



**TWIN CITIES  
ORTHOPEDICS**



**TRAINING  
HAUS**  
POWERED BY TCO

# Delivering High Performance Rehabilitation and Navigating Multidisciplinary Care

Bringing the Collegiate and Professional  
Experience to the Clinic

Twin Cities Orthopedics Virtual Rounds

March 17<sup>th</sup>, 2022

**Chad Krawiec, MS, LAT, ATC**

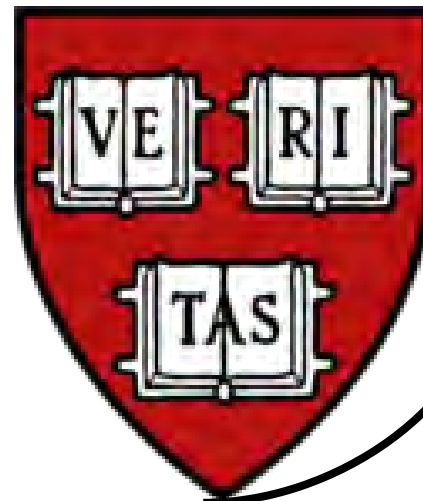
Athletic Trainer –Training HAUS

# Thanks!

- Annie Rowan and Karie Nash and all involved in keeping the virtual rounds running
- Everyone taking their time to watch
- TrainingHAUS and Eagan MOB staff
- All of our patients
- I have no conflicts of interest to disclose.

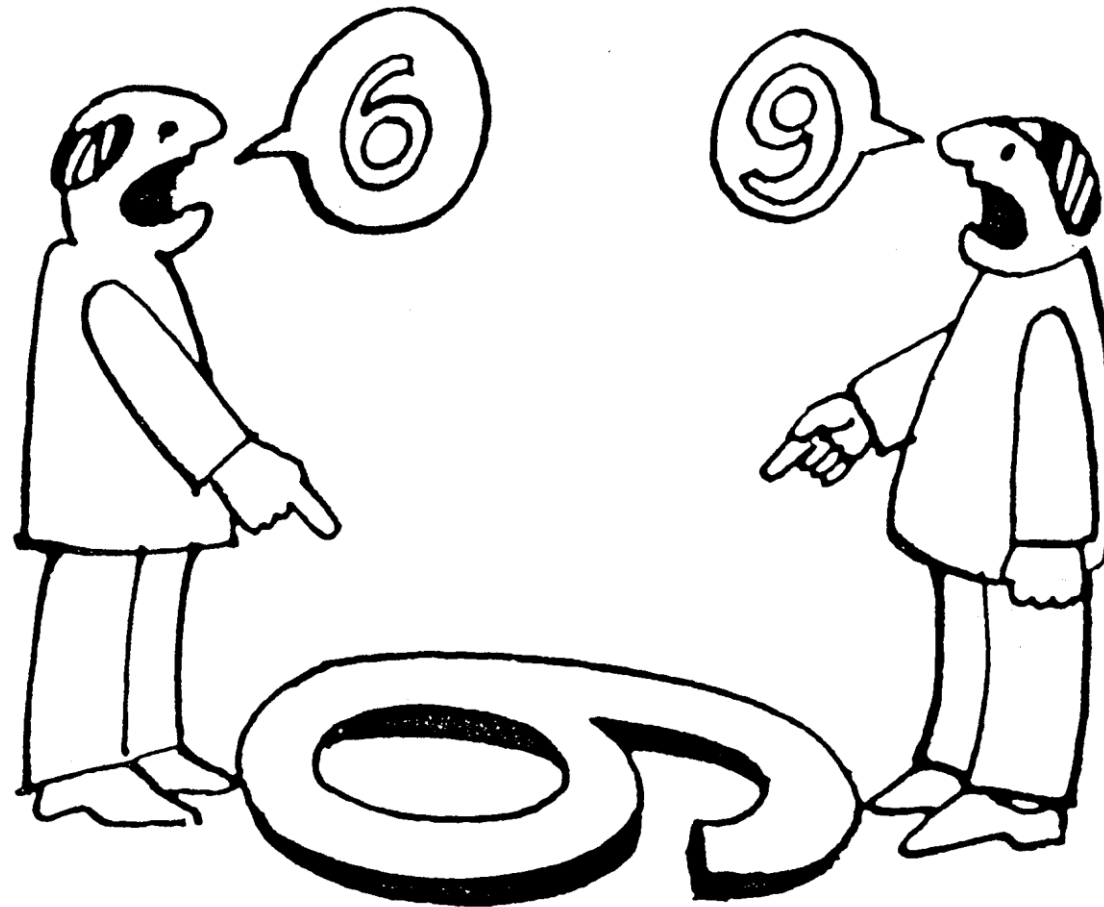
# Happy St. Patrick's Day







# Perspective

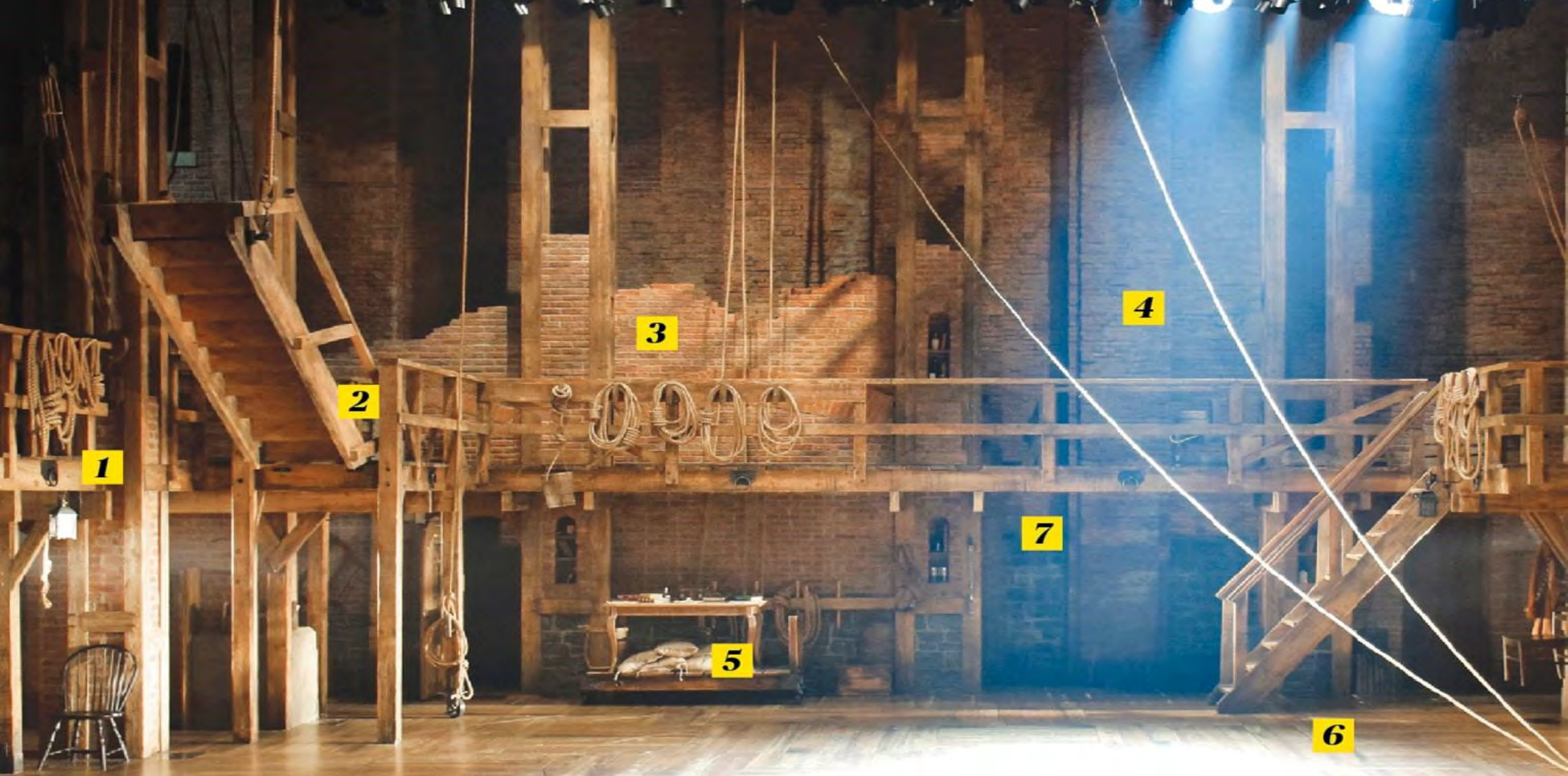


# Overview

- Components of care and training for the rehab of elite athletes
- Strategies for integrating providers across different disciplines
- Ways to apply high performance concepts to across our patient population
- Look at how a structured return to sport training program can be used to meet these components and integrate practitioners

**Yesterday I saw a book called  
“How to solve 50% of your problems”  
So I bought two.**





# Set the stage

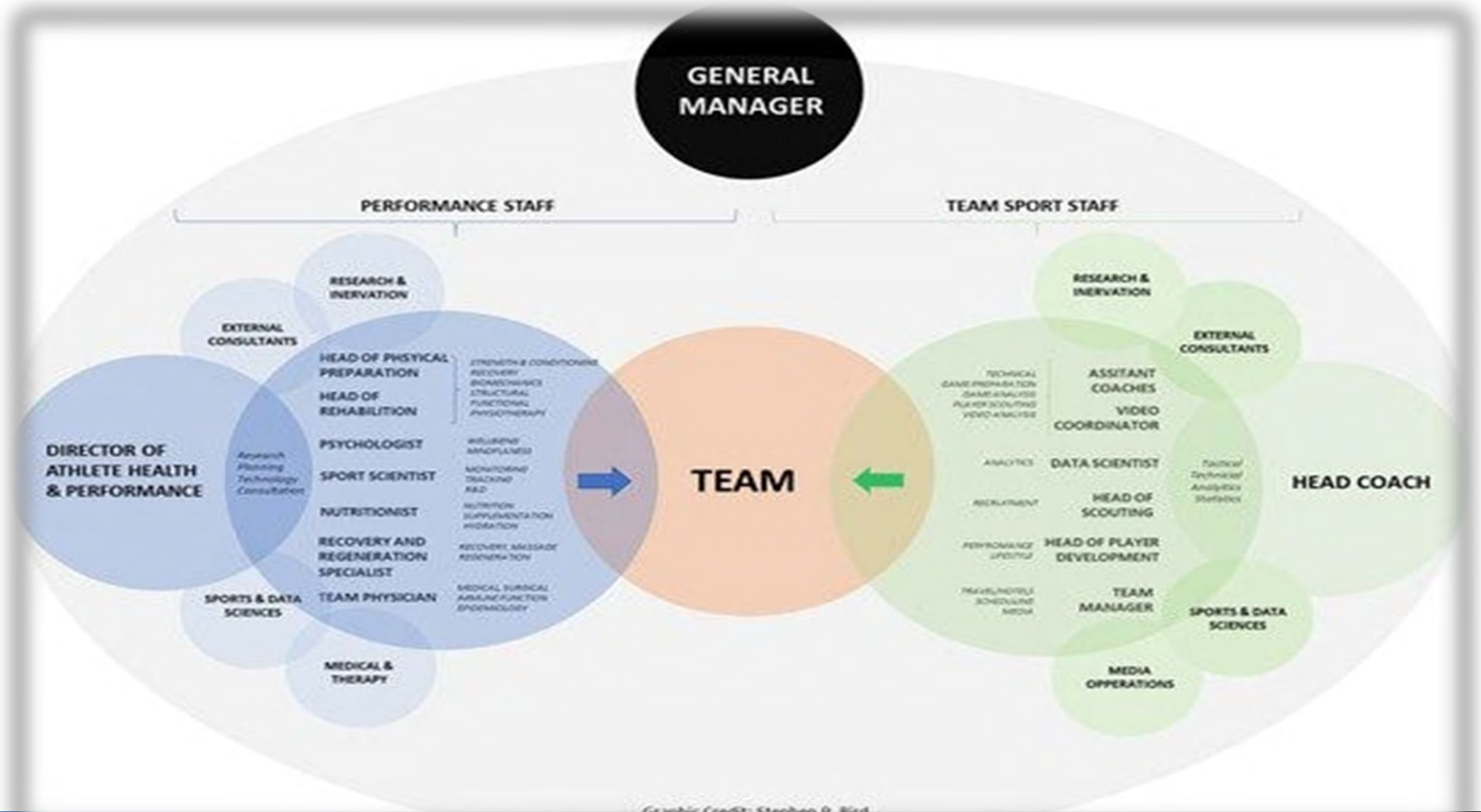


- Private



- Team sports





Graphic Credit: Stephen P. Bird

# Components of care for the elite athlete

- Medical- physician
- Rehabilitation – physical therapist, athletic trainer
- Strength & Conditioning
  - \* deconditioning
- Sports Science\*\*\*
- Systemic health readiness, recovery, sleep
- Tissue healing and health
- Nutrition
- Psychological
- Sport skill and return to sport

# Sports Science

## Noise – Wisdom Continuum

Data (alone) = Noise

Data + Context = Information

Experimentation + Error = Experience

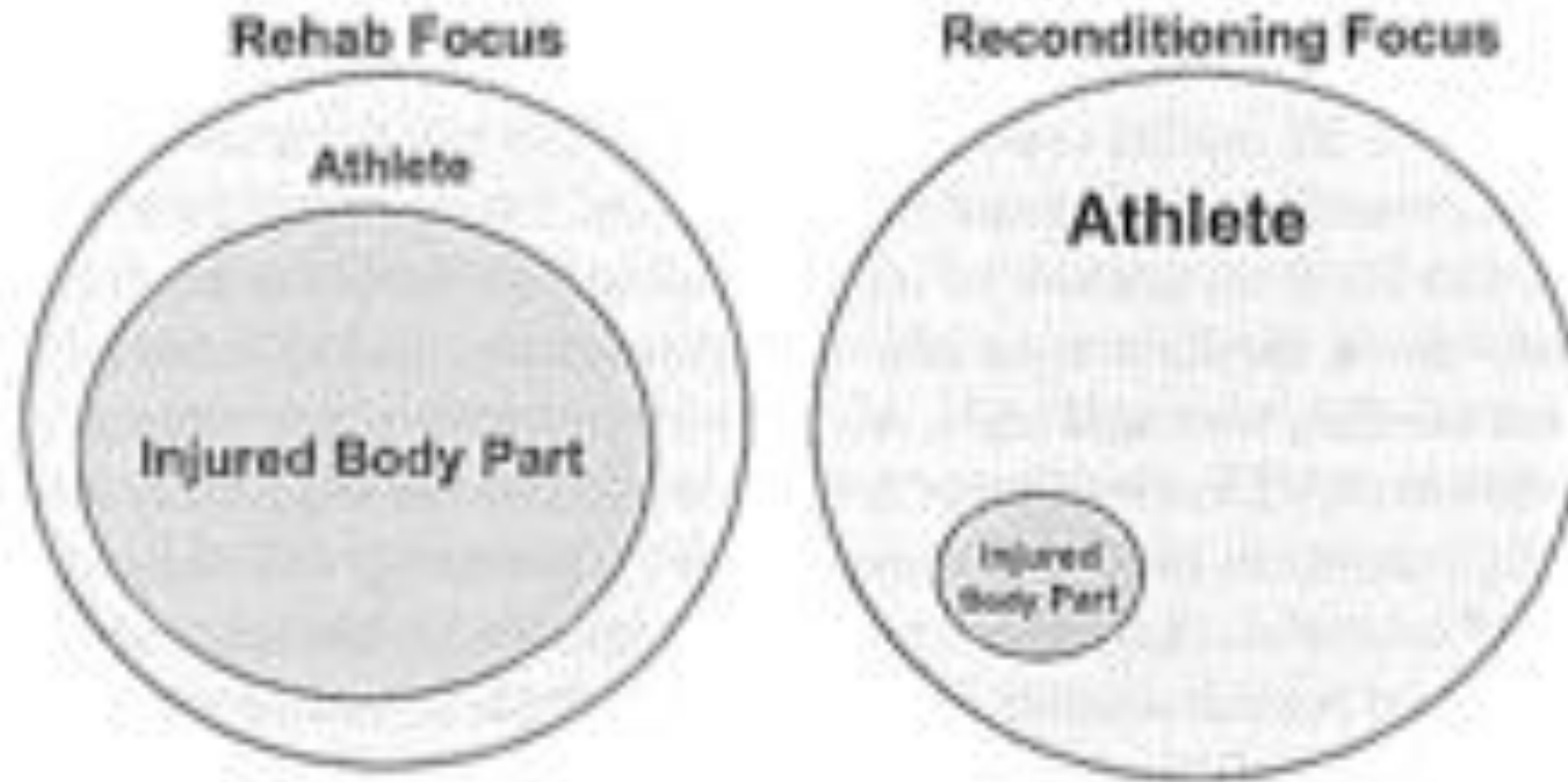
Information + Experience = Knowledge

Knowledge + Humility = Wisdom

--Fergus Connolly



It's about the athlete, not the 'specific' injury



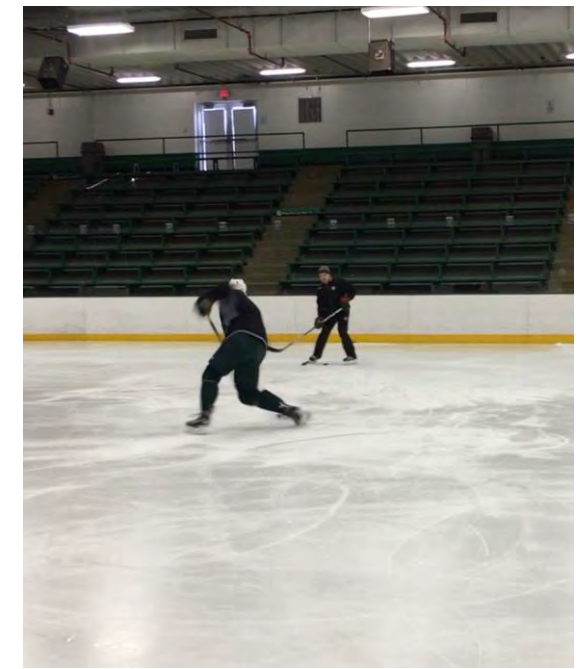
# Strength and Conditioning

- Deconditioning effects as little as 2 weeks of inactivity
- Aerobic steps
- Build to anaerobic work
- Along side strength training
- Strategically mitigate deconditioning
  - retain previous training capacity
    - support and protect the rehab process
    - RETURN TO TRAINING



Don't let what you CAN'T do, impede what you CAN do

# Sport Skill



**RETURN TO  
PARTICIPATION**

**RETURN TO  
SPORT**

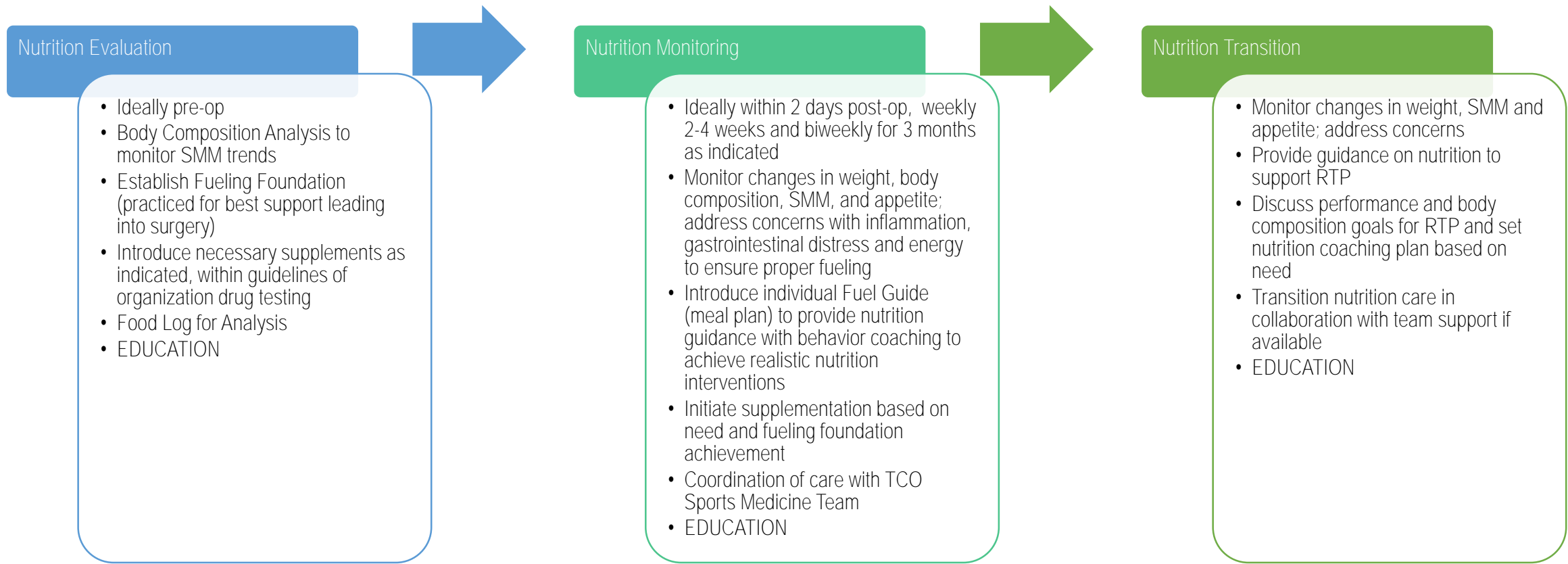
**RETURN TO  
PERFORMANCE**

# It's easy to get them back, It's hard to keep them back

Bill Knowles

- Frequency → Better Outcome
- Peripheral focus /Central-Sensorimotor focus

# High Performance Rehab: Sports RD Support



## Ongoing Care

- Coordinate care transition with team nutrition support if available
- Organize dietitian macro defined Training HAUS Meal Preparation for duration of visit to MN (instead of relying on inadequate meals from delivery services)
- Provide fueling station pre- and post-rehab snacks to ensure proper food access and timing

# Fueling Protocols within Training HAUS

- Evaluation: Assess current/previous intake of nutrients of energy balance, macronutrients (carbohydrate, fiber, protein, fat, saturated fat) and micronutrients (Vit C, Vit A, Vit D, Cal, Mag, Zinc, Copper, Omega-3, etc.), hydration practices, etc.
- Meals: Coordinated to adjust macronutrient needs for injury healing
  - Generally 40% CHO (vs. 55-60%), increased protein per Kg wt with nutrient timing to promote Leucine Threshold and anti-inflammatory fat content (*dependent on specific athlete case*)
- Fueling surrounding Rehab:
  - Pre-treatment fuel: 30 g CARBS, 15 g collagen peptides, 100 mg vitamin C
  - Post-treatment recovery: personalized shake with 2.5+ g Leucine content and high antioxidant content
- Supplement Discussion
  - Third-Party Tested Supplements is an ABSOLUTE for drug tested athletes
  - Discuss use of protein powder, creatine, collagen, omega-3s, curcumin etc. depending on athlete case and nutrition foundation (*dependent on specific athlete case*)

You find out that life is just a game of inches.  
So is football.  
Because in either game  
life or football  
the margin for error is so small.  
I mean  
one half step too late or too early  
you don't quite make it.  
One half second too slow or too fast  
and you don't quite catch it.  
The inches we need are everywhere around us.  
They are in every break of the game  
every minute, every second.

**WE FIGHT FOR THAT INCH.**

*We tear ourselves and everyone  
else around us to pieces for that inch.*

**WE CLAW WITH OUR FINGERNAILS  
FOR THAT INCH**

*Because we know*

**WHEN WE ADD UP ALL THOSE INCHES**

*that's gonna make the difference between*

**WINNING and LOSING**

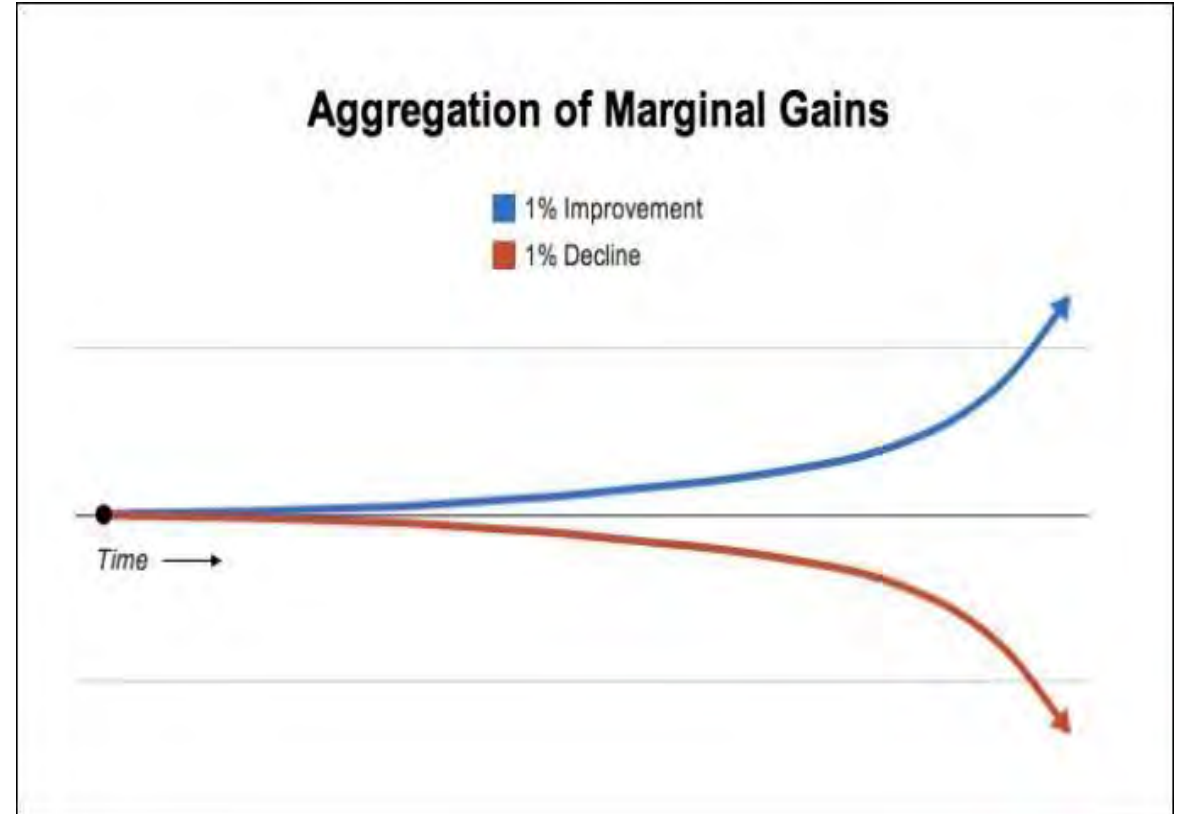
*Tony D'Amato*

HEAD COACH  MIAMI SHARKS

GAME OF INCHES

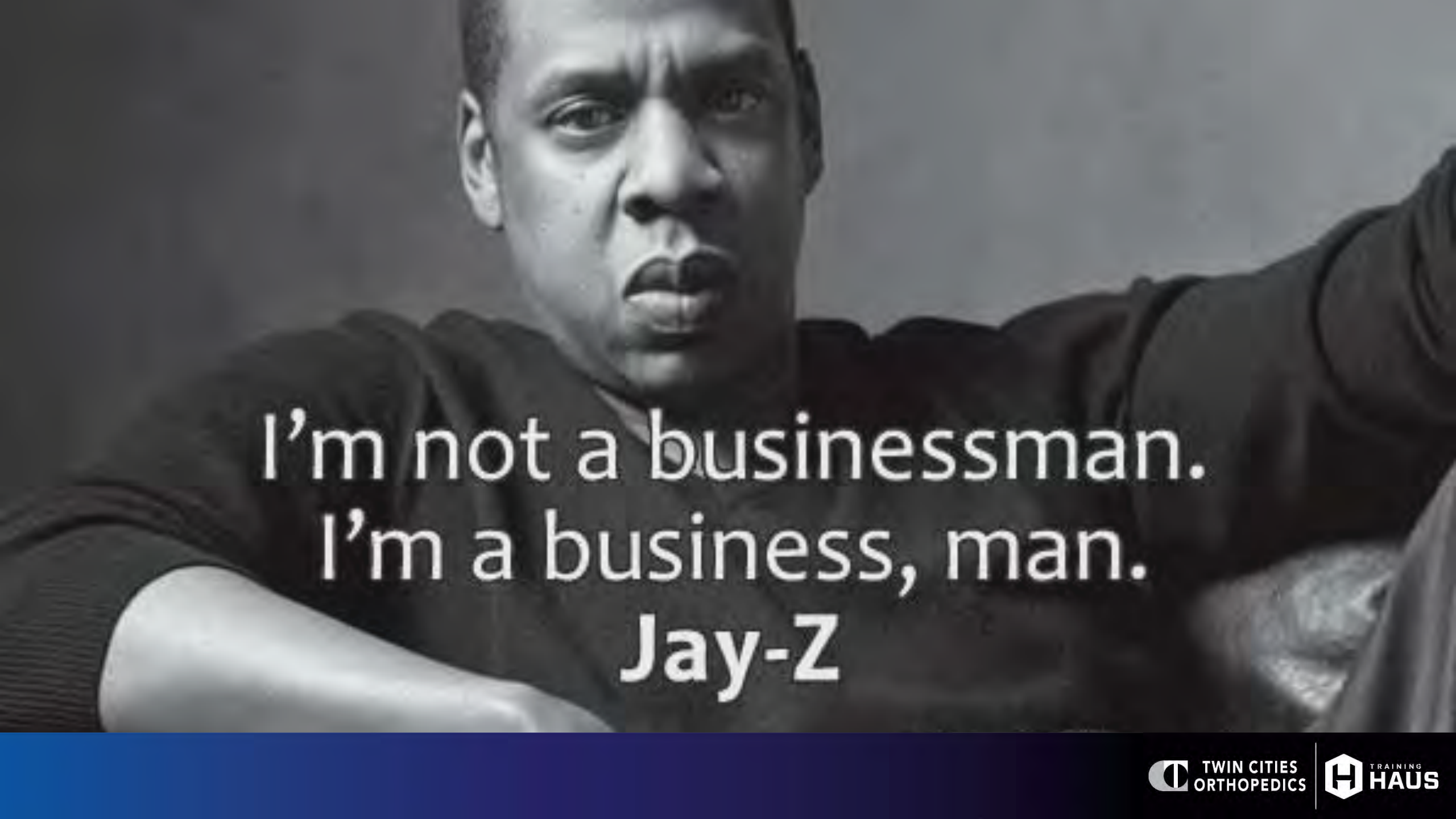


# Become 1% better



# Surgical rehab – example of schedule

- Hyperbaric chamber
- Rehab session
- Pilates session
- Strength and conditioning session
- Rehab session
- Recovery
- IV delivery
- Sauna
- Recovery/estim/compression

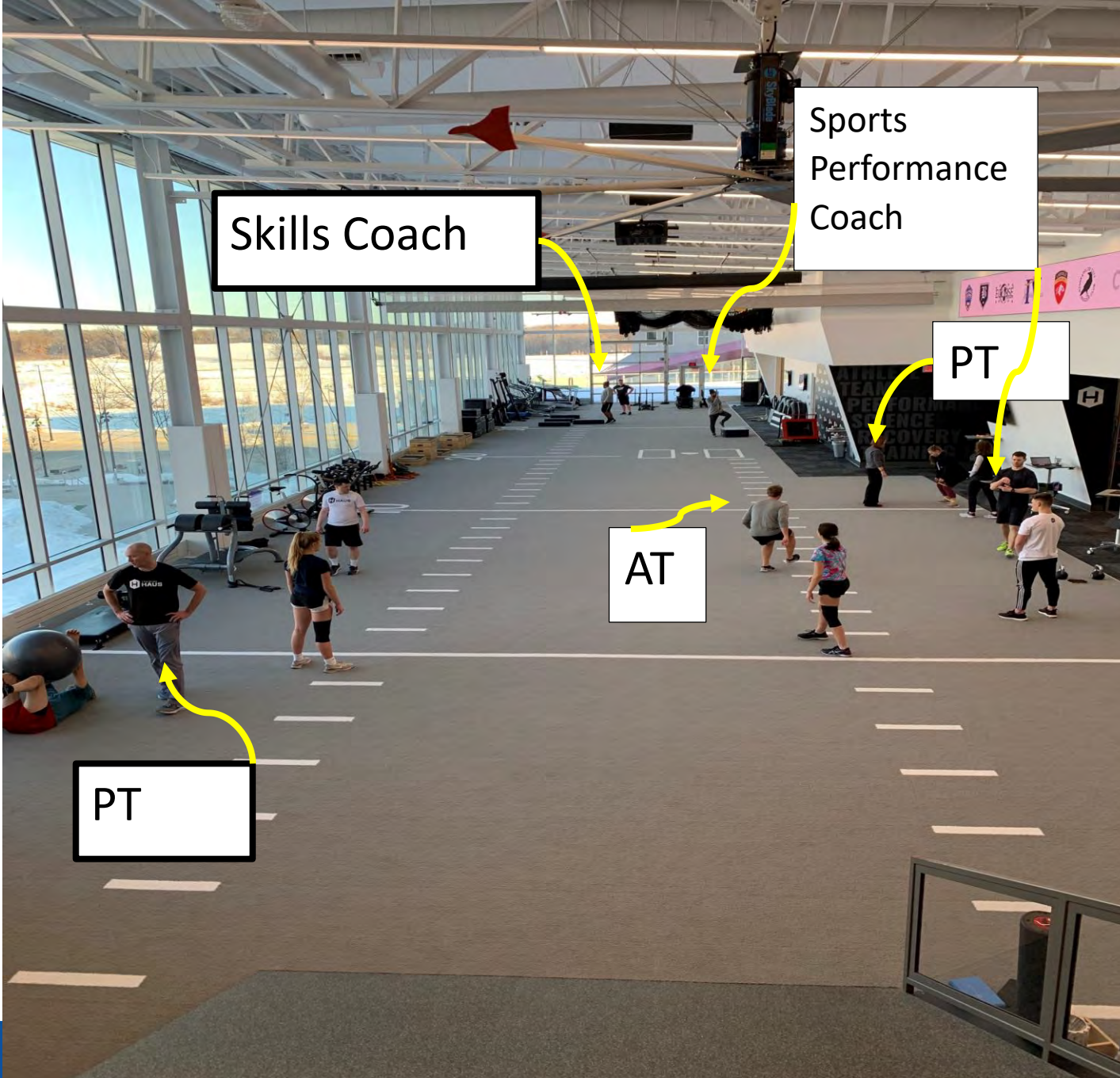


I'm not a businessman.  
I'm a business, man.  
**Jay-Z**

FAILURE IS NOT AN OPTION

☐ SUCCESS

FAILURE



Multidisciplinary Care

Teamwork

makes the

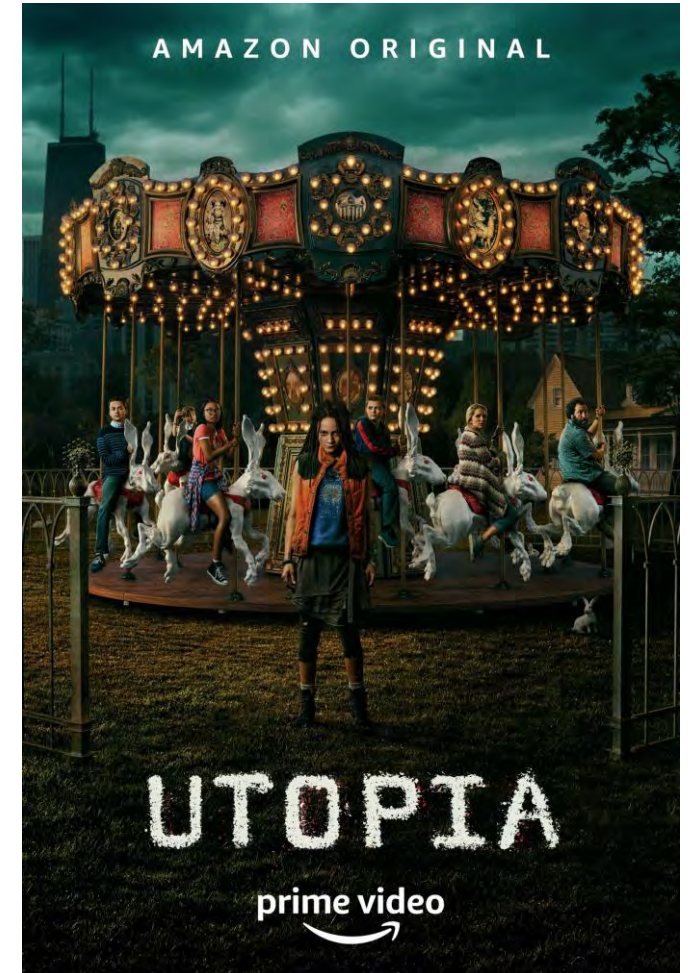
Dream Work



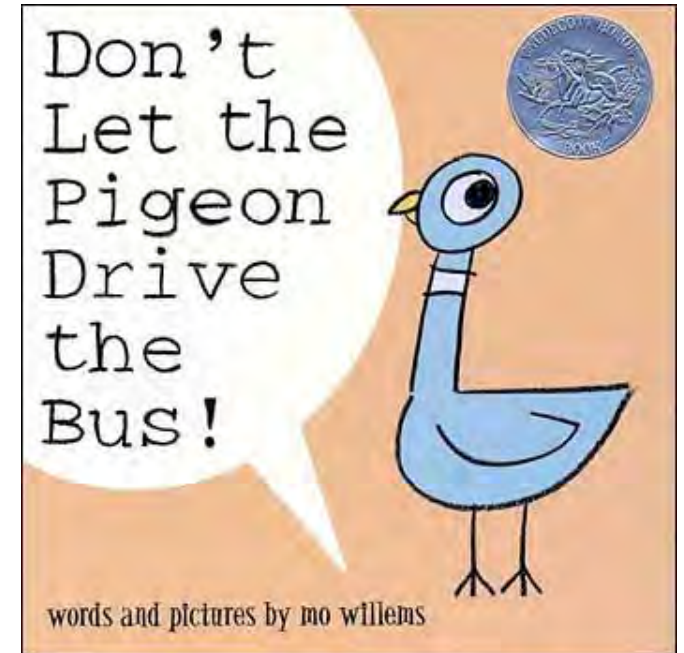


# Multidisciplinary care

- Communication
  - Consistent messaging
- Discussion and debate
- Seek opinions
- Scheduling



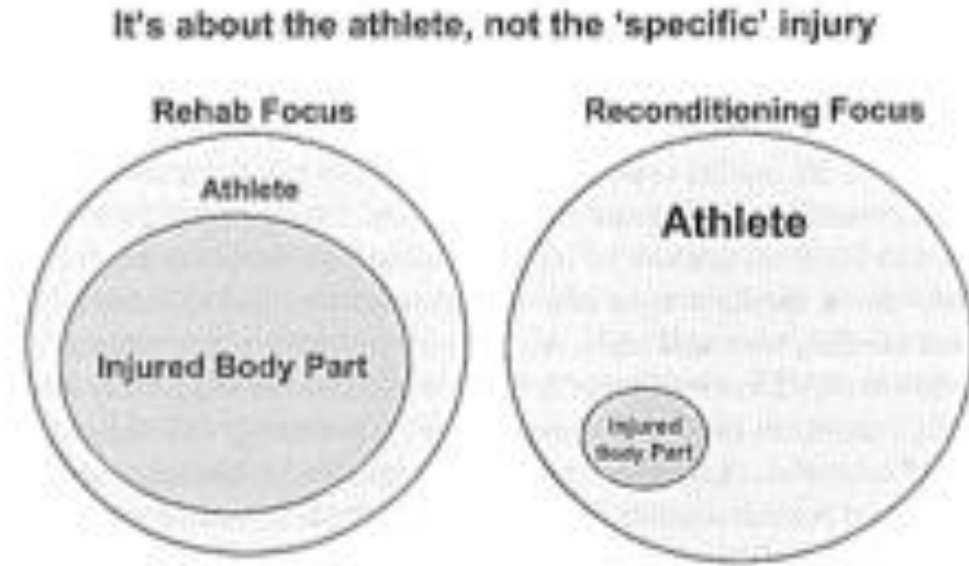
# Someone has to be the clinical navigator



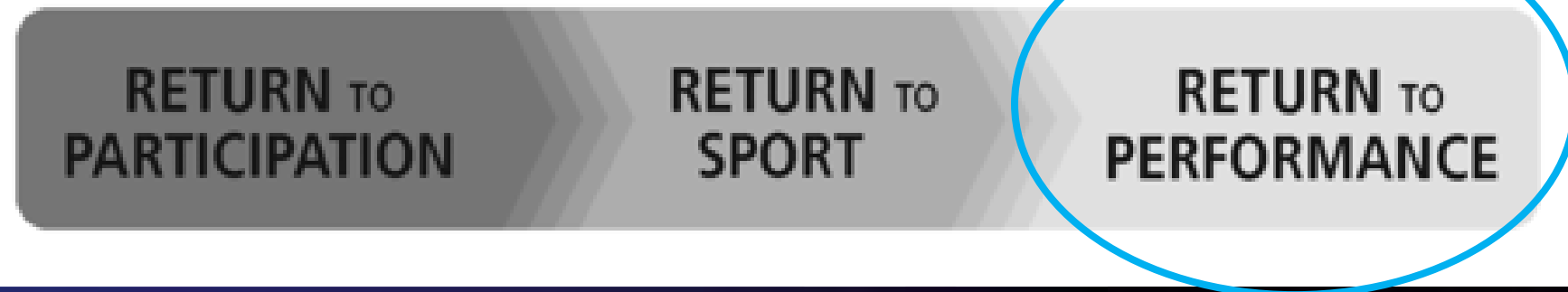
# Applying high performance philosophy

- Can't we do this with everyone??
- Is the patient committed?
- More touches and exposures
- Attack the 1%
- Don't neglect the fitness

- Think holistic



- Give your patient your best—Make it a success story



# Emphasize Sleep



Remember....

It's hard on them

“Growing evidence also suggests that ***emotional social support***, defined as expressions of empathy, love, trust, and caring, may be ***crucial to recovery for injured collegiate athletes***”

“More than **80%** of injured athletes in this study relied on social support from their athletic trainers during their recovery.”

“In **79.3%** of injury events, athletes reported that their ***AT was the person they could really count on.***”

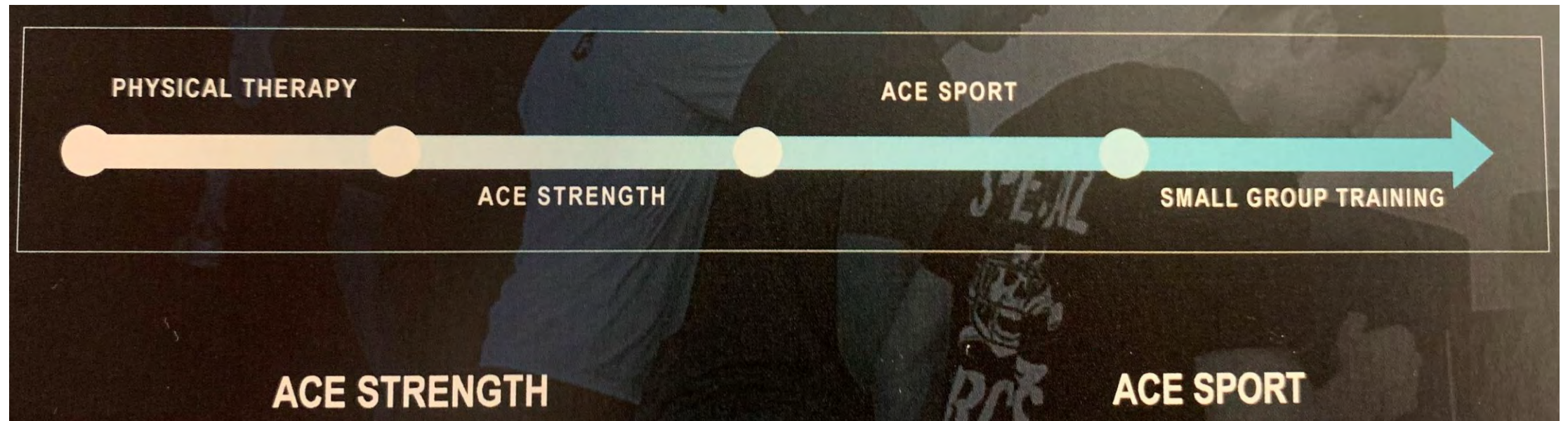
***Journal of Athletic Training*** Cohort Study  
Volume 49, Issue 6: Social Support From the Athletic Trainer  
& Symptoms of Depression & Anxiety at Return to Play  
Jingzhen Yang, PhD & others

# Resources

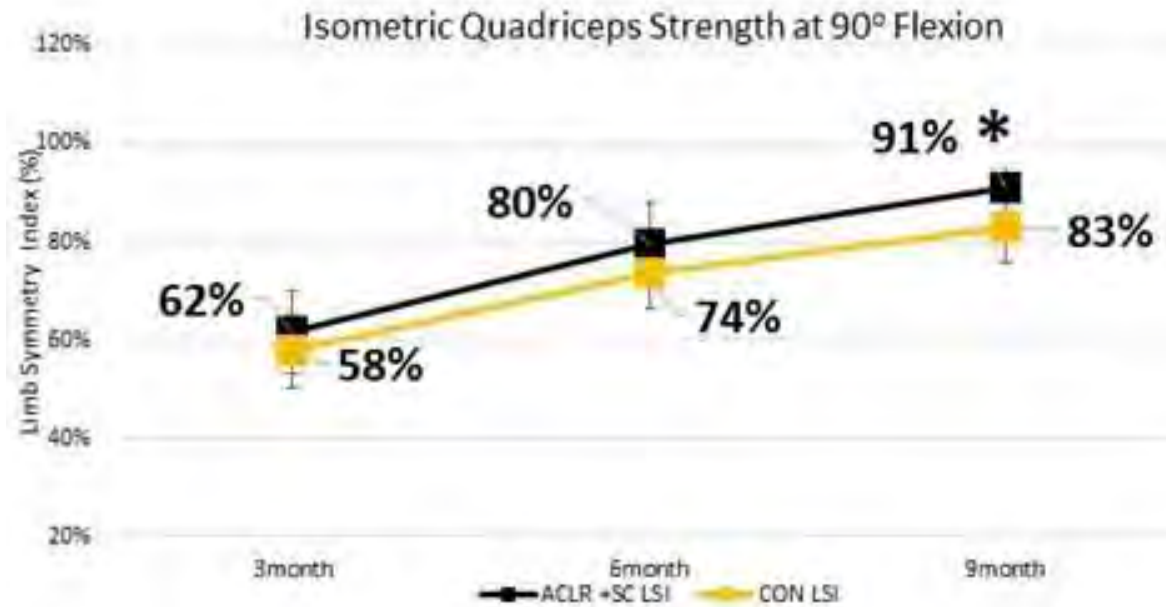
- What else does our organization have to offer?
- Enlist the school AT Strength & Conditioning coach
- Sport coaches
- Skill coaches
- Return to sport program



# Return to sport training program



Schwery N, Kiely M, Doney C, Solie B, Krawiec C. (2022). Why More Is Better: Integrating Sports Rehabilitation With Group-based Strength & Conditioning After ACL Reconstruction. *Poster Presentation ACSM Annual Meeting. San Diego, CA.*



[Original Research](#)

#### Quadriceps Strength following Anterior Cruciate Ligament Reconstruction: Normative Values based on Sex, Graft Type and Meniscal Status at 3, 6 & 9 Months

Nicole A. Schwery, MS, CSCS<sup>1</sup>, Michael T. Kiely, MS, SCCC<sup>1</sup>, Christopher M. Larson, MD<sup>2</sup>, Corey A. Wulf, MD<sup>2</sup>, Christie S. Heikes, MD<sup>2</sup>, Ryan W. Hess, MD<sup>3</sup>, M. Russell Giveans, PhD<sup>4</sup>, Braidy S. Solie, DPT, SCS, CSCS<sup>1</sup>, Christopher P. Doney, MS, LAT, ATC<sup>1</sup>

<sup>1</sup> Training HAUS at Twin Cities Orthopedics, Eagan, MN, USA, <sup>2</sup> Twin Cities Orthopedics, Edina, MN, USA, <sup>3</sup> Twin Cities Orthopedics, Robbinsdale, MN, USA, <sup>4</sup> Training HAUS at Twin Cities Orthopedics, Eagan, MN, USA; Twin Cities Orthopedics, Edina, MN, USA

## • CONCLUSION

Individuals who complete additional strength training in conjunction with physical therapy during rehabilitation from ACLR reach RTS criteria levels of quadriceps LSI at 9 months post-op compared to those who do not complete additional training. This model of combined physical therapy and group based strength training proves to increase positive functional outcomes after ACLR. It further justifies the importance of collaboration using a team based, patient centered, objective measure driven rehabilitation model.

Sometimes More IS Better

Thank you

All the facts you  
didn't learn at school.

Get Smart.

- Schwery N, Kiely M, Doney C, Solie B, Krawiec C. (2022). Why More Is Better: Integrating Sports Rehabilitation With Group-based Strength & Conditioning After ACL Reconstruction. *Poster Presentation ACSM Annual Meeting. San Diego, CA.*

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