Female athlete triad

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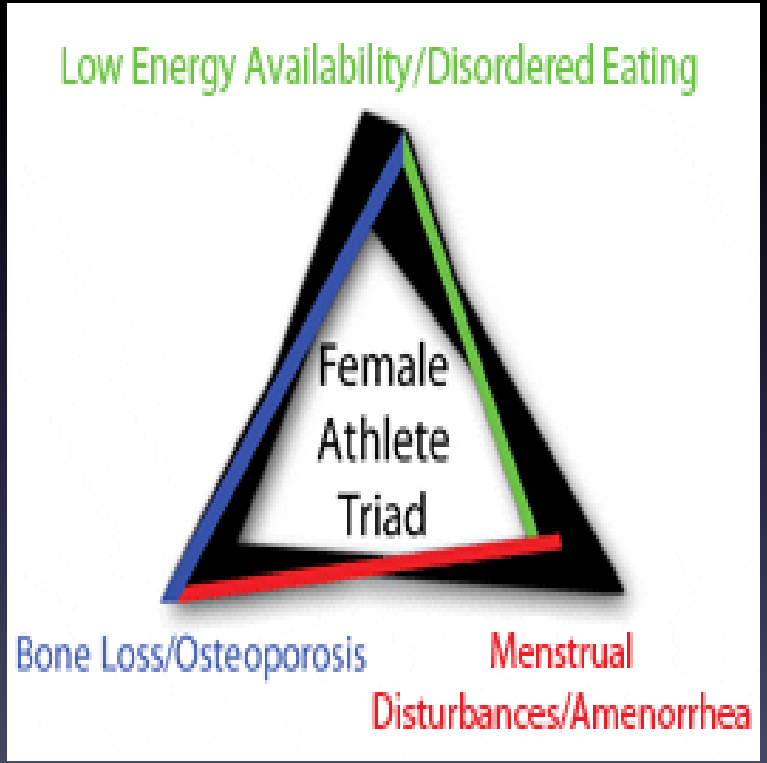
female athlete triad

- 1992 - term first coined
- Disordered eating
- Amenorrhea
- Osteoporosis (osteopenia)



Progression…

"…usually from disordered eating patterns to menstrual disorders to decreased bone density to frank osteoporosis…"

(Lebrun & Rumball 2002)

terminology…

Eating disorder*… clinical mental disorder defined by DSM-IV criteria to include restrictive eating, irrational fear of weight gain, use of "diet pills", laxatives, diuretics, binge eating and purging.*

ACSM Position Stand 2007

terminology...

***Amenorrhoea**... absence of menstrual cycles for more than 90 days.*

ACSM Position Stand 2007

terminology…

Low BMD*…bone mineral density Z-score between -1.0 and -2.0. (BMD cf age, race, sex-matched controls)*

Osteoporosis… *BMD Z-score <-2.0 plus risk factors for fracture (hypoestrogenism, prior #s)*

ACSM Position Stand 2007

“body image”

- Subjectivity in sport
- Judging
- Stereotypes
- Athlete self-perception
- Obsessive-compulsive personality

“body image” in sport

Dance

Gymnastics

Distance running

Aquatic sports

building body image…

perception…

"…athletes believe being thinner may help them get a better score where they are judged by body appearance…"

(Sherman & Thompson 2006)

incidence

- White adolescents 15-24yrs
- Higher-income families
- Elite athletes
- Subjective criteria
- Societal values
- Media influences

disordered eating

- Preoccupation with weight loss
- Intense fear of “fatness”
- Abnormal eating/exercise patterns
- Binge eating
- Purging
- “*anorexia athletica*”

Menstrual function

- Amenorrhoea = absence of cycles > 3/12
- Primary – delayed menarche (15yrs)
- Secondary - post-menarcheal
- Oligomenorrhea (>35 day cycles)

secondary amenorrhea

“athletic amenorrhea”

Diagnosis of exclusion

Pregnancy, hypothalamic defect

In athletes – hypoestrogenism

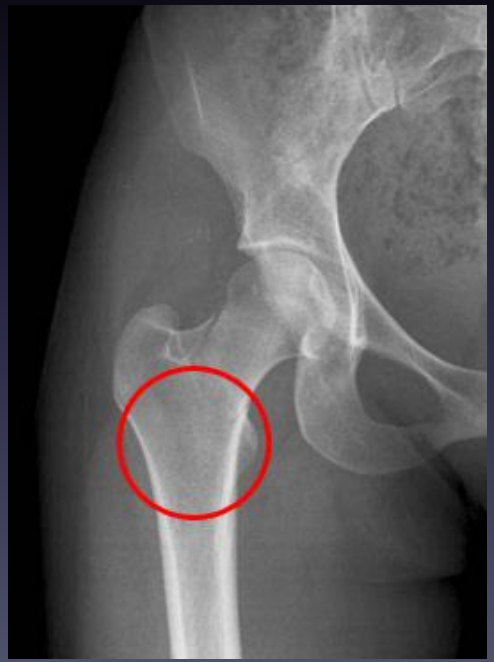
Reduced GnRH

BMD

Bone strength & fracture risk

Dependent on density, internal structure, protein quality

Osteoporotic bone = compromised strength & increased # risk



“bone banking”

Acquisition of BMD from menarche to menopause…

Bone “superannuation fund”

…the more you acquire the more you have to spend…

Clinical features

Subjective cues:

“Energy availability…”

Dietary practices

Weight fluctuations

Exercise patterns (aspirations)

Menstrual status

Musculoskeletal dysfunction

Clinical features

Objective cues:

BMI – body composition

Bradycardia

Orthostatic hypotension

Cool/discoloured peripheries

Lanugo

Hypercarotenaemia

parotid enlargement

Musculoskeletal signs

investigations

Electrolytes

FBC & iron status

Pregnancy test

Thyroid status

LH/ FSH /prolactin

Estradiol

Testosterone DHEA

Imaging

By exclusion

Nutritional concerns / anaemia

Pregnancy

Ovarian failure

PCOS (increased LH:FSH ratio)

Lactotropic-secreting tumour

Thyroid disease

Androgen-secreting tumour (ovary or adrenal)

Congenital adrenal hyperplasia

Functional hypothalamic amenorrhoea (low Gonadotrophins & oestradiol)

Low Bone density

Bone fatigue/stress reaction

Management (1)

Multidisciplinary team approach

Physician

Nutritionist

Psychiatrist /clinical psychologist

Coach & athlete entourage

Management (2)

Broad principles:

Nutritional counselling

Vit D (400-800IU)

Calcium (1500mg/day)

?HRT or Oral Contraceptive

SSRIs to control OCD-anxiety-depression

Management (3)

***specifics**:*

Rebalance energy availability

Address musculoskeletal issues

Provide psychological support

Establish realistic goals for “return to play”

Bone, fatigue & stress

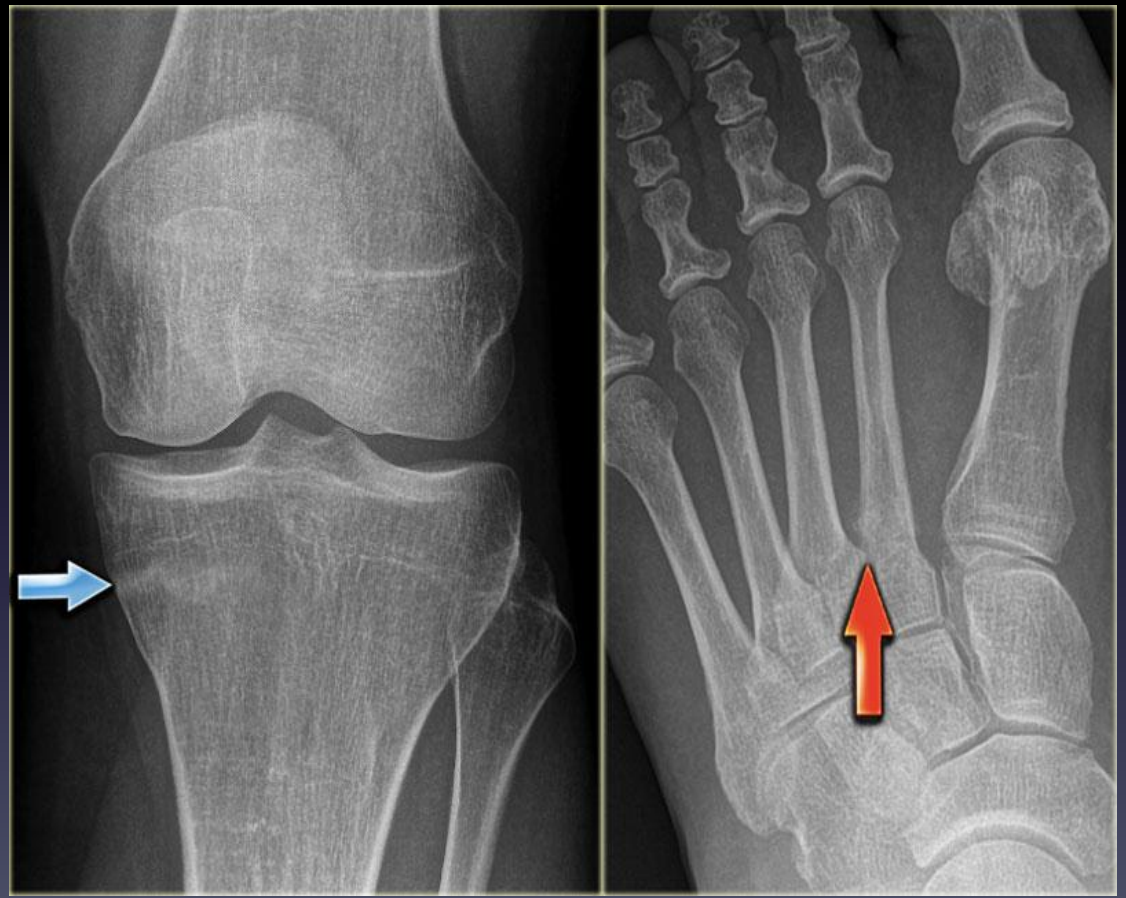
Common sites

Ballistic stressors

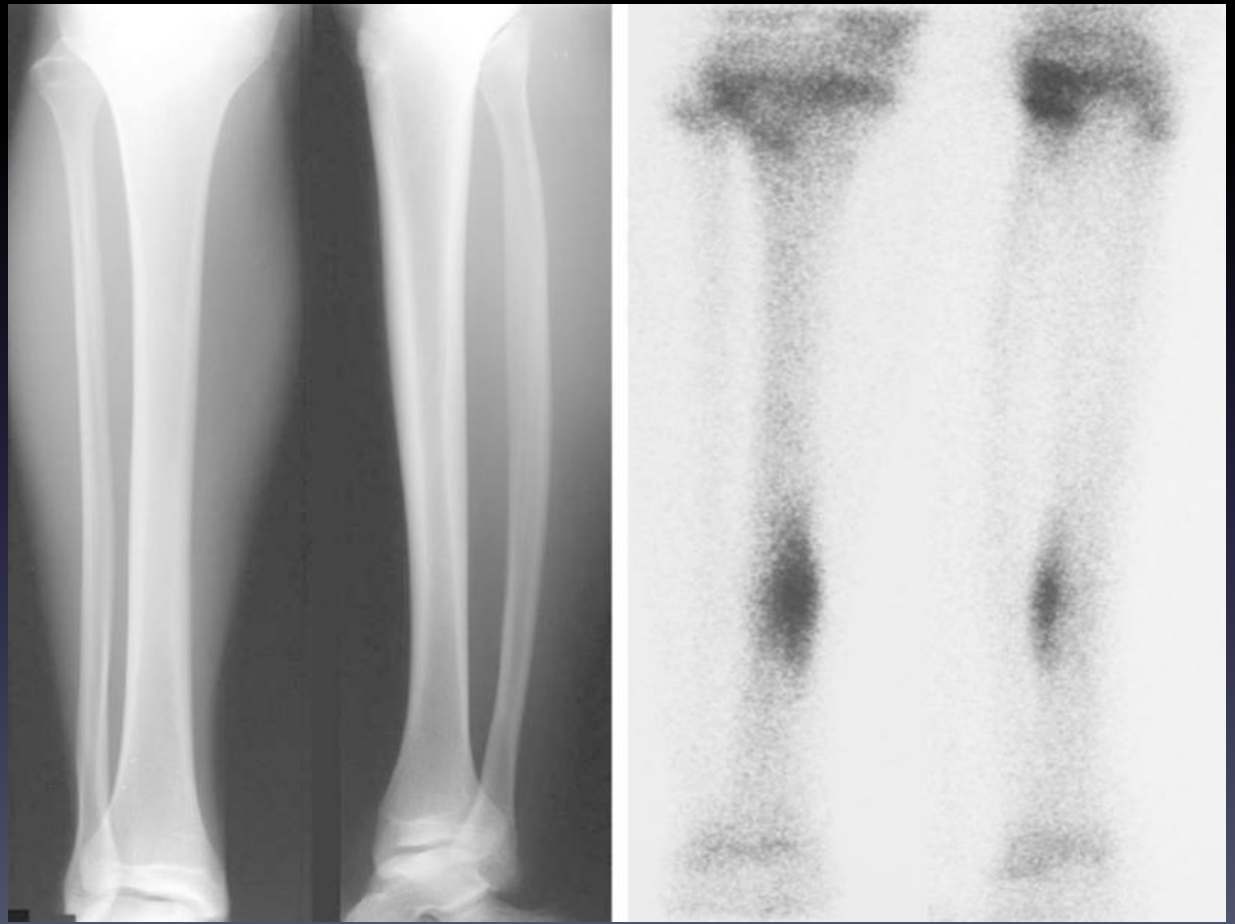
Clinical signs

Investigations

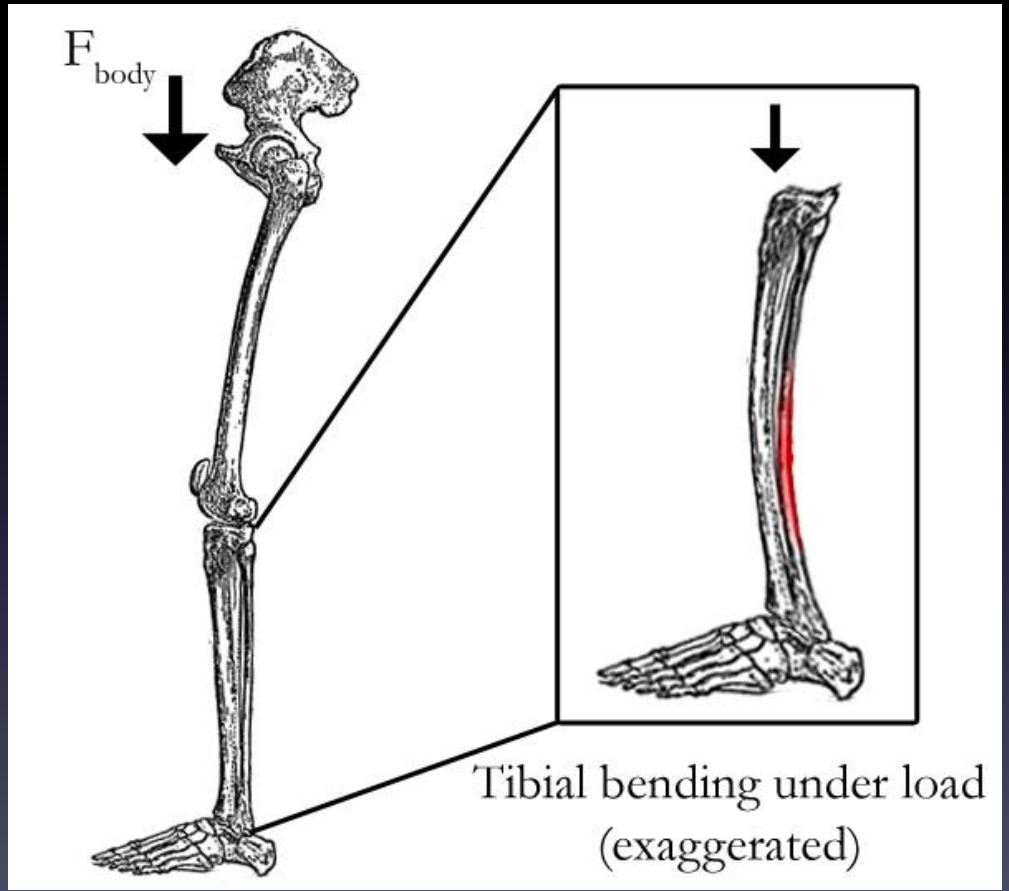
Rehabilitation

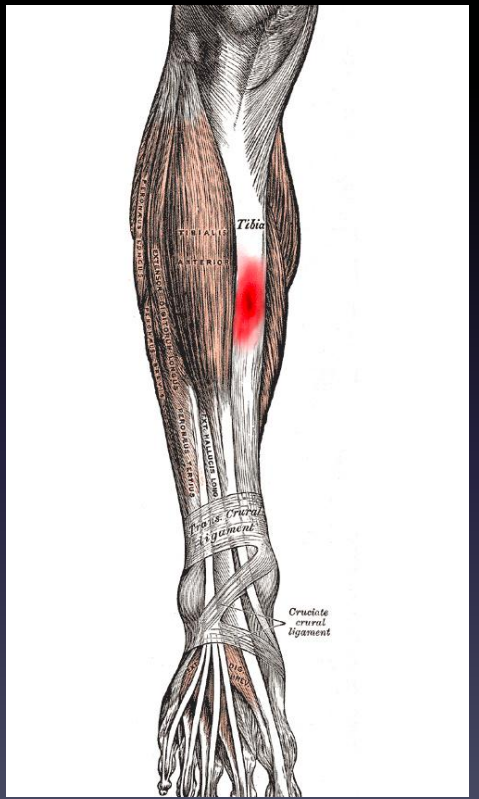


Bone, fatigue & stress



Tibial stress





Take home messages

- Patient vulnerability
- Red flags from the history/examination
- Any point on the “triad”
- Diagnosis by exclusion
- Collaborative management

DISCUSSION

- Shared experiences
- Managing athletes & their entourage
- Musculoskeletal issues
- Prolonged conservative treatment (physio)
- “shin splints”
- Personality traits…