SPORT INJURY:
IMPACT on HEALTH & PERFORMANCE

Polish Psychological Association
Sport Psychology
Division

John Heil
Psychological Health Roanoke
October 5, 2023

Chair, Sport Medicine & Science
USA Fencing (~15 years)

Medical Director,
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Board Member,
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President, APA Sport Psychology

Olympic Team Psychologist

GOALS

- 1- Conceptualize Sport Injury as at Cusp of Medical & Psychological Health & Performance
- 2- Develop Strategies for Assessing Psychological Factors in Sport Performance and Injury
- 3- Gain Insight into the Role of Psychological Factors in Remarkable Recovery & Post Traumatic Growth

FUNDA-"*MENTALS*"

- Psych Factors as Cause & Consequence in Injury
- Injury & Recovery – Mind-Body
- Rehab as Sport – Skill Transfer
- Medical Providers as Psych 1st Responders

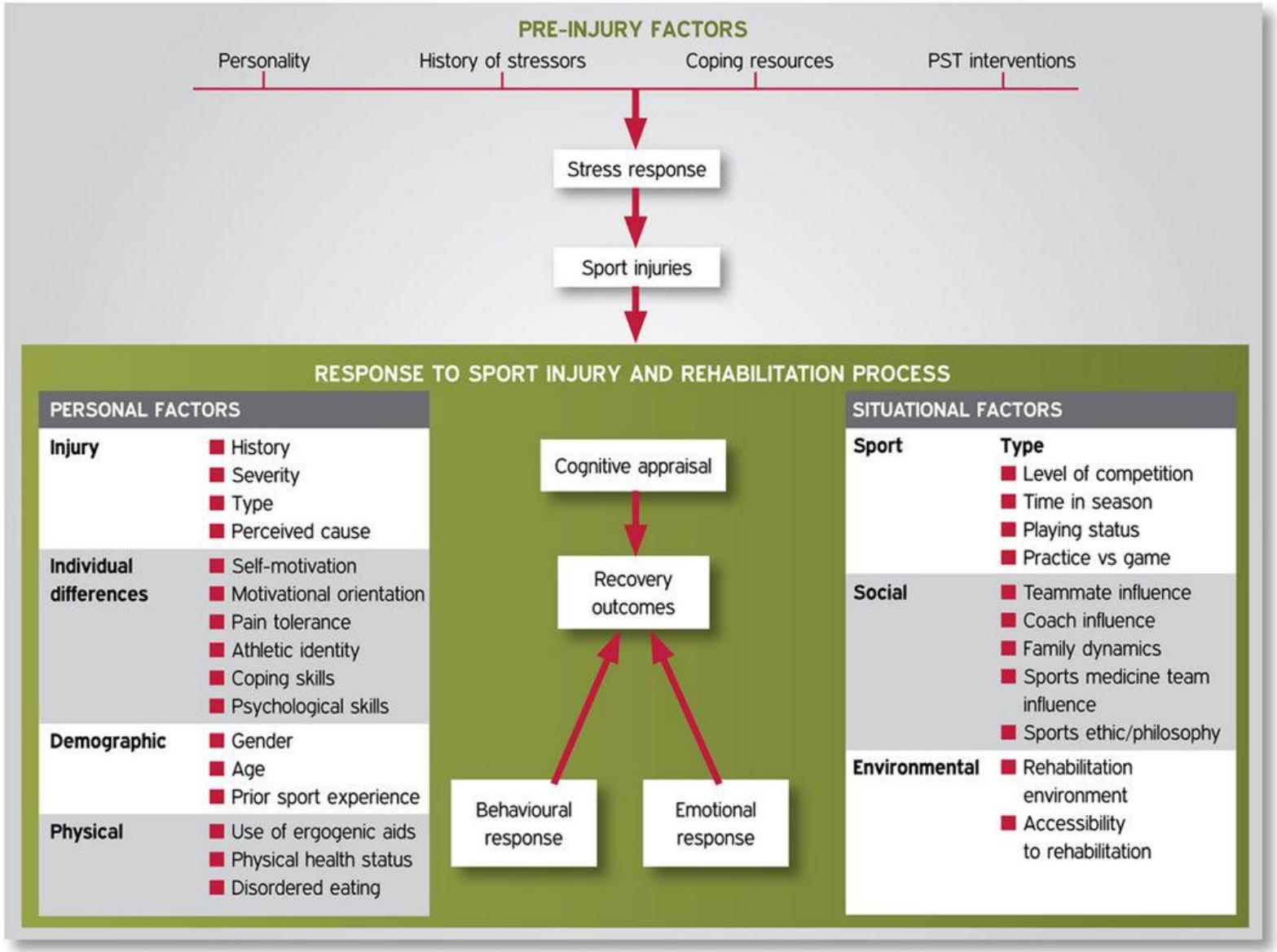
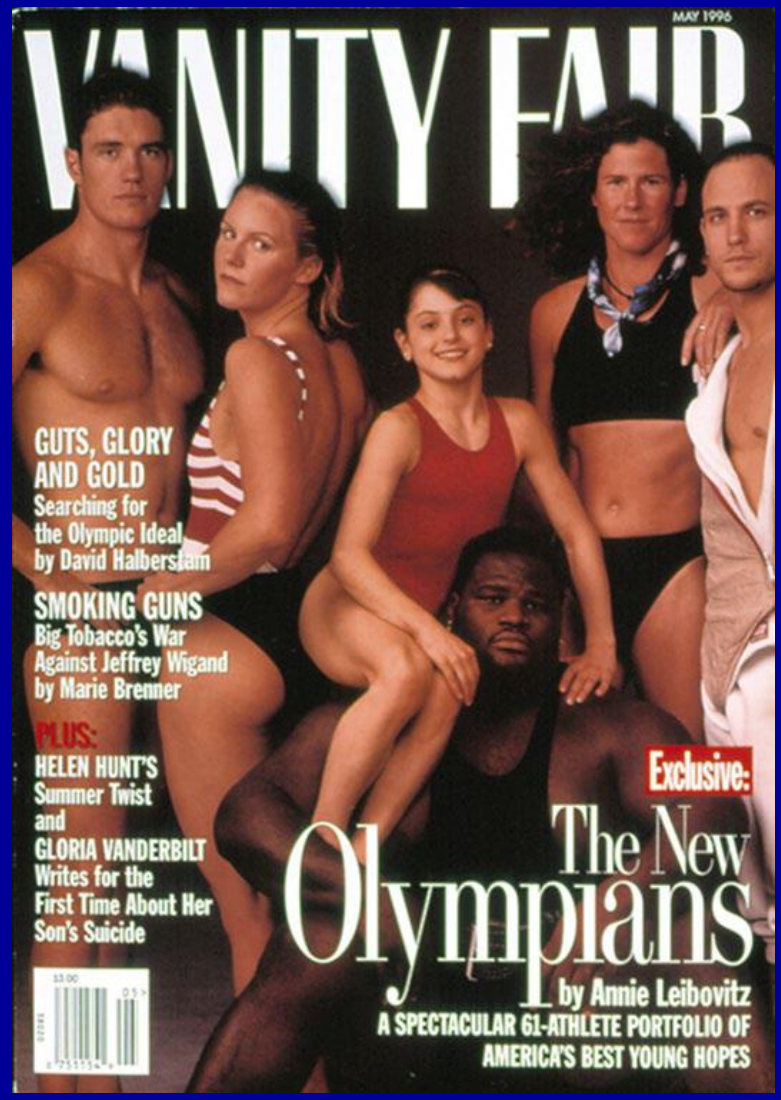


Figure 2: Integrated model of response to sports injury and rehabilitation [Adapted from Wiese-Bjornstal et al. 1998 (8)]

- Wiese-Bjornstal, D. M. (2019)

INJURY: MECHANISMS & "MEANING"

Athlete-Psych
e.g., anxiety, recent stressors
X
Athlete-Physical
e.g., injury history
&
Environment-Psych
e.g., pressure to perform, opponent behavior
X
Environment-Physical
e.g., facilities, coaching



PSYCH LANDMARKS: Search Heuristics

PSYCHOLOGICAL LOAD

PSYCH

- Denial
- Pain
- Fear
- Culpability

SITUATIONAL

- History
- Timing
- Severity
- Media

REMARKABLE RECOVERY

- Body Awareness Heightened
- Pain Assessment Enhanced
- Mental Skills Sharpened
- Psychological Momentum
- Sport Revalued

STAGE MODEL: Grief-Loss

Kubler-Ross (1969)

Disbelief/Denial → Anger → Bargaining → Depression → Acceptance/Resignation

Pro

Normalizes Situational Distress

Dynamics of Emotion

Con

Overgeneralized

Not a linear process

Stage Transitions

FUNCTIONAL & PSYCH DYNAMICS

- Biology Leads, Psychology Follows

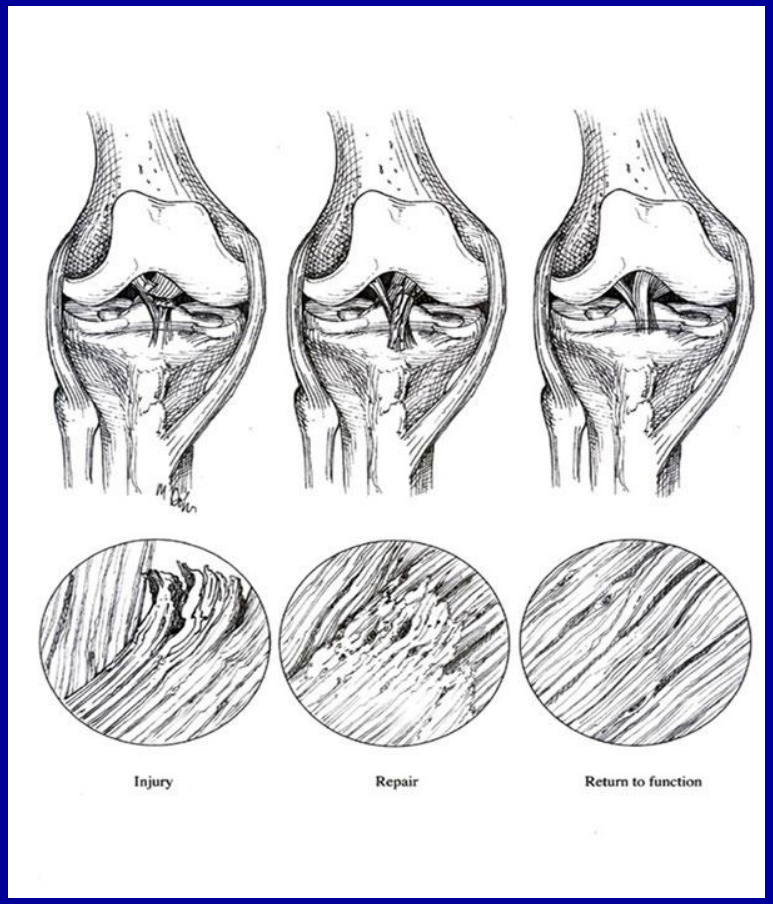
- Medical Stages

Stages of Healing

Stages of Rehab

- 2 Recovery Trajectories

Inflammation → Proliferation of Bridging Material → Matrix Remodeling



MEDICAL STAGE MODEL

- Pre-Injury
- Treatment Decision
- Surgery
- Early Post-Op Rehab
- Late Post-Op Rehab
- Specificity
- Return to Play

Steadman (1993)

AFFECTIVE CYCLE

- Medical Stage & Psych Cycle

- **MACRO**

Recovery Course

- **MESO**

Medical Stages

- **MICRO**

Daily Challenge

(Heil, 1993)

PSYCHOLOGICAL STATES

- **Distress**

Anger, Depression etc.

Identifiable; Treatable

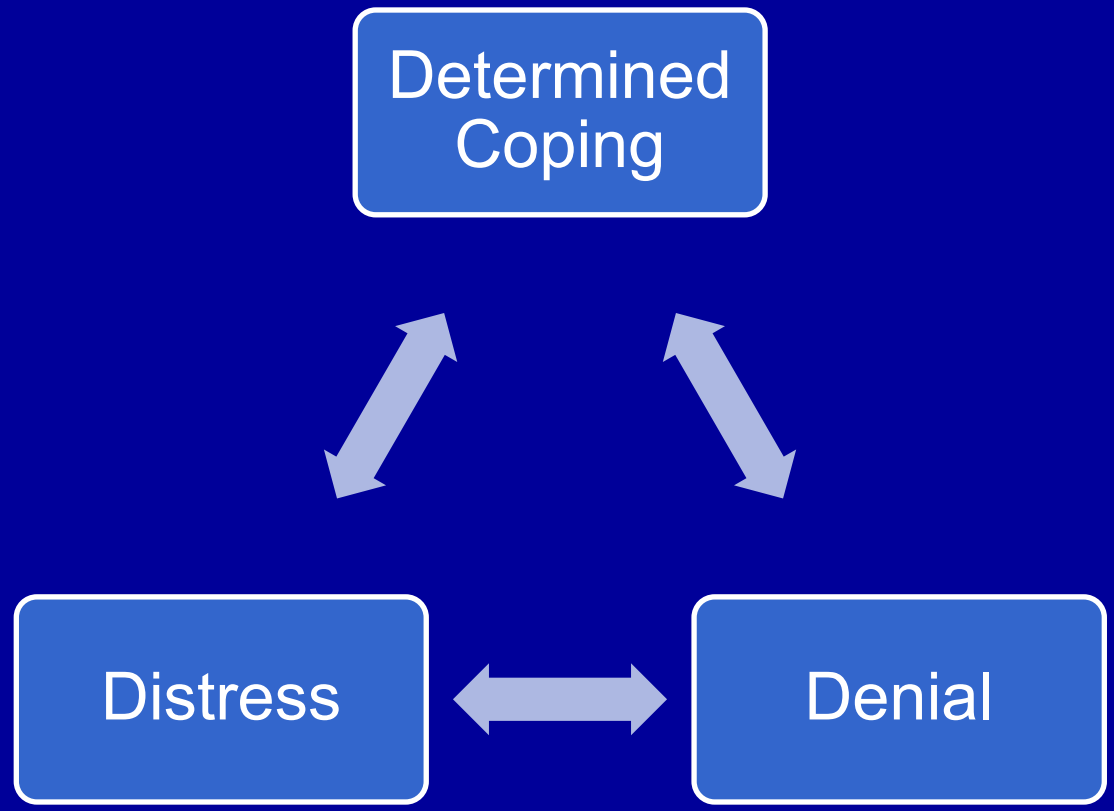
- **Denial**

Unacknowledged Distress

Covert; TX Resistant

- **Determined Coping**

Optimal Rehab



DETERMINED COPING

- Zone Theory - Hanin (2000)

Positive & Negative Affect as Independent Dimensions

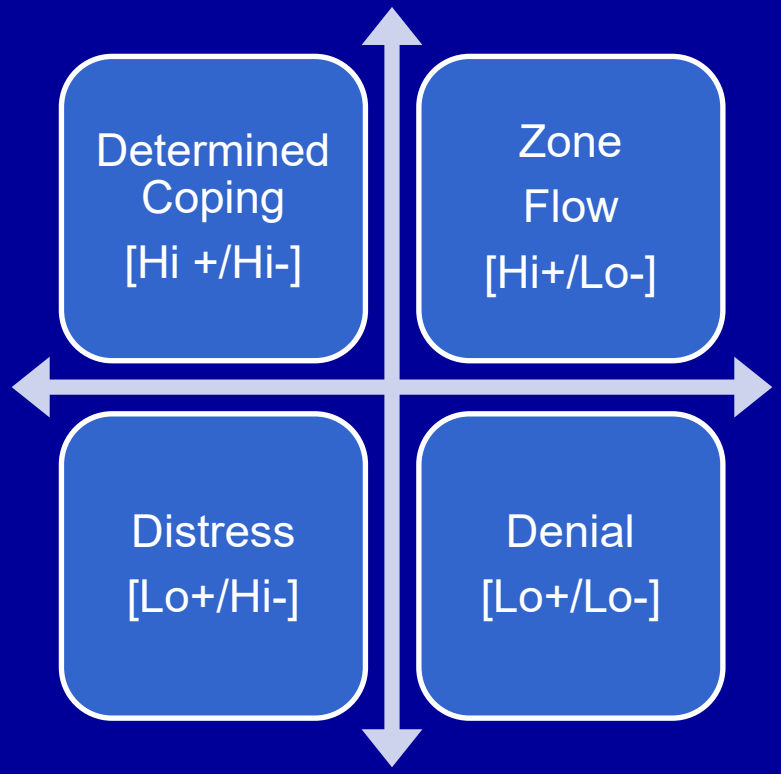
- Determined Coping

Hi Positive Affect

Hi Negative Affect

- Denial

Negative Affect Reduced



DENIAL: Unacknowledged Distress

- Adaptive-Maladaptive
- Challenged by Rehab

- Fail to Accept Realistic Goals
- Lack of Insight into Behavior
- Treatment Resistance

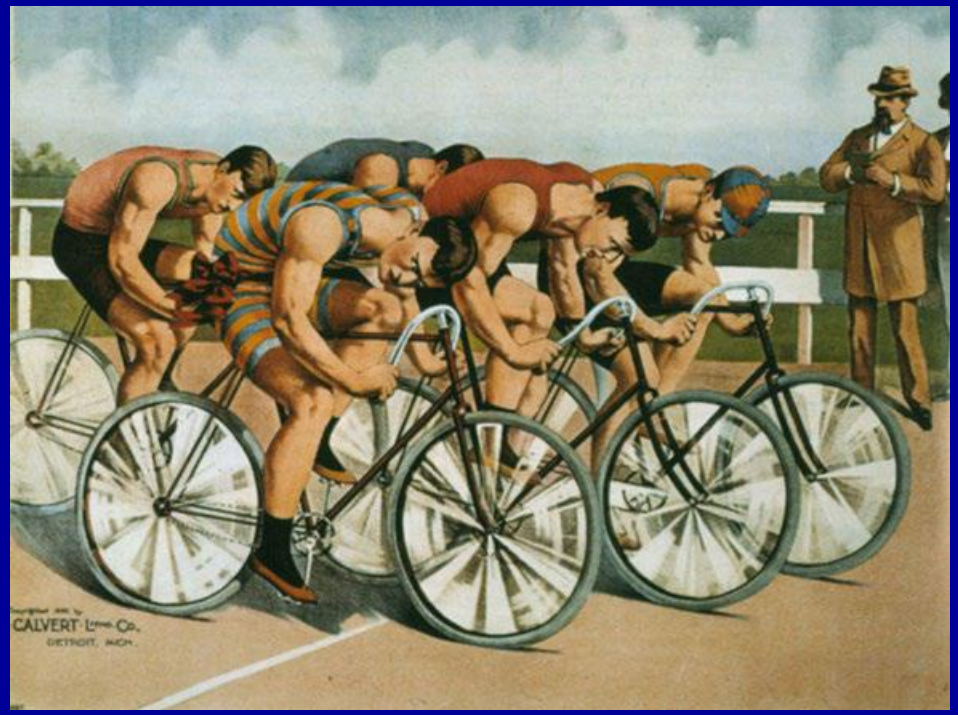
CASE STUDY: WORLD CLASS TOUR CYCLIST

Surgical Injury on ‘S’ curve

No Memory of Impact

Viewed on TV
“OK…since I didn’t see the impact”

Successful Return



ACUTE-CHRONIC CONUNDRUM

- Case Study: Oil Rig Worker

Trapped to Spinning Oil Derrick; Multiple Surgeries

Chronic: Pervasive BioPsychoSocial Disruption

Acute: Self-Directs Emergency Care

HX:Military: US Army Special Forces

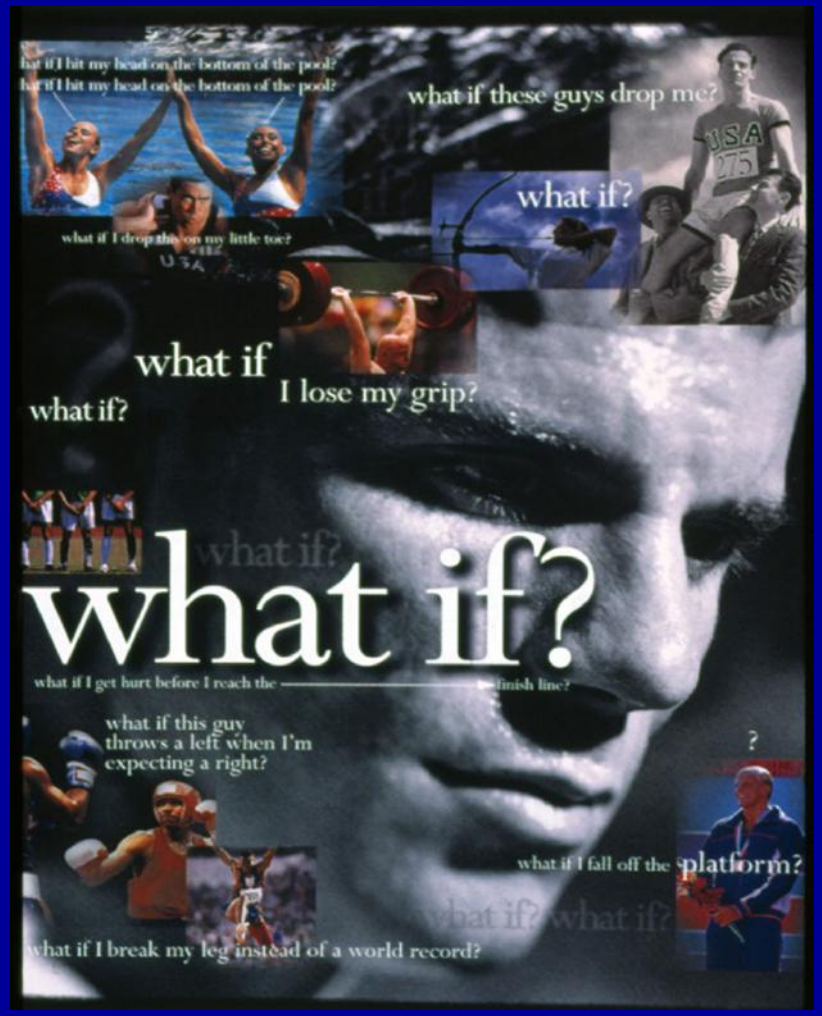
HX:Sport: Ice Hockey & Distance Running

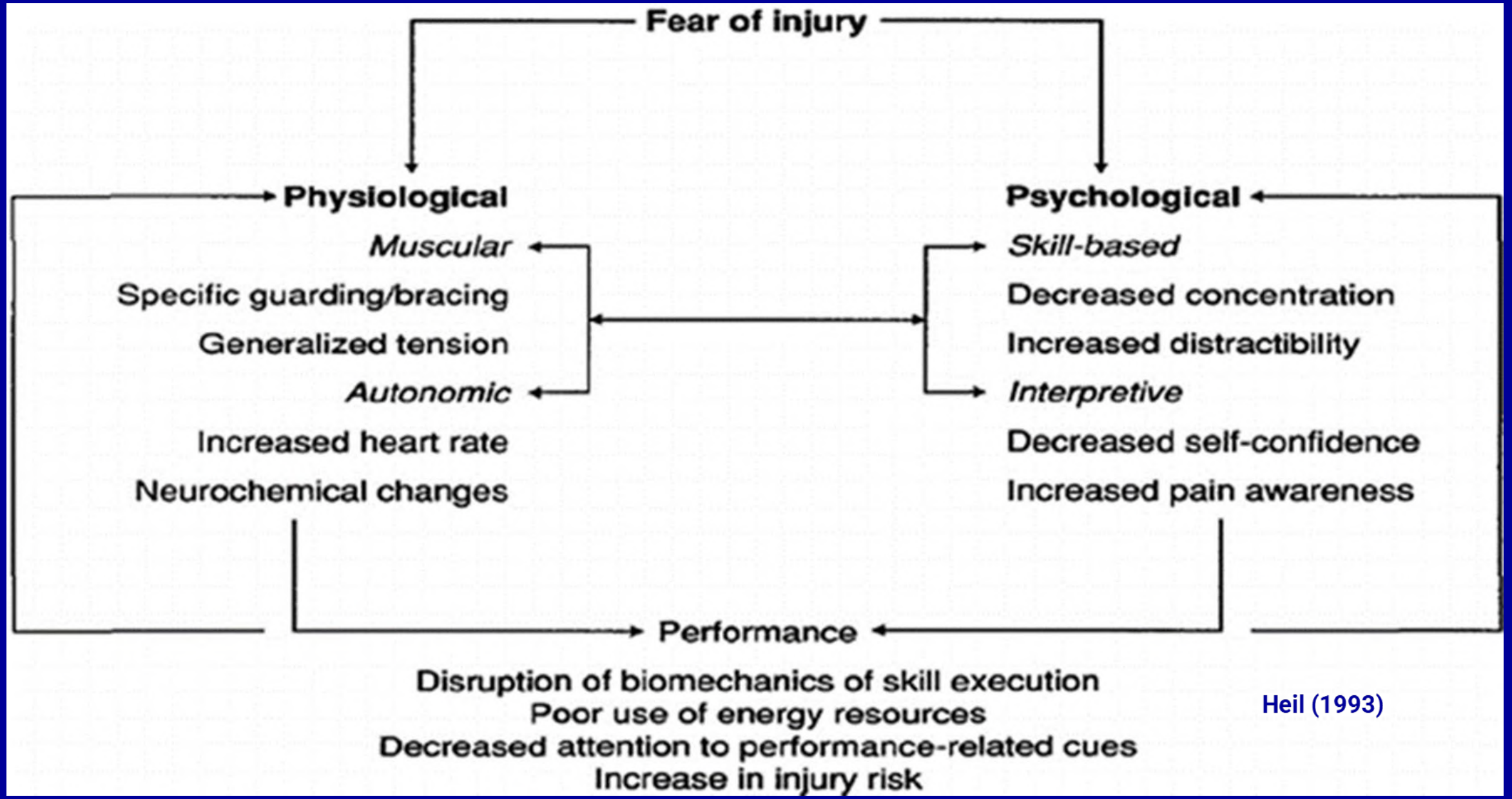
FEAR: Maladaptive (or Adaptive!)

- Threat / Danger
- →Doubt / Hesitance
- →Caution / Realistic

- BioPsychoSocial

Bio - Muscle Tension;
Physio Intensity
Psych – Narrow Focus;
Question Efficacy
Social – Pressure to Perform




Fear of injury
Physiological
Muscular
Specific guarding/bracing
Generalized tension
Autonomic
Increased heart rate
Neurochemical changes
Psychological
Skill-based
Decreased concentration
Increased distractibility
Interpretive
Decreased self-confidence
Increased pain awareness
Performance
Disruption of biomechanics of skill execution
Poor use of energy resources
Decreased attention to performance-related cues
Increase in injury risk

Heil (1993)

CULBABILITY

- Opponent

Clean Play vs Rule Violating Behavior

- Coach

Pressure to Play

- Officials

Failure to Manage Game

- Athlete/Self

Poor Decision; Loss to Team

Distress→ Sub-Clinical→ Diagnosable Disorder

- **THREAT → ANXIETY**
- Uncertain Future
- Psych-“Fear”
Reinjury; Team Status; Finances
- Bio-Autonomic Symptoms
Vigilance, Motor Tension

Negative Emotions during Rehabilitation, Impact on RTP
Meta-Analysis; Sub-Clinical Symptoms
Ivarsson, Tranaeus, Johnson, & Stenling (2017)

- **LOSS → DEPRESSION**
- Function & Roles NOW
- Psych-“Empty Present”
Sadness; Helplessness; Apathy
- Bio-Neurovegetative Symptoms
Lethargy, Sleep, Pain Sensitivity

Exercise-Protective Factor for Depression
Major Depressive Disorder Working Group of the Psychiatric Genomics Consortium; N=~140,000
Choi, Chen, Stein, Klimentidis, Wang, Koenen, & Smoller (2019)

PSYCHOLOGICAL ASSESSMENT

- IOC – SMHAT

Pro: Comprehensive; System Integration

Con: Self-Report Bias; Cumbersome

- Clinical Assessment w/Multiscale Personality Inventory

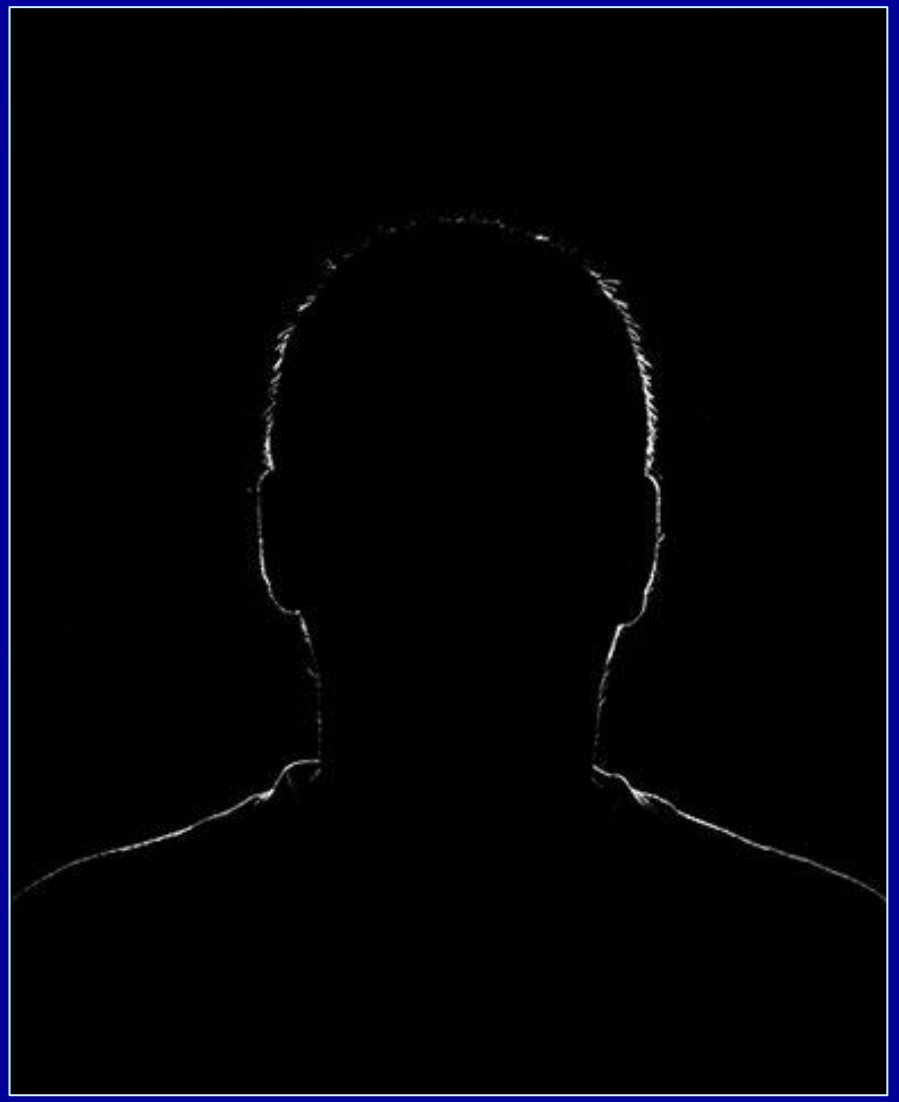
Pro: Accuracy - Con: Time; Cost

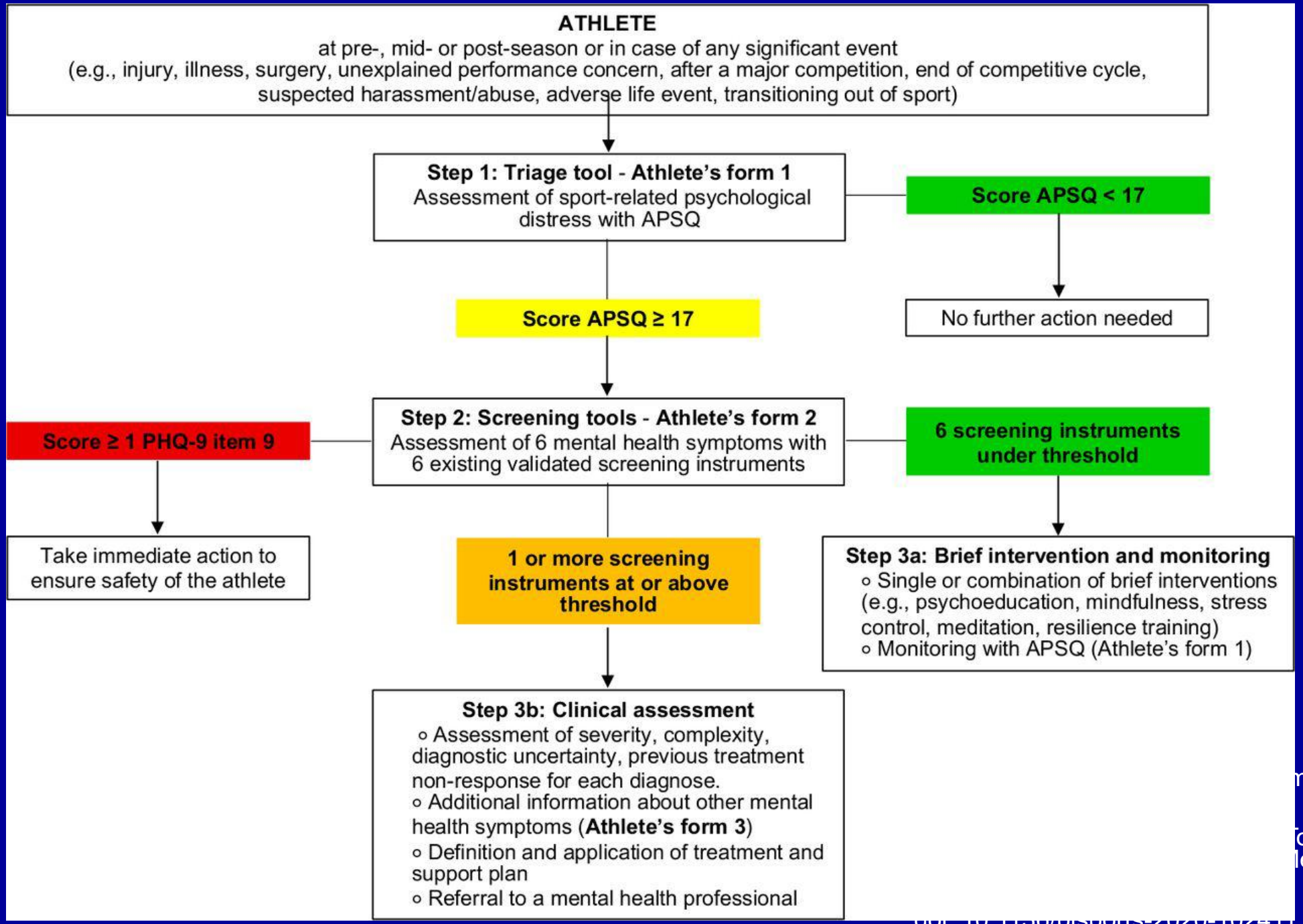
- Athlete Injury Checklist

Pro: Intuitive, Minimally Intrusive - Con: Validation

- Sport Performance & Rehab Tracker (SP&RT)

Pro: Psych Skills; Link to TX; Quick - Con: Compliance





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doi: 10.1136/bjsports-2020-102411

PATIENT HEALTH QUESTIONNAIRE-9 (PHQ-9)

Over the last 2 weeks, how often have you been bothered by any of the following problems? *(Use "✔" to indicate your answer)*	**Not at all**	**Several days**	**More than half the days**	**Nearly every day**
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself — or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

KWESTIONARIUSZ ZDROWIA PACJENTA PHQ-9

JAK CZĘSTO W CIĄGU OSTATNICH 2 TYGODNI DOKUCZAŁY PANU/PANI NASTĘPUJĄCE PROBLEMY?

1. Niewielkie zainteresowanie lub odczuwanie przyjemności z wykonywania czynności a) wcale nie dokuczały (0 pkt) b) kilka dni (1 pkt) c) więcej niż połowę dni (2 pkt) d) niemal codziennie (3 pkt)
2. Uczucie smutku, przygnębienia lub beznadziejności a) wcale nie dokuczały (0 pkt) b) kilka dni (1 pkt) c) więcej niż połowę dni (2 pkt) d) niemal codziennie (3 pkt)
3. Kłopoty z zaśnięciem lub przerywany sen, albo zbyt długi sen a) wcale nie dokuczały (0 pkt) b) kilka dni (1 pkt) c) więcej niż połowę dni (2 pkt) d) niemal codziennie (3 pkt)
4. Uczucie zmęczenia lub brak energii a) wcale nie dokuczały (0 pkt) b) kilka dni (1 pkt) c) więcej niż połowę dni (2 pkt) d) niemal codziennie (3 pkt)
5. Brak apetytu lub przejadanie się a) wcale nie dokuczały (0 pkt) b) kilka dni (1 pkt) c) więcej niż połowę dni (2 pkt) d) niemal codziennie (3 pkt)
6. Poczucie niezadowolenia z siebie — lub uczucie, że jest się do niczego, albo że zawiódł/zawiodła Pan/Pani siebie lub rodzinę a) wcale nie dokuczały (0 pkt) b) kilka dni (1 pkt) c) więcej niż połowę dni (2 pkt) d) niemal codziennie (3 pkt)
7. Problemy ze skupieniem się na przykład przy czytaniu gazety lub oglądaniu telewizji a) wcale nie dokuczały (0 pkt) b) kilka dni (1 pkt) c) więcej niż połowę dni (2 pkt) d) niemal codziennie (3 pkt)
8. Poruszanie się lub mówienie tak wolno, że inni mogliby to zauważyć? Albo wręcz przeciwnie — niemożność usiedzenia w miejscu lub podenerwowanie powodujące ruchliwość znacznie większą niż zwykle a) wcale nie dokuczały (0 pkt) b) kilka dni (1 pkt) c) więcej niż połowę dni (2 pkt) d) niemal codziennie (3 pkt)
9. Myśli, że lepiej byłoby umrzeć, albo chęć zrobienia sobie jakiejś krzywdy a) wcale nie dokuczały (0 pkt) b) kilka dni (1 pkt) c) więcej niż połowę dni (2 pkt) d) niemal codziennie (3 pkt)

KWESTIONARIUSZ ZDROWIA PACJENTA - PHQ-9

- W badaniach walidacyjnych kwestionariusza, w grupie 6000 pacjentów podstawowej opieki zdrowotnej, ustalono następujące zakresy nasilenia depresji: brak 0–4; łagodna 5–9; umiarkowana 10–14; umiarkowanie ciężka 15–19; ciężka 20- 27. W walidacji narzędzia w populacji polskiej obliczono wartość graniczną 12 pkt. Jest to optymalny punkt odcięcia do przesiewowej diagnozy depresji wśród osób w wieku 18–60 lat. Wynik nie jest równoznaczny z diagnozą kliniczną wykonywaną przez specjalistę.

- Źródło: Dr Robert L. Spitzer, Dr Janet B.W. Williams, Dr Kurt Kroenke oraz współpracownicy z wykorzystaniem grantu oświatowego od firmy Pfizer Inc. Andrzej Kokoszka, Adam Jastrzębski, Marcin Obrębski Psychiatry 2016; 13, 4: 187–193

- https://psychoazyl.pl/wp-content/uploads/2020/10/KWESTIONARIUSZ-ZDROWIA-PACJENTA-PHQ-9.pdf

Psychological Health Roanoke

Suicide Risk Assessment Record (SRAR)

Zen Zone Digital

NOW

Suicide Status (Ideas-Intent-Plans-Means)

Hopelessness & Unbearability

Hostility

PAST

Suicide Status (Ideas, Intent, Plans, Attempts)

Hopelessness & Unlovability

Hostility

FUTURE

Suicide Status (Ideas, Intent, Plans, Means)

Hopelessness & Unsolvability

Hostility

Relevant items may be checked

☑

I. **Suicide Ideation**
- Think things too bad to share
- Need to punish myself
- Not worth continuing to live
- People better off if I were dead
- Less painful to die
- Thought of how to do myself in
- Think of suicide

II. **Hopelessness**

Unlovability, Unbearability, Unsolvability
- Too much responsibility
- So lonely
- Not able to do things well
- No one will miss me if I'm gone
- Feel hopeless
- Worry about money
- Can't be happy
- People don't care for me
- Don't plan for the future
- Not close to my family
- Not close to my friends
- Unworthy of love
- Problems are unsolvable
- Life is unbearable
- Nothing redeeming about me

III. **Hostility**
- Get mad and throw things
- Tend to be impulsive
- Feel hostile
- Feel isolated
- Others hostile toward me
- Trouble keeping a job
- Get mad and break things

This form draws on the Suicide Probability Scale (Cull & Gill, 1992), the Suicide Cognitions Scale (Rudd & Bryan, 2021), and the research upon which they are based. Truncated versions of scale questions are grouped by category in the right margin and are intended to serve as prompts to inquiry. © John Heil, 2002; 2005; 2022

Heil, J. (2022, October). Athlete mental health &safety: suicide & suicide prevention. American Fencing Magazine, 73(1), 32-33. https://issuu.com/usafencing/docs/fall2022_amfenc_full_digital/32

ATHLETE MENTAL HEALTH & SAFETY

SUICIDE & SUICIDE PREVENTION

This is a difficult article to write about a difficult conversation to have. It's about those mental health challenges that athletes don't survive. It's about suicide.

In March and April 2022, three successful collegiate student-athletes committed suicide: Katie Meyer (Stanford University), Sarah Schulze (University of Wisconsin) and Lauren Bennett (James Madison University).

Unfortunately, their stories and tragic early passings are just the tip of the iceberg when it comes to depression and suicide. In the USA in 2020, there were more than 1 million suicide attempts, with about 130 actual suicide completions each day.

According to the Centers for Disease Control and Prevention, suicide deaths for women and girls more than doubled between the years 2001 and 2020, while for men and boys the same figure increased by 60%. This is part of a growing trend in mental health problems that has been most likely worsened by the pandemic.

Athletes and student-athletes have been directly affected, prompting initiatives from groups like the NCAA and the International Olympic Committee. While professional mental health access and sport organizational responses are essential, there is more that can and needs to be done. Bystander intervention programs focus on helping friends and teammates take action when someone appears to be struggling emotionally. The more who are engaged and informed, the better.

However, with cases of completed suicide, there comes an understandable shockwave of loss, grief and confusion for family, friends, teammates and schoolmates. Inevitably there are questions, like "Why did this happen?", "What are the signs?", "How could it have been prevented?" or "Could I have done more?".

Many potential suicides are stopped before completion. Below, we'll consider reasons why suicidal thoughts and actions may arise, the signs of suicide risk and what coaches, teammates and family members can do to provide support for someone struggling with suicidal ideation.

Personally, as a psychologist, I find encounters with suicidal persons both extremely challenging and critically important, even with professional training and years of experience in the mental health field. I have witnessed the devastating impact of suicide on loved ones. I've helped to successfully manage multiple suicide crisis situations, including once at a NAC. I have also been deeply saddened to learn of a fencer's death by suicide at an international tournament after their perceived poor performance.

My personal takeaway from these experiences is that showing up authentically and in a supportive and direct manner will prevent some suicides.

Depression and suicide may stem from personal loss, grief or disappointment, or feelings of rejection and humiliation – on or off the field of play. Alcohol and drug use oftentimes exacerbate these feelings. A cohesive support system, available resources and compassionate and caring teammates may serve as lines of defense for those who are struggling.

Understanding why an individual may experience suicidal ideation or planning is a first step – what signs to look for followed by how to respond with care and knowledge.

IF YOU OR SOMEONE YOU KNOW IS STRUGGLING OR IN CRISIS

HELP IS AVAILABLE

CALL or TEXT 988 or CHAT 988LIFELINE.ORG

Most importantly, if you recognize signs of low mood, withdrawal, change of appetite or any out-of-the-ordinary behavior for an individual, it's important to reach out to them. This might be as simple as "I've noticed you seem down. How are you feeling?" or "It seems like you have been having a rough time lately, I'm concerned about you."

Next, listen actively and carefully! Often, when asked with care and compassion, individuals will want to express how they feel and what they may be going through. If you have relevant personal experience, consider whether it may be appropriate to share it. Importantly, it is reasonable to ask clear and direct question about suicide. It is a myth that discussing suicide, and suicidal ideation and planning (even just using the word), will encourage individuals to complete suicide. Remember to keep listening, even if you are uncomfortable. Above all, encourage the person struggling to seek mental health treatment and be willing to offer to help them through this process. If the person is displaying imminent risk of harming themselves, stay with them and call or text 988, the Suicide and Crisis Lifeline, for further help and support.

Some who are in distress will be on the edge of disclosure, hesitant and reluctant to acknowledge suicidal thoughts or feelings, but leaving you feeling very uncomfortable with their emotional state. You may consider saying something like: "There has been a lot about mental health and suicide in the news recently. It seems that often people are in distress but are afraid to speak about it. If this were the case with you, I hope you would be able to talk with me or someone else about this."

You may help this along by pointing out that many athletes, even great ones like Simone Biles and Michael Phelps, have suffered mental health problems, speaking openly about them. In this situation, be patient and listen carefully, in particular for signs of "unlovability" (no one really cares), "unbearability" (feelings that are too intense to live with) and "unsolvability" (there is no solution in sight). Showing sincere interest counters feelings of unlovability, may diminish the sense of "unbearability," and help with identifying a path to a solution.

If you are not prepared to be open or willing to recognize the validity of another person's feelings, whether you agree with them or not, you should not try to help them. Do not engage in a philosophic or moral discussion about suicide. Do not suggest that suicide is a desirable alternative, or that the person is not serious.

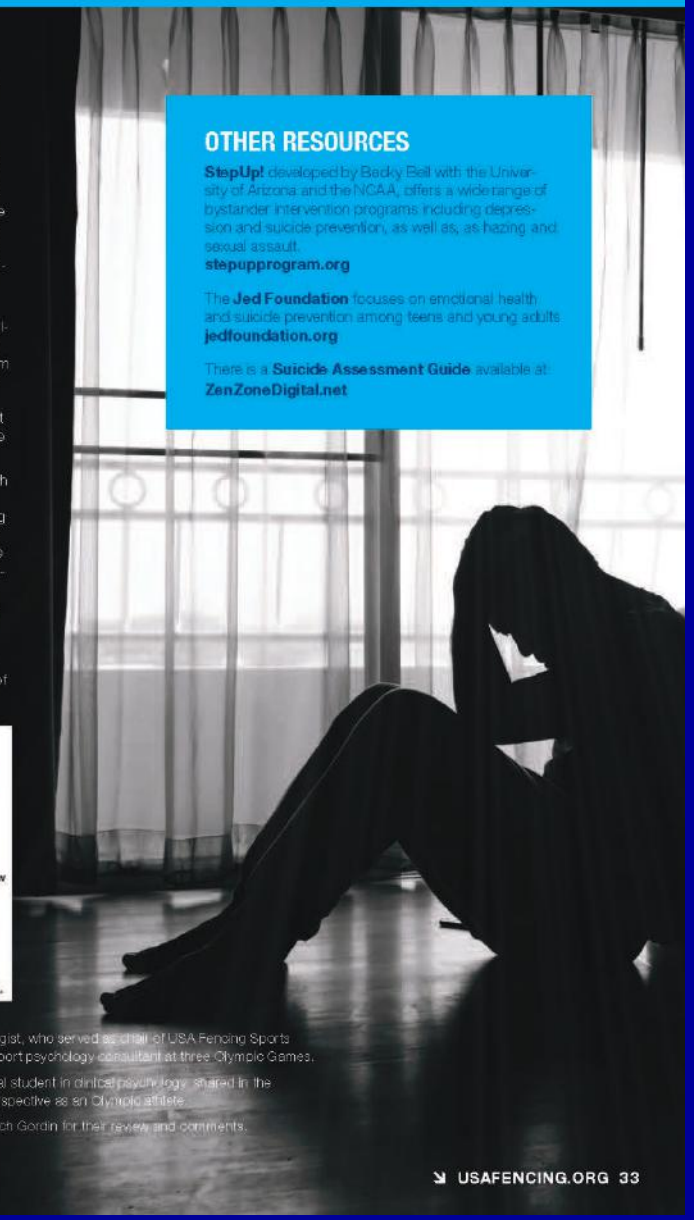
It's important to know and be armed with resources. The national Suicide & Crisis Lifeline can be reached by calling or texting 988. This is not only for those who may be considering suicide but also those who are concerned about others or assisting someone experiencing a crisis. Extensive information, including social media shareables, is available at the website www.samhsa.gov/find-help/988. I've included various other resources and educational information regarding the care and management of crises, below.

OTHER RESOURCES

StepUp! developed by Becky Bell with the University of Arizona and the NCAA, offers a wide range of bystander intervention programs including depression and suicide prevention, as well as, as hazing and sexual assault.
stepupprogram.org

The **Jed Foundation** focuses on emotional health and suicide prevention among teens and young adults.
jedfoundation.org

There is a **Suicide Assessment Guide** available at **ZenZoneDigital.net**



Dr. John Heil is a sport and clinical psychologist, who served as chair of USA Fencing Sports Medicine & Science for 16 years, and as a sport psychology consultant at three Olympic Games.

Nicole Ross, an elite U.S. fencer and doctoral student in clinical psychology, shared in the preparation of the article and offered her perspective as an Olympic athlete.

Thanks also to Dr. Ina Harizanova and Dr. Rich Gordin for their review and comments.

MULTISCALE PERSONALITY ASSESSMENT

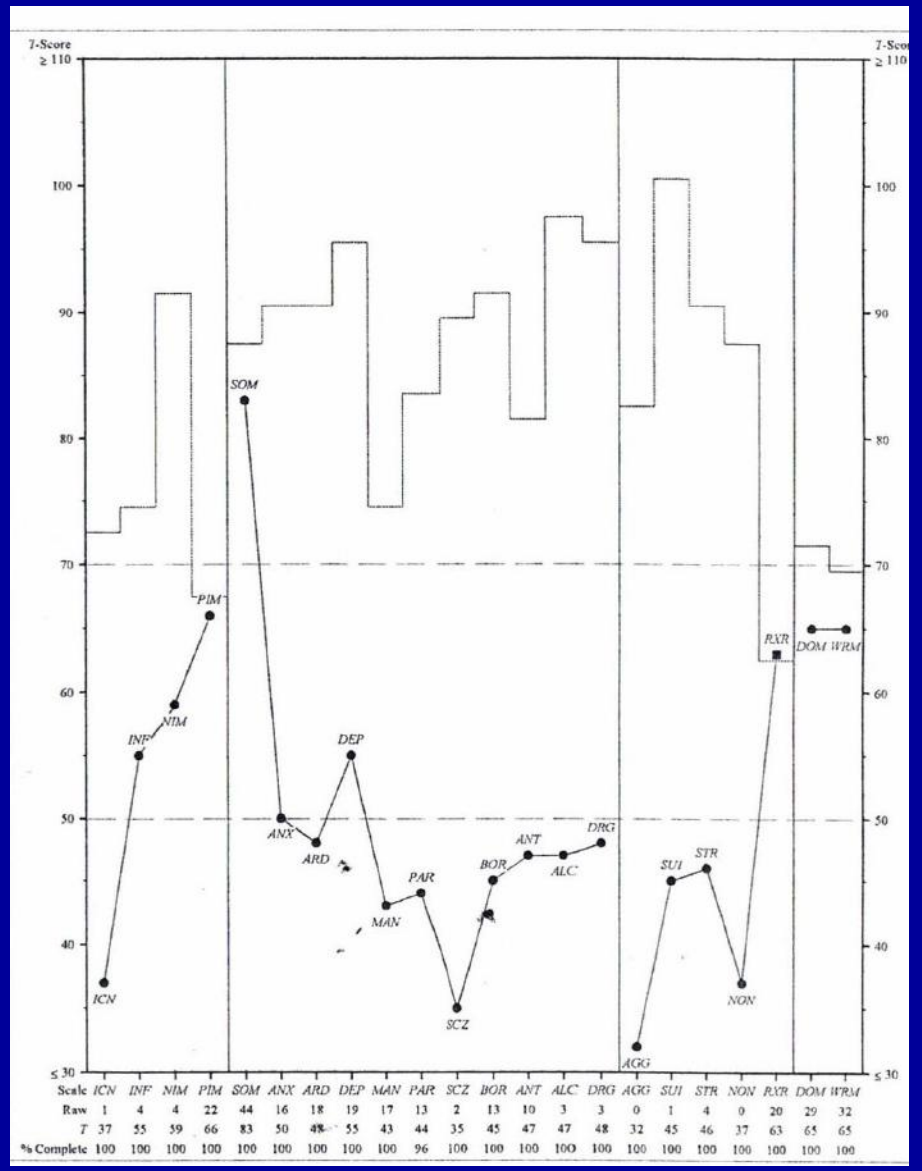
(e.g., MMPI; PAI)

- **Clinical Interview**
- **Medical Records**
- **Psychological Testing**

Personality Assessment Inventory (PAI)
Brief Inventories

Case Study: 17yo; Female; CRPS & Anxiety Disorder & Dysautonomia. Foot injury in 3rd grade playing kickball, and continued sport. Hip injury during cheerleading in 2018, with surgery & onset of contralateral leg CRPS. ITP candidate.

Interp: Under-report psych sx; Coping style (alt. minimize-catastrophize); Anxious-OCD; Depressed-Neurovegetative



ATHLETE INJURY CHECKLIST

Step-wise: LOOK, LOOK, LISTEN

LOOK -- at the "Situation"
Circumstances that can be discovered through careful observation of day-to-day behavior

LOOK -- at the "Personal"
Psychological factors that are unseen, but may be revealed with careful consideration of what the athlete says and does

LISTEN
How the athlete responds to open-ended questions that follow from what is seen by looking at the "Situational" and the "Personal"

ATHLETE INJURY CHECKLIST

LOOK

Situational

- ○ -Poor Compliance with Rehab (exercise, medication, activity restrictions)
- ○ -Rehab Setbacks
- ○ -Poor Quality Rehab Environment
- ○ -Lack of Social Support (athlete away from family; isolated from team)
- ○ -Reinjury following Return to Play
- ○ -Does Not Perform to Ability at Return to Play

Personal

- ○ -Loss (sadness; apathy; withdraws from team; guilt about letting team down)
- ○ -Threat (nervous or uptight; shows outright fear; hesitant in key situations)
- ○ -Overconfidence (minimizes injury; exaggerates past or future achievements)
- ○ -Pain (frequent or excessive complaints; signs of physical discomfort)
- ○ -Pressure to Return to Play
- ○ -Trust in Treatment & Treatment Providers

LISTEN

- ○ -Life Problems? (sport, school, family, friends,)
- ○ -Physical Problems? (headache, poor sleep, stomach distress, health concerns)
- ○ -Goals for Performance? (unable to identify realistic goals)
- ○ -Confidence Crisis (worry about recovery; teammates/coaches reaction)

Zen Zone Digital

Available from ZenZoneDigital.net

ATHLETE INJURY CHECKLIST

- **LOOK - Situational**

Poor Compliance with Rehab
Lack of Social Support

- **LOOK - Personal**

Loss / Threat
Pain Complaints

- **LISTEN**

Life Problems
Confidence Crisis

- Practical, Intuitive, Minimally Intrusive- Unscored
- Talking Points - Structure Conversation about Athlete Psychological Status
- Use by (One/Multiple) Sports Medicine & Coaches &…
- Cross Check with Stakeholders
- Cross Check w/ Self Report

Sport Performance & Rehab Tracker

(SP&RT)

PSYCHOLOGICAL SKILLS RATING

- 1. Sport & Injury Knowledge
- 2. Pain Management
- 3. Communication
- 4. Focused Thinking & Emotions
- 5. Motivation
- 6. Social Support
- 7. Readiness to Play

Sport Performance & Rehab Tracker (SP&RT)

- Evidence-Based
- Language of Performance vs Mental Health
- Limit Self-report Bias (mental health stigma)
- Sensitive to Change over Time
- Quick – Respond & Interpret
- Structure to Interview
- Transfer from Sport to Rehab (rehab is sport)
- Link Assessment to Intervention

(Podlog & Heil, in development)

Sport Performance & Rehab Tracker (SP&RT)
2-Support Disruption

- Initially at moderate psychological risk
- Probably candid in response
- Improving but still vulnerable
- Satisfactory overall Psych Skills
- New issues -- ***Team & Family Support***
  Problems with family, friends, coach?
- Fall off -- ***Focused Thinking & Emotion***

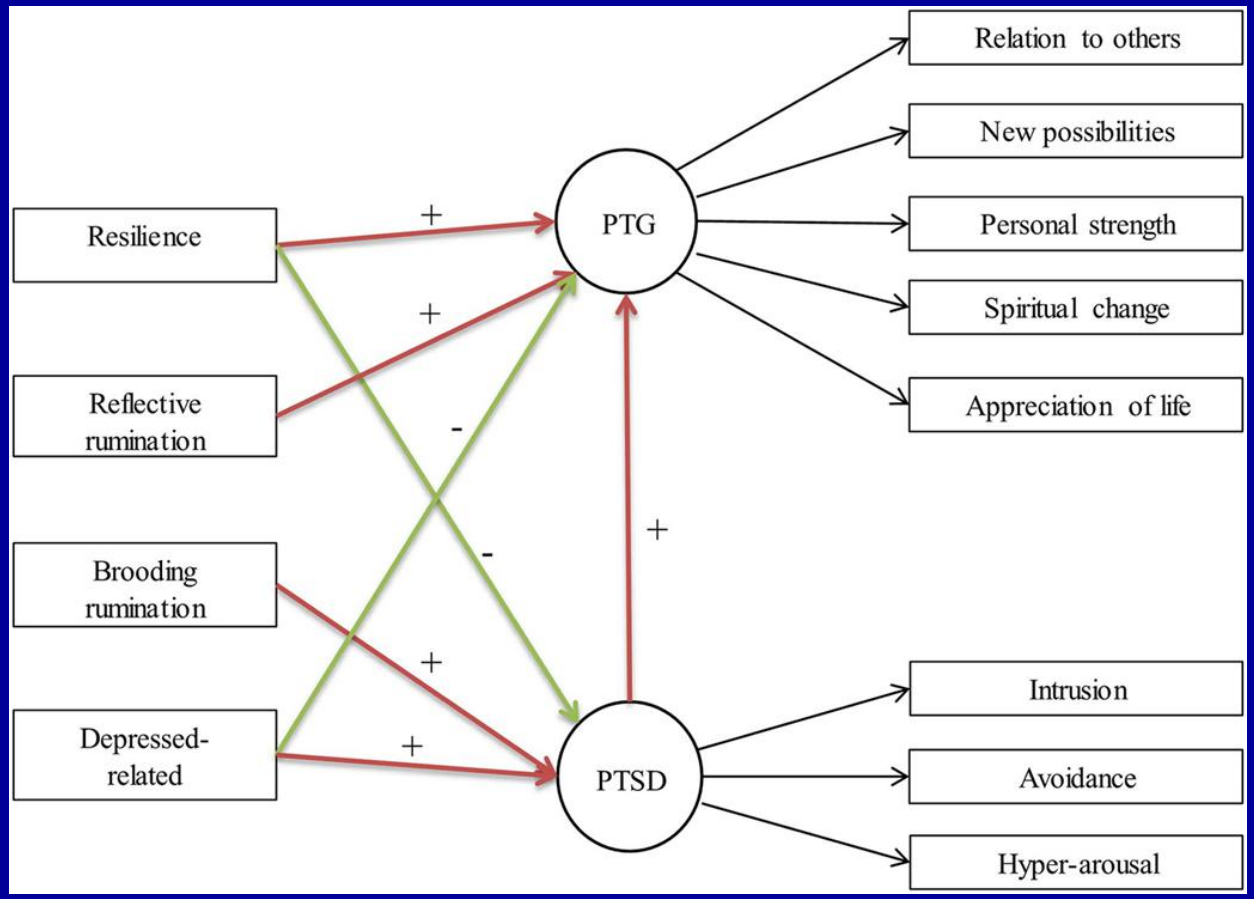
POST TRAUMATIC GROWTH

- **Organismic Valuing Theory**
  Joseph & Linley (2005)

Innate Drive to Modify Worldview Positively after Trauma

Positive Accommodation - Growth
Pre-Trauma Function - Recovery
Negative Accommodation – Distress

- Wadey, Clark, Podlog, & McCullough (2013)



REMARKABLE RECOVERY

Return to Play at Higher Level

Injury as Learning

Sport Skill-Rehab Skill Transfer

- Body Awareness Heightened
- Pain Assessment Enhanced
- Mental Skills Sharpened
- Psychological Momentum
- Sport Revalued

Heil (2011)

HEIGHTENED BODY AWARENESS

- ***Motor Genius*** Ogilvie

- Fine Tuned Fitness
- Biomechanics

Macchi & Crossman (1996) - Ballet
Udry et al (1997) - Skiers

ENHANCED PAIN ASSESSMENT

- ***Pain vs Injury***

- Finely Tuned Perception
- Decision Making

e.g., Sport-Attention Matrix

(Heil & Podlog, 2012)

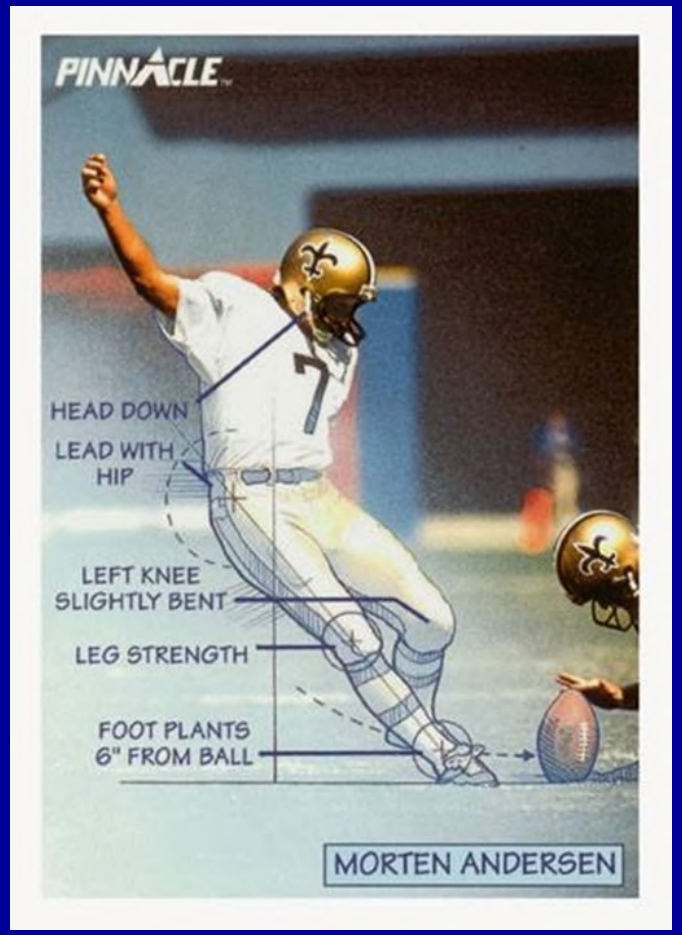
SHARPENED MENTAL SKILLS

- Mental Game to Rehab
- Mental Rehearsal as Preparation

Case Study: Morten Anderson

NFL leading scorer; FG Kicker

I made it to the Pro Bowl through mental preparation and visualization. There was ***no foot to ball practice*** *until Sunday afternoons.*

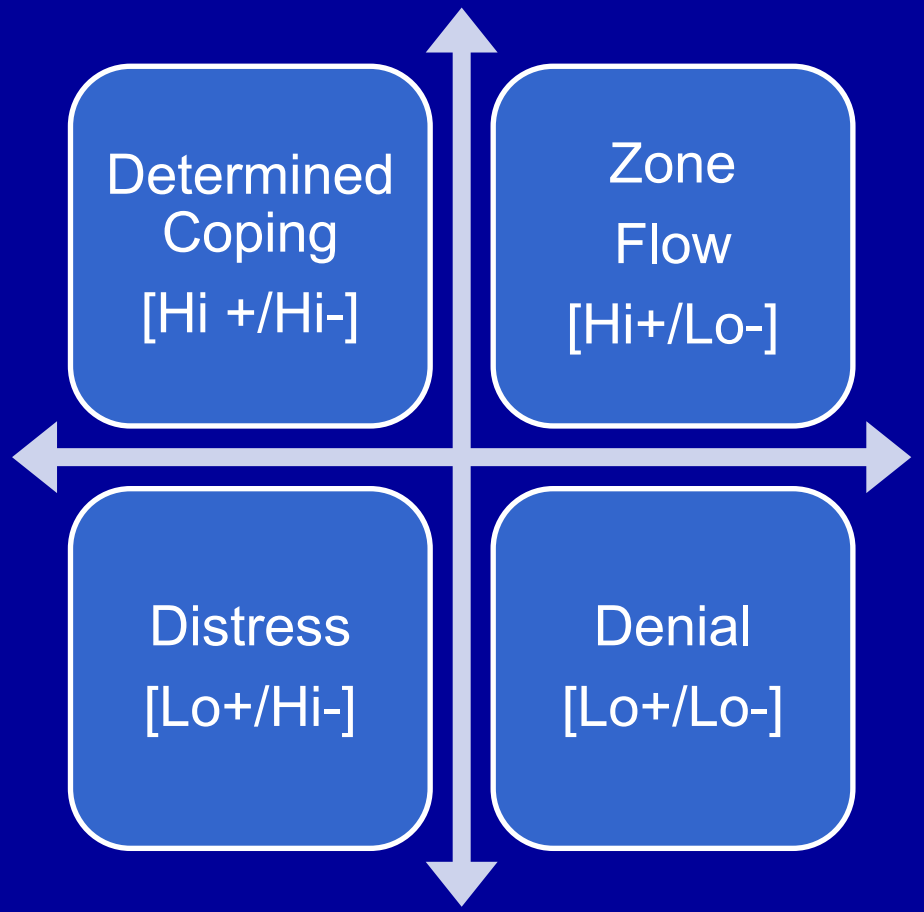


Andersen (2013)

PSYCHOLOGICAL MOMENTUM

Negative & Positive Affect
Independent

Injury & Emotion
Negative Affect Up w/Injury
Positive Affect Maintained
Negative Affect Down w/Rehab
Balance Shifts to Positive



Heil (2000)

REVALUING SPORT

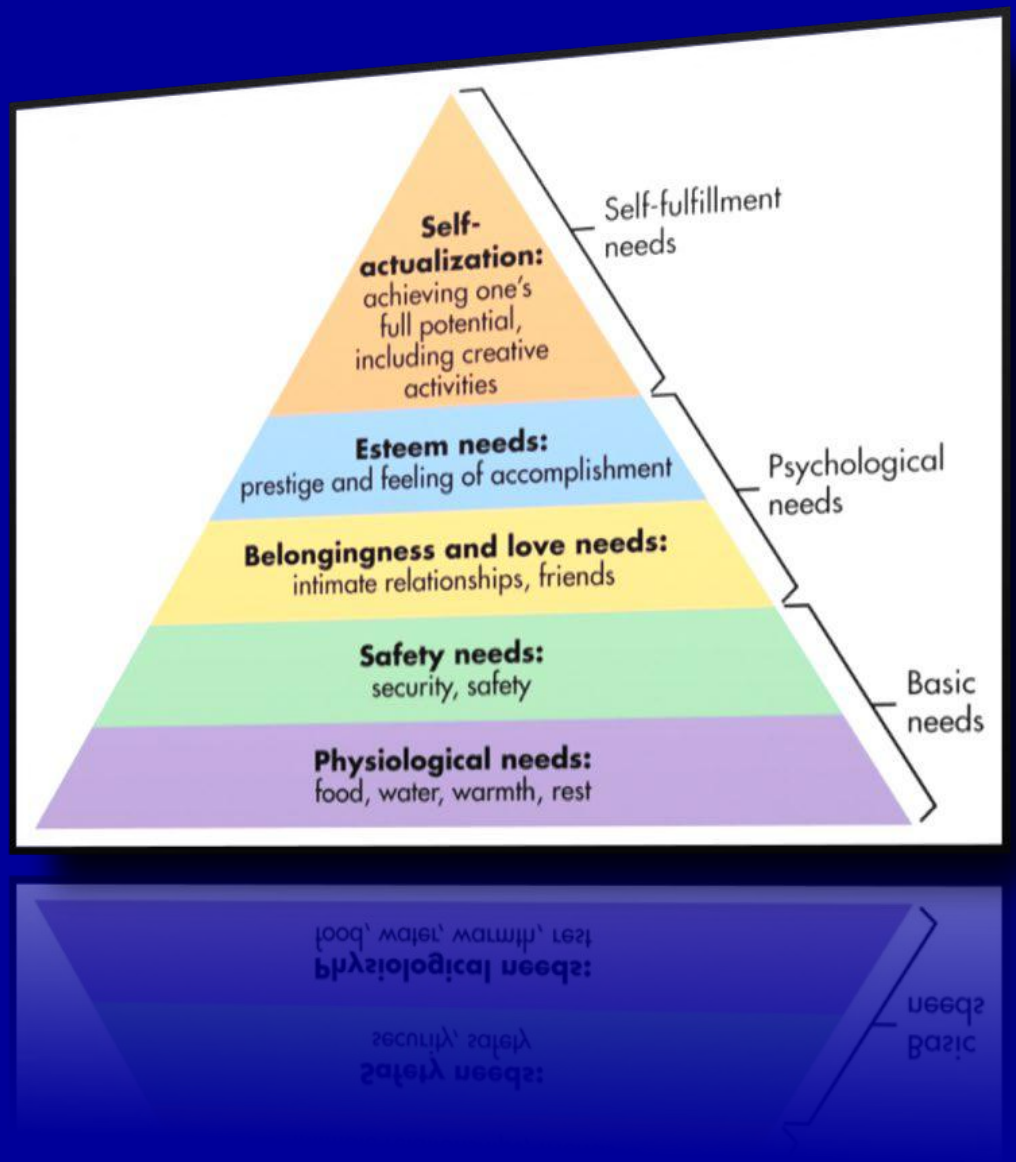
- **Self-Actualizing**

Maslow (1971)

- **Paradoxical**

Day-to-Day Grind

Sense of Loss



- TRUST
- Injury as “Trust Challenge”
- Injury Team as “Trust Bridge”

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