

# Women Boxers : Special Considerations

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# Physical Differences

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- Pubertal delay in physically active girls
- Rate of vertical growth decelerates with menarche
- In fully developed women, less lean body mass
- Wider pelvis as compared to shoulder
- Greater cardiac work than males
- Lower VO<sub>2</sub>max relative to body size (75% of male on average)

# Hypermobility

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- Hypermobility refers to the flexibility beyond normal
- Higher risk of
  - Ehlers-Danlos Syndrome
  - Marfan Syndrome
  - Stickler Syndrome
- Increase risk of joint subluxations and dislocations

# Implication on Boxing Training

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- Structuring a training and competition plan
- Modification of training load as compared to men
- Modification of strength training plan

# Breast Trauma

- Direct blow -----
  - Contusion ?
  - Haematoma ?
- Treatment – Ice, analgesics and breast support.



- No evidence that trauma to breast causes tumours or long term risk
- Prevention – chest guards or sports bras with padding



# Patellofemoral Syndrome

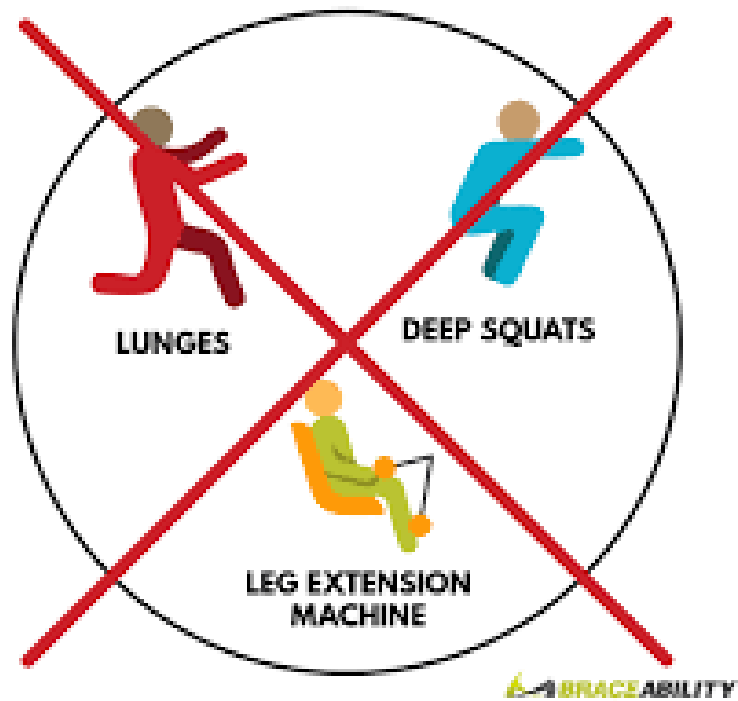
- Pain during exercise and activities that repeatedly bend the knee, such as climbing stairs, running, jumping, or squatting.
- Popping or crackling sounds in your knee when climbing stairs or when standing up after prolonged sitting.



- Higher risk
- Increased patellofemoral loading ... ?
- Larger Q angle ?
- Increased knee valgus ?
- Weak muscles ?
- Respond well to exercise therapy protocols



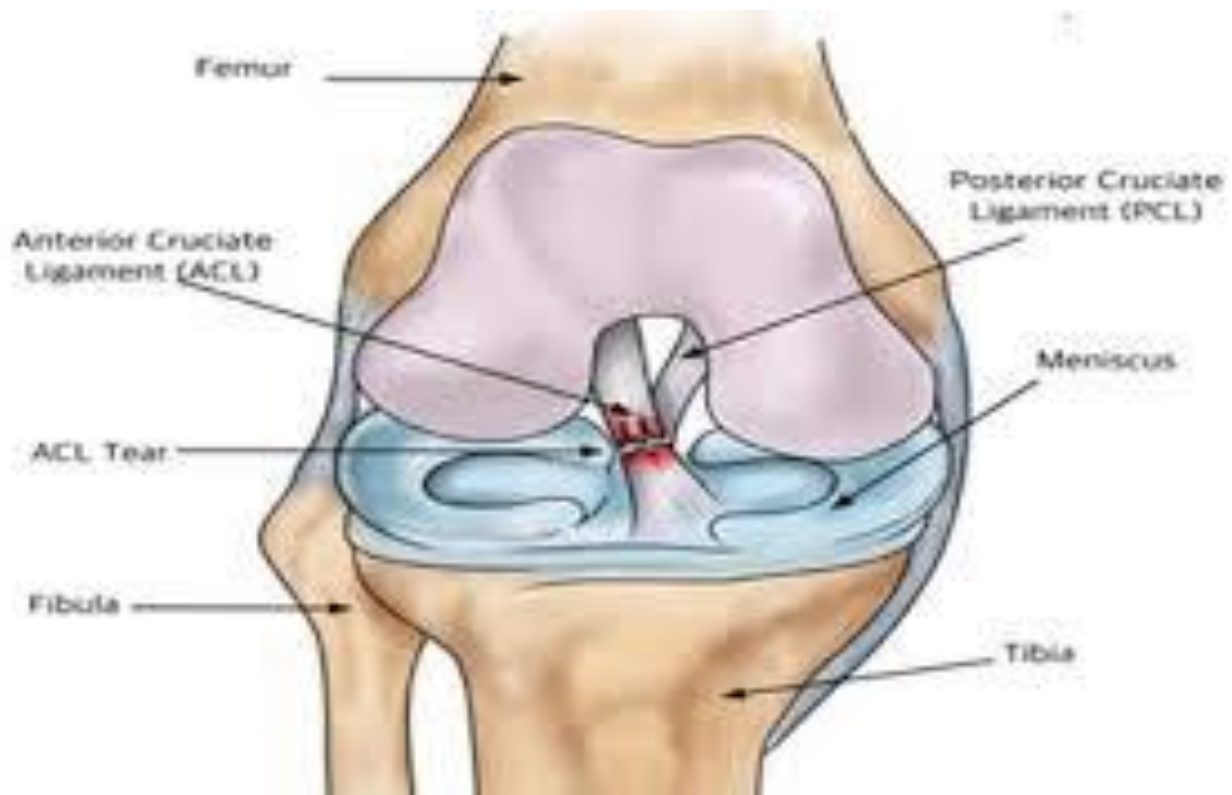
## Patellofemoral Pain Syndrome Exercises to Avoid



# Anterior Cruciate Ligament Injuries

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- 3 - 8 fold greater than males
- Specific risk factors
  - Smaller bones for knees
  - Large Q angles
  - Knee Valgus
- Preovulatory period – oestrogen peak
- Adolescent girls must adopt specific training of leg muscles and agility to minimize ACL injury risk





# Anaemia

- Haemoglobin less than 11 gm/dL
- Many causes –
  - Blood loss
  - Insufficient vitamins and/or minerals
- Most common cause of anaemia is iron deficiency
- Vegetarian diet --- risk for IDA and B12 deficiency anaemia
- Most common complaint ---- poor athletic performance
- Other complaints ---- fatigue, weakness and dizziness



- Iron deficiency impairs

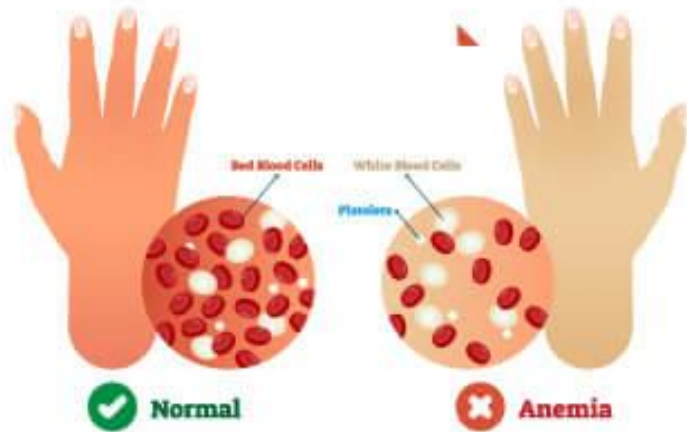
- Aerobic exercise
- Endurance capacity
- Energy efficiency



- 150 – 300 mg of elemental iron consumed daily for 4 – 6 months
- Absorption augmented by Vitamin C and reduced by tannins and phosphates and calcium
- B12 supplementation – 1000  $\mu$ g



# ANEMIA



## SYMPTOMS

Fatigue



Weakness



Irregular  
Heartbeats



Shortness  
of Breath



Chest  
Pain



Cold Hands  
and Feet



Dizziness or  
Lightheadedness



Pale or  
Yellowish Skin



Headache



# Menstrual Abnormalities

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- Too much exercise can make your periods disappear
  - Amenorrhea is dangerous - accompanied by low oestrogens --- osteoporosis
- Excessive exercise / Stress / Rapid weight loss --- Increase spotting
- Menstrual Irregularity :-
  - Skipped periods
  - Delayed cycles
  - Irregular cycles
- Surveys --- 20-42% athletes finds that their menstruation affects their performance.



## How Can Exercise Affect Your Period?



Breakthrough  
bleeding outside  
of your period



Lighter  
flow



Missed periods



Reduces  
period pain



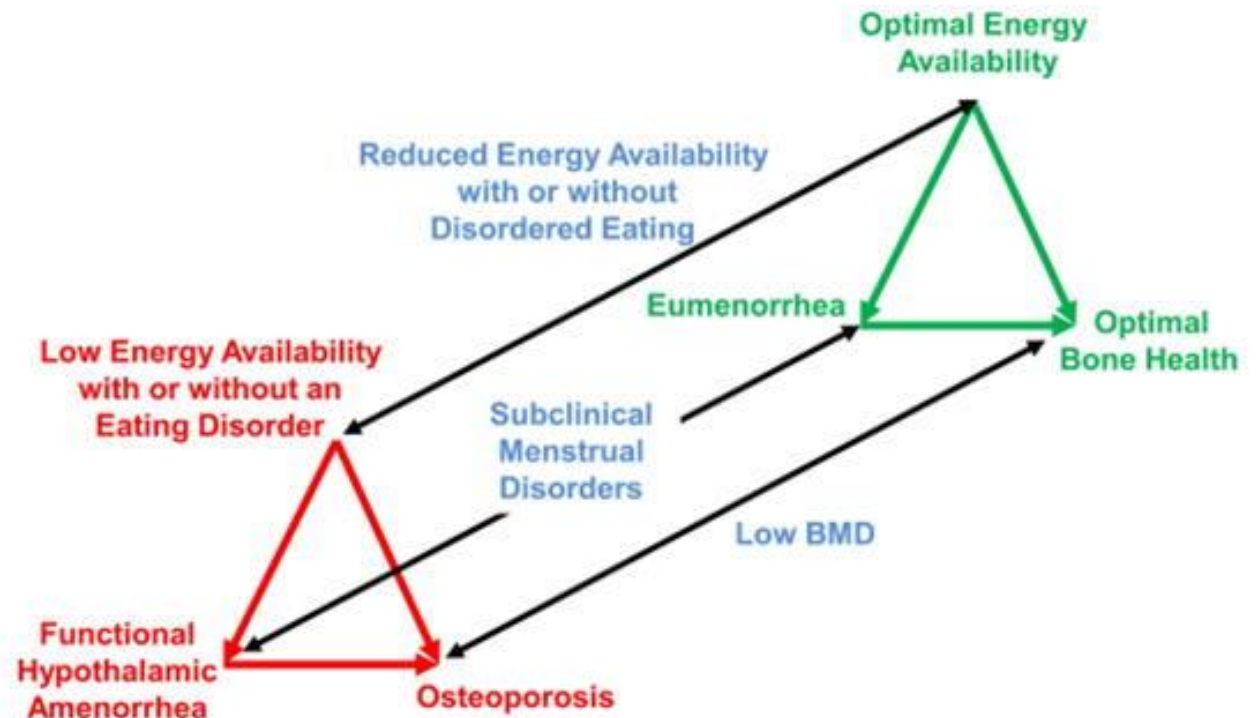
# Manipulation of Menstrual Cycle

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- Maintain your training logbook. Mark the duration of menstrual phase.
- OCP prevent ovulation – thus decrease oestrogen and progesterone and inhibit LH and FSH
- OCP can reduce premenstrual syndrome complaints
- Use or Not ??

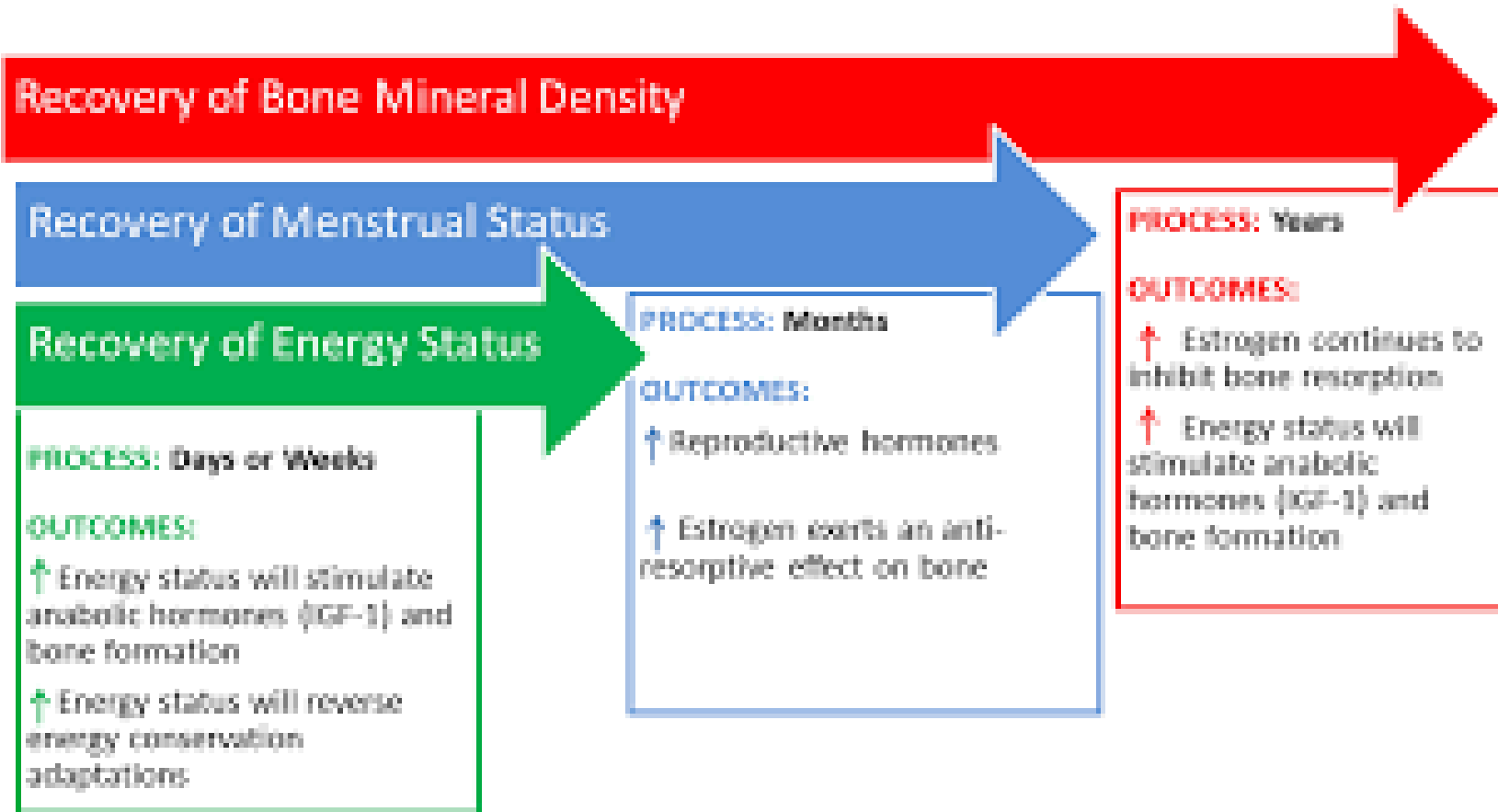
# Female Athlete Triad

- Term given by ACSM in 1992 for combination of disordered eating, amenorrhoea and osteoporosis.
- An athlete may exist at different points along each of the three spectra.



- Energy availability – the amount of energy remaining after exercise training for all other physiological functioning each day.
- Struggle between physical performance and physical appearance



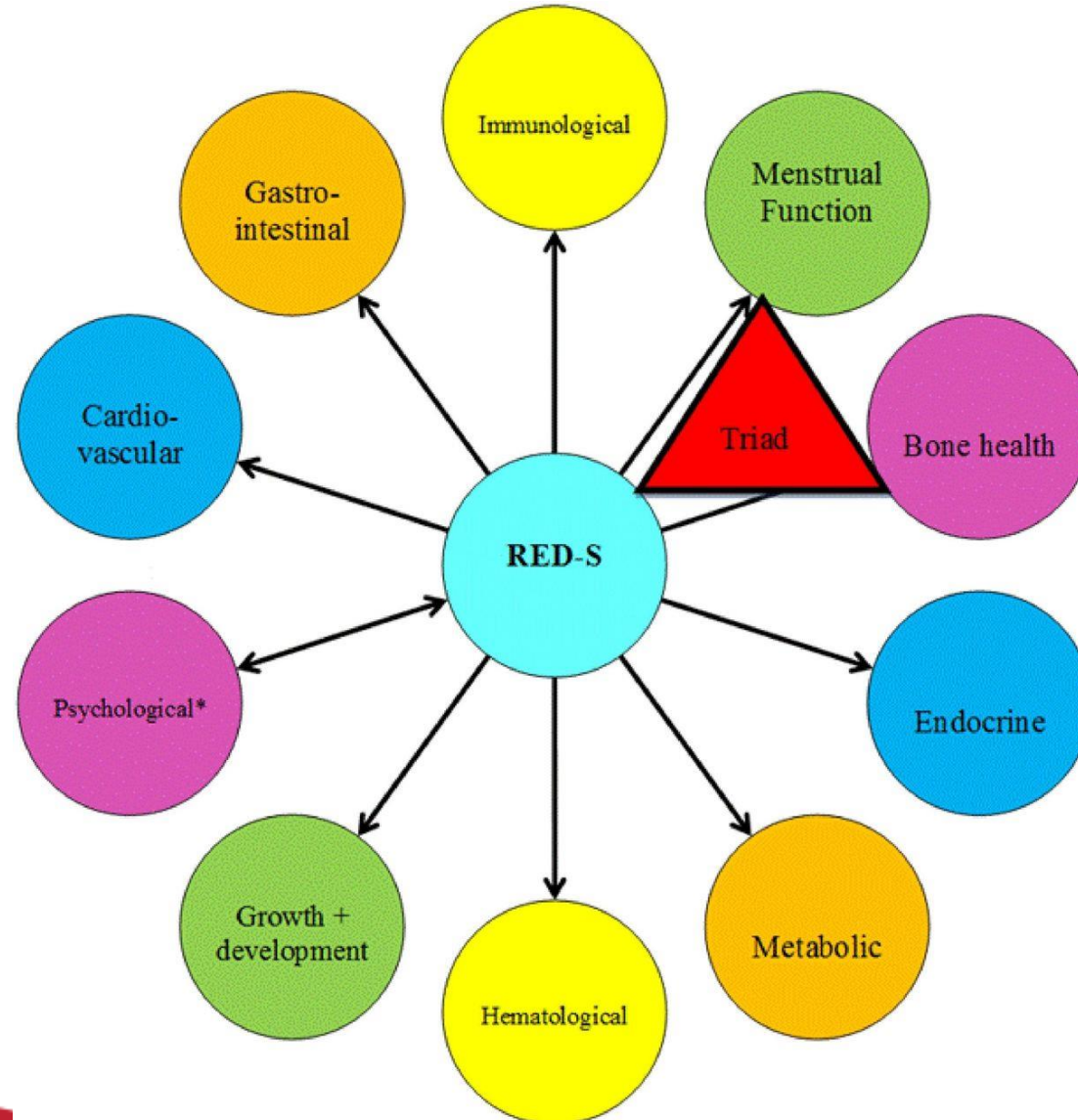


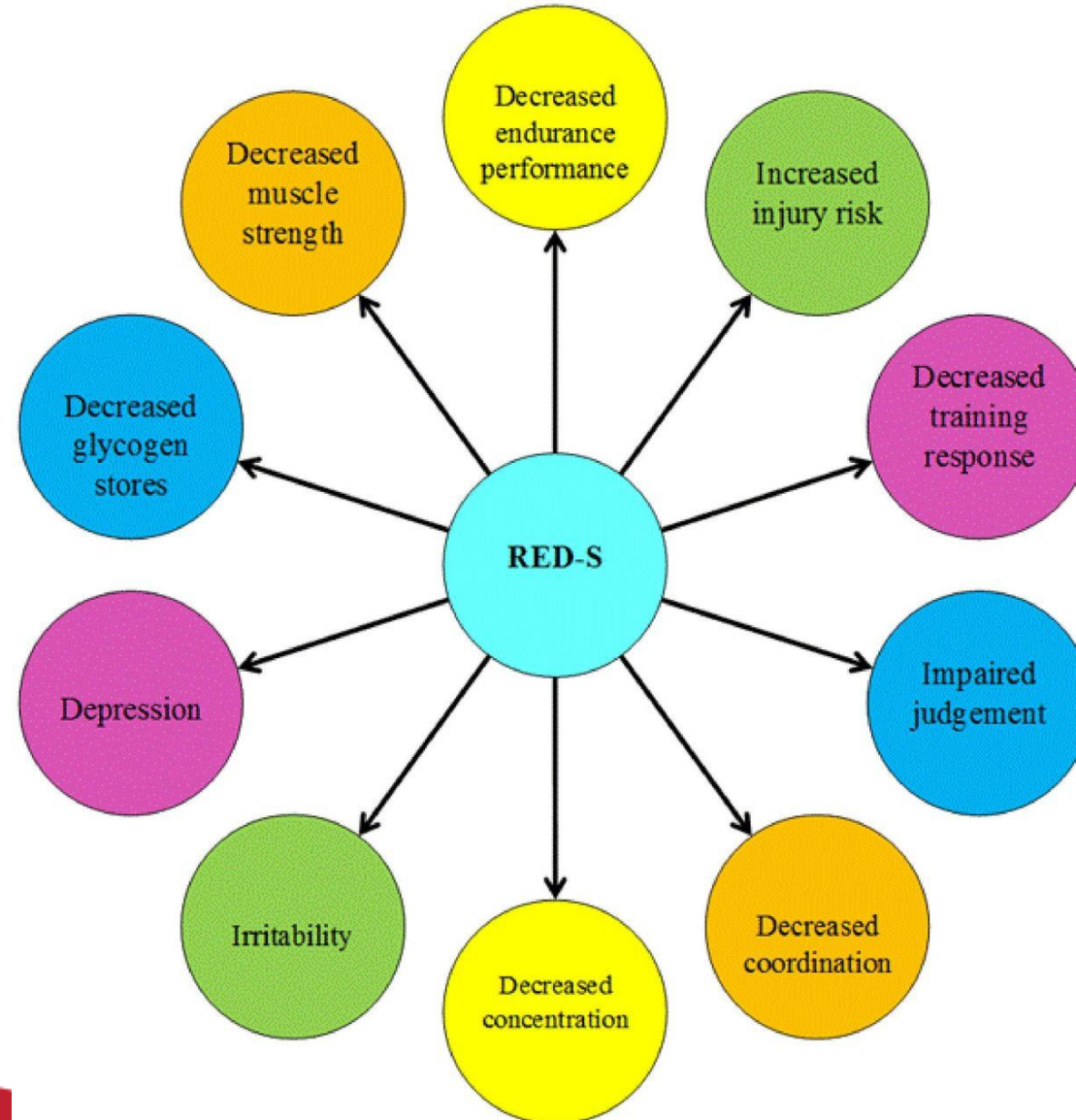
# Relative Energy Deficiency (RED-S)

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- In 2014, the International Olympic Committee introduced a new syndrome Relative Energy Deficiency in Sport (RED-S) reflecting an evolution of the Triad concept.
- Includes the concept of Triad and extends it to men too.









# Screening and RTP

- Point system is developed by Female Athlete Triad Coalition in 2014
  - EA and history of DE/ED
  - BMI
  - Age of Menarche
  - Number of Menstrual cycles in past 12 months
  - BMD Z-scores
  - Stress reaction/fracture history
- Athletes are assigned risk categories – Low, Moderate and High
- The level of risk is tied to level of clearance
  - Full clearance
  - Provisional/limited clearance
  - Restricted from training or competition

Menstrual Week	1		2		3		4	
Menstrual Days	1 to 5		6 to 8	9 to 13	14	15 to 20	21 to 24	25 to 31
Phase	Early Follicular (Menses)		Mid Follicular	Late Follicular	Ovulation	Early Luteal	Mid Luteal	Late Luteal
Hormone Levels	T, O and P ↓		O ↗ P ↘ GH ↑	O ↑ P ↓	O ↑ T ↑	O → P ↗	O → P ↑	T, O and P ↓
Physiological Changes	Mood changes. Increased stress. Poor reaction times and perception of excretion. Immune depression.		Increase in intramuscular and hepatic glycogen storage and uptake	Increased glycogen, fat, protein and electrolyte stores.	Possible changes in behavior and playing potential.	Increased glycogen stores in liver and muscle tissue. Increase in total energy and fat intake (lipolysis). Lowered levels of blood lactate. Greatest retention of water, sodium, chloride and potassium.	Greater protein breakdown. Muscular endurance low. Increased glycogen storage, increased fat and protein. Increased water and electrolytes stores.	Mood changes. Increased stress. Poor reaction times and perception of excretion. Immune depression.
Psychological Changes								
Effects on Training	Eliminate skill and precision training, reduce stress and training volume. Include anaerobic and power based activity, lactic acid based work and strength training.		Include low intensity and high volume aerobic work. Emphasize non-weight bearing activities and prolong exercise.	Include high intensity, low volume, complex tasks, anaerobic and power based activity. Lactic acid based work and strength training.	Strength and Power Training.	Include high intensity, low volume, complex tasks, anaerobic and power based activity. Lactic acid based work and strength training.	Include low intensity and high volume aerobic work. Emphasize non-weight bearing activities and prolonged exercise. Ability to cope with heat stress.	Recovery week. Eliminate skill and precision training. Include simple tasks and low stress. Reduce stress and training volume and include strength training.
Training Component	Regeneration - Metabolic		Prehab	Metabolic + Strength	Peak Strength + Power		Prehab	Recovery
Intensity	↓		→	↗	↑		→	↓
Session Priority	Mixed Light conditioning + Gym		Conditioning	Speed	Gym + Speed		conditioning Heavy	Light Mixed

Testosterone (T) - Oestrogen (O) - Progesterone (P) - Growth Hormone (GH)

# Pregnancy

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- Absolute contraindication for sport of Boxing --- Foetal harm
- Women should be encouraged to return back to sport after delivery of baby
- When and What ??
- Athletes who are Moms ??

# Thank You

For Any Queries :-

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