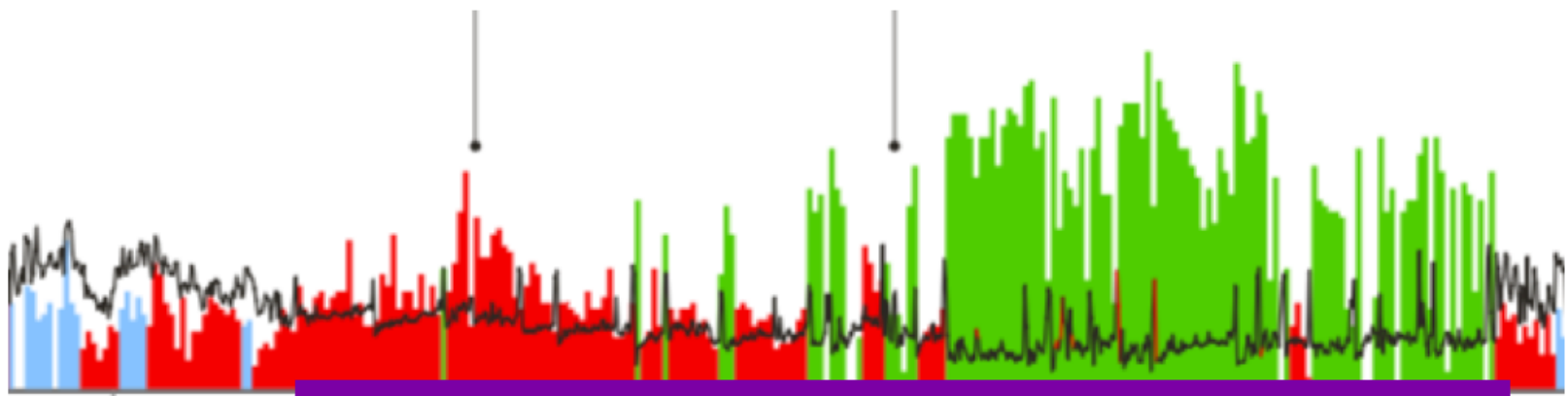
BODY GUARD DATA

TV ON ALL NIGHT: *OVERNIGHT RECOVERY 43%, RMSSD 62*



11:00PM 12:00AM 1:00AM 2:00AM 3:00AM 4:00AM 5:00AM 6:00AM 7:00AM 8:00AM

SLEEP TIMER ON: *OVERNIGHT RECOVERY 53%, RMSSD 68*

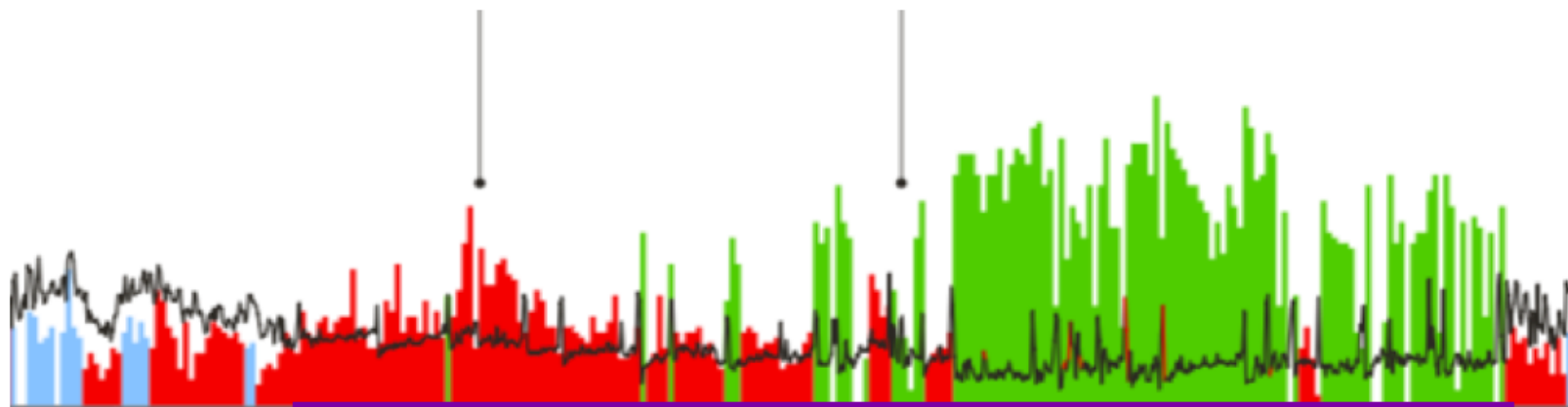


11:00PM 12:00AM 1:00AM 2:00AM 3:00AM 4:00AM 5:00AM 6:00AM 7:00AM 8:00AM



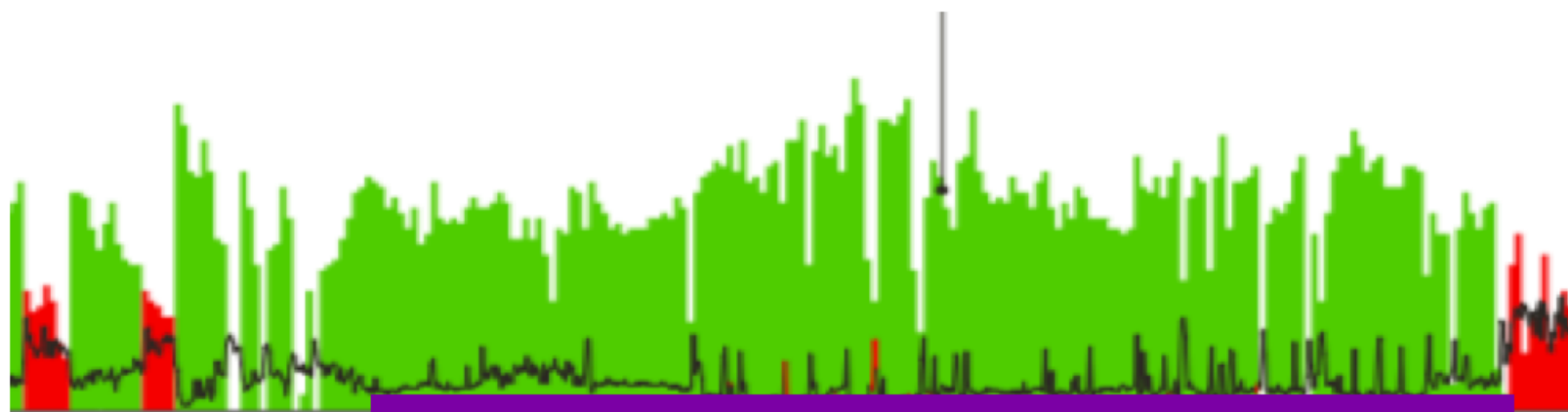
BODY GUARD DATA

SLEEP TIMER ON: *OVERNIGHT RECOVERY 53%, RMSSD 68*



11:00PM 12:00AM 1:00AM 2:00AM 3:00AM 4:00AM 5:00AM 6:00AM 7:00AM 8:00AM

NO TV & RPR: *OVERNIGHT RECOVERY 70%, RMSSD 80*



11:00PM 12:00AM 1:00AM 2:00AM 3:00AM 4:00AM 5:00AM 6:00AM 7:00AM 8:00AM

ASPECTS OF PERFORMANCE

TECHNICAL



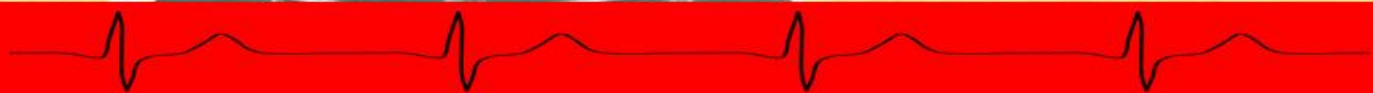
TACTICAL



PHYSICAL



HEALTH







THANK YOU!

E



FIRSTBEAT

CSCC_a

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