2014 FEMALE ATHLETE TRIAD COALITION CONSENSUS STATEMENT

Treatment & Return to Play

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DISCLOSURES

- DJ Global Primary Care Sports Medicine Advisory Board
- Research funding NFL Charities
- Chair, Big Ten-Ivy League Traumatic Brain Injury Research Committee
- No off label uses
OBJECTIVES

- List the strengths & weaknesses of the Triad Coalition risk assessment scoring system.
- Assess risk and determine clearance status in a case example.
OVERVIEW

- Coalition Consensus Article 2014
- Female Athlete Triad Coalition
- What was the need for this article?
  - ACSM Position Stands 1997 & 2007
  - Review the Triad spectrum
- Risk assessment
- Clearance & Treatment
- Case
- Strengths/ Limitations
2014 Female Athlete Triad Coalition Consensus Statement on Treatment and Return to Play of the Female Athlete Triad:
1st International Conference held in San Francisco, California, May 2012 and 2nd International Conference held in Indianapolis, Indiana, May 2013

Mary Jane De Souza,1 Aurelia Nativ,2 Elizabeth Joy,3 Madhusmita Misra,4 Nancy I Williams,1 Rebecca J Mallinson,1 Jenna C Gibbs,3 Marion Olmsted,6 Mark Goolsby,7 Gordon Matheson,8 Expert Panel

ABSTRACT
The female athlete triad is a medical condition often observed in physically active girls and women, and involves three components: (1) low energy availability with or without disordered eating, (2) menstrual dysfunction and (3) low bone mineral density. Female athletes often present with one or more of the three triad components, and an early intervention is essential to prevent its progression to serious endpoints that include clinical eating disorders, amenorrhea and osteopenia. This consensus statement represents a set of recommendations developed following the 1st (San Francisco, California, USA) and 2nd (Indianapolis, Indiana, USA) International Symposium on the Female Athlete Triad. It is intended to provide clinical guidelines for physicians, athletic trainers and other healthcare providers for the screening, diagnosis and treatment of the female athlete triad and to provide clear recommendations for return to play. The 2014 Female Athlete Triad Coalition Consensus Statement on Treatment and Return to Play of the Female Athlete Triad expert panel has proposed a risk stratification assessment system that takes into account magnitude of risk of the physician in decision-making regarding sport participation, clearance and return to play. Guidelines are offered for clearance categories, management by a multidisciplinary team and implementation of treatment contracts. This consensus paper has been endorsed by the Female Athlete Triad Coalition, an international Consortium of leading Triad researchers, physicians and other healthcare professionals, the American College of Sports Medicine and the American Medical Society for Sports Medicine.

INTRODUCTION
This consensus statement is the first of its kind and represents a set of recommendations developed following the 1st (San Francisco, California, USA) and 2nd (Indianapolis, Indiana, USA) International Consensus Meetings on the Female Athlete Triad (Triad). It is intended to provide clinical guidelines for physicians, athletic trainers and other healthcare providers for the treatment of the Triad and to provide clear recommendations for return to play. The Consensus recommendations herein were developed using a consensus-based approach similar to that utilised by the International Consensus Statement on Contraception.1 This consensus statement will serve as a supplement to the American College of Sports Medicine (ACSM) revised position statement on the Triad published in 2007. The 2007 position statement provided the scientific evidence documenting the existence and causes of the Triad.2 Practical information for athletes, coaches, parents and a list of resources and helpful information on the Triad can be readily viewed on the Female Athlete Triad Coalition website at http://www.femaleathletetriad.org. This consensus paper has been endorsed by The Female Athlete Triad Coalition, an International Consortium of leading Triad researchers, physicians and other healthcare professionals, the American College of Sports Medicine and the American Medical Society for Sports Medicine.

While agreement exists concerning the primary guidelines and recommendations communicated in this document, the authors acknowledge that the underlying levels of scientific evidence regarding some elements of the Triad, particularly related to treatment strategies, are still evolving. The treatment guidelines and return-to-play recommendations proposed herein are based on the published literature available to date, with consensus from the International team of experts convened at the two meetings. As such, management and return-to-play decisions should be based on informed clinical judgement keeping in mind individual risk factors and concerns as described herein.

DEFINITION OF THE FEMALE ATHLETE TRIAD MODE
The Triad is a medical condition often observed in physically active girls and women, and involves any one or more of the three components: (1) low energy availability (LEA) with or without disordered eating (DE), (2) menstrual dysfunction and (3) low bone mineral density (BMD) (see figure 1). Female athletes often present with one or more of the three Triad components, and an early intervention is essential to prevent its progression to serious endpoints that include clinical eating disorders (EDs), amenorrhea and osteopenia.

In 1997, the Task Force on Women’s Issues of ACSM published the first Triad position stand which described a syndrome of three distinct but
FEMALE ATHLETE TRIAD COALITION

- Non-profit organization formed in 2002
- Represents key medical & athletic groups, & concerned individuals
- Promote optimal health & well-being for female athletes, active girls & women.
- www.femaleathletetriad.org
ACSM POSITION STANDS

1997

Amenorrhea
Osteoporosis

Disordered Eating

1997

Low Energy Availability with or without an Eating Disorder
Functional Hypothalamic Amenorrhea
Osteoporosis

Optimal Energy Availability

Reduced Energy Availability with or without Disordered Eating
Subclinical Menstrual Disorders
Low BMD

Eumenorrhea

2007

Optimal Bone Health

Nattiv A: The Female Athlete Triad Position Stand. MSSE 2007
<table>
<thead>
<tr>
<th>Risk Assessment</th>
<th>Low Risk</th>
<th>Moderate Risk</th>
<th>High Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low EA with or without DE/ED</td>
<td>No dietary restriction</td>
<td>Some dietary restriction; current/past history of DE</td>
<td>Meets DSM V criteria for ED*</td>
</tr>
<tr>
<td>Low BMI</td>
<td>BMI $\geq 18.5$; $\geq 90%$ EW; weight stable</td>
<td>BMI between 17.5-18.5; or $&lt; 90%$ EW; $5 &lt; 10%$ wgt loss/month</td>
<td>BMI $\leq 17.5$ or $&lt; 85%$ EW or 10% wgt loss/month</td>
</tr>
<tr>
<td>Delayed Menarche</td>
<td>Menarche $&lt; 15$ yr</td>
<td>Menarche 15 $&lt; 16$ yr</td>
<td>Menarche $\geq 16$ yr</td>
</tr>
<tr>
<td>Oligo-amenorrhea</td>
<td>$\geq 9$ menses in 12 months*</td>
<td>6-8 menses in 12 months*</td>
<td>$&lt; 6$ menses in 12 months*</td>
</tr>
<tr>
<td>Low BMD</td>
<td>Z-score $\geq -1.0$</td>
<td>Z-score between -1.0 and -2.0****</td>
<td>Z-score $\leq -2.0$</td>
</tr>
<tr>
<td>Stress Reaction/Fracture</td>
<td>None</td>
<td>1</td>
<td>$\geq 2$; $\geq 1$ high risk** or of trabecular bone sites***</td>
</tr>
<tr>
<td>Cumulative Risk</td>
<td>0 points</td>
<td>1 point</td>
<td>2 points</td>
</tr>
</tbody>
</table>

* = Current or past history; ** = High risk fracture = femoral neck (tension side), patella, anterior tibial cortex, medial malleolus, talus, tarsal navicular, 5th metatarsal, and great toe sesamoid; *** = Stress reaction/fracture of trabecular sites (femoral neck, sacrum, pelvis)
EA = Energy availability; DE = Disordered eating; ED = Eating disorder; BMI = Body mass index; BMD = Bone mineral density; EW = Expected weight
**** = Weight bearing sport
## Female Athlete Triad: Clearance and Return to Play (RTP) Guidelines by Medical Risk Stratification

<table>
<thead>
<tr>
<th>Clearance and RTP Recommendations by Risk Stratification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cumulative Risk Score</strong></td>
</tr>
<tr>
<td>---------------------------</td>
</tr>
<tr>
<td><strong>Full Clearance</strong></td>
</tr>
<tr>
<td><strong>Provisional/Limited Clearance</strong></td>
</tr>
<tr>
<td><strong>Restricted from Training and Competition</strong></td>
</tr>
</tbody>
</table>

* = Cumulative Risk Score determined by summing score of each present risk factor from Cumulative Risk Assessment
CLEARANCE: MODERATE RISK

- **Provisional**
  - Full training/competition based on the athlete’s compliance & follow thru via written contract

- **Limited**
  - Limitations of training & competition specified in a written contract

MODERATE RISK = 2-5 points
CLEARANCE: HIGH RISK

Restricted from training & competition

- Status can be revised/upgraded if the healthcare team determines the athlete can reach the stated health goals in the written contract.

- Disqualified
RESTRICTED FROM TRAINING & COMPETITION

- Athlete w/ anorexia nervosa whose BMI is < 16.0 kg/m²
- Moderate to severe bulimia
  - Purging > 4 x/wk
CASE

- 18 yo freshman female distance runner PPE
  - 1.5 years of amenorrhea
  - Menarche @ 16.5 but then no further menses
- Ht 5 ft 6 in Wt: 110 lbs BMI 17.6 kg/m2
- No fx's or bony stress injuries
- Reports being a “good & healthy eater”
WHAT WOULD YOU RECOMMEND?

1. Full clearance
2. Full clearance w/ further evaluation
3. Limited participation until she starts OCPs
4. Limited participation w/ further evaluation
5. No participation until further evaluation
6. Disqualified
<table>
<thead>
<tr>
<th>Risk Factors</th>
<th>Magnitude of Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low risk = 0 Points each</td>
</tr>
<tr>
<td>Low EA with or without DE/ED</td>
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<td>&gt; 9 menses in 12 months</td>
</tr>
<tr>
<td>Low BMD</td>
<td>Z-score ≥ -1.0</td>
</tr>
<tr>
<td>Stress Reaction/Fracture</td>
<td>None</td>
</tr>
<tr>
<td>Cumulative Risk</td>
<td>Points +</td>
</tr>
</tbody>
</table>

DATE______________________________
WHAT WOULD YOU RECOMMEND NOW?

1. Full clearance
2. Full clearance w/ further evaluation
3. Limited participation until she starts OCPs
4. Limited participation w/ further evaluation
5. No participation until further evaluation
6. Disqualified
## Clearance and Return to Play

<table>
<thead>
<tr>
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<th>Moderate Risk</th>
<th>High Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Full Clearance</strong></td>
<td>0 – 1 point</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Provisional/Limited Clearance</strong></td>
<td>2 – 5 points</td>
<td>Provisional Clearance</td>
<td>Limited Clearance</td>
</tr>
<tr>
<td><strong>Restricted from Training and Competition</strong></td>
<td>&gt; 6 points</td>
<td></td>
<td>Restricted from Training/Competition-Provisional Disqualified</td>
</tr>
</tbody>
</table>
**Recovery of Bone Mineral Density**

**Recovery of Menstrual Status**

**Recovery of Energy Status**

**PROCESS:** Days or Weeks

**OUTCOMES:**
- Energy status will stimulate anabolic hormones (IGF-1) and bone formation
- Energy status will reverse energy conservation adaptations

**PROCESS:** Months

**OUTCOMES:**
- Reproductive hormones
- Estrogen exerts an anti-resorptive effect on bone

**PROCESS:** Years

**OUTCOMES:**
- Estrogen continues to inhibit bone resorption
- Energy status will stimulate anabolic hormones (IGF-1) and bone formation
STRENGTHS

- Evidence based clinical risk factors
  - Objective score
- Framework for clearance & monitoring
- Standardize medical practice
  - Recognize red flags!
- Avoid poor outcomes
- More detailed evaluation & treatment information than in the 2007 Position Stand
LIMITATIONS

- Not tested in widespread clinical use
- BMI has limitations for athletes
- What about OCP use?
- Determining low EA vs DE vs ED
  - Not always easy!
- Can’t change menarche, stress fxs, h/o o ED, etc
- What about younger athletes?
- Stress fractures due to training errors
SUMMARY

- Triad Coalition Consensus Article
- Risk Assessment
  - Generate a score
  - Consider risk category & clearance/RTP
  - Use your medical judgement!
- Tip of the iceberg
- Stay tuned!
  - Revisions are likely