



UiT The Arctic University of Norway

FENDURA & OLT – UTHOLDENHETSSEMINAR

GI IDRETTSUTØVERNE NOK MAT! BETYDNINGEN AV TILSTREKkelig NÆRINGSINNTAK NÅR DU TRENER

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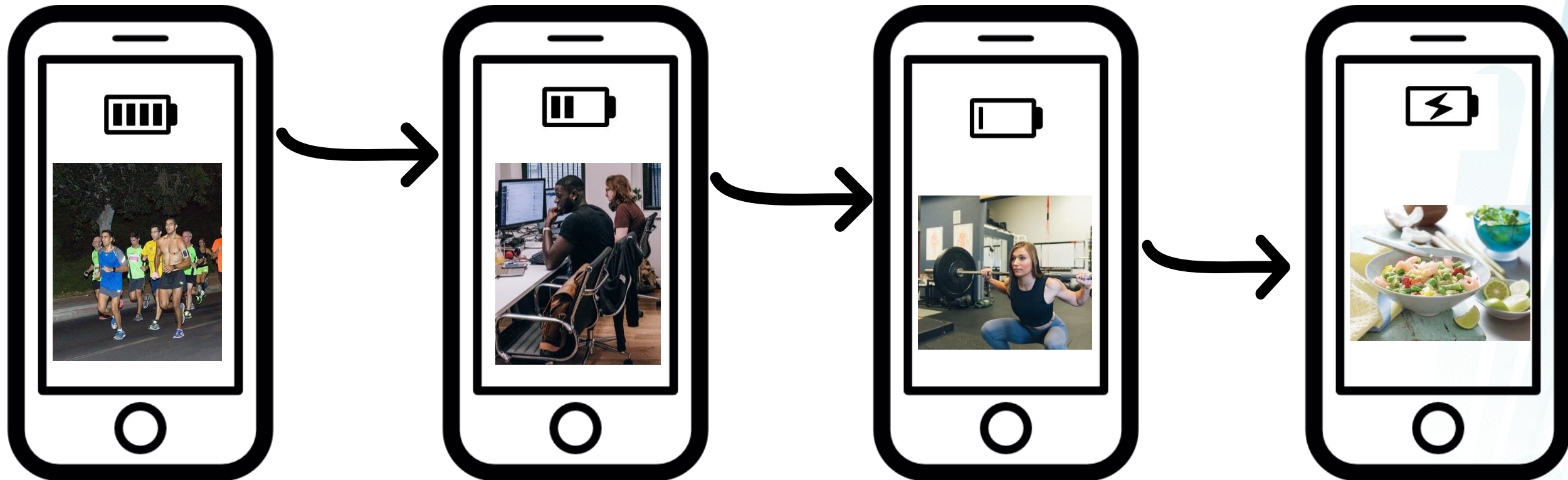
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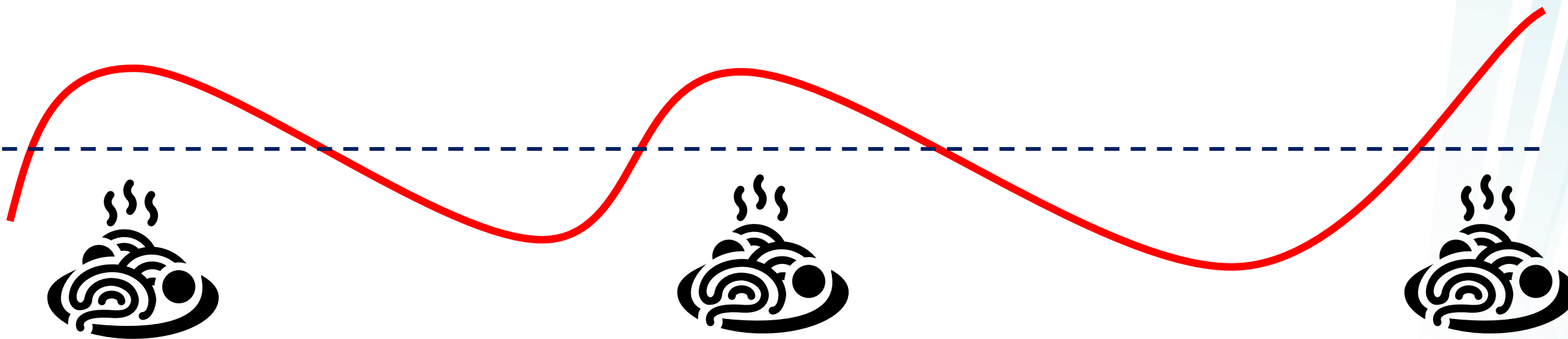
Energy intake and expenditure

- Food = fuel (energy) for exercise.
- Require adequate energy for work/school, training and recovery.



Food timing

- Eat often! Frequent small meals (not just 1-2 large meals)



Food timing

- Eat often! Frequent small meals (not just 1-2 large meals)
- Ideally 4 main meals plus snacks when required (~3-4h apart)
 - ↑ blood glucose control; nutrient absorption
 - ↓ stress hormone (e.g., cortisol); hunger



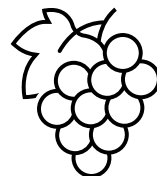
Frokost



Post-training



Lunsj



Snack



Middag



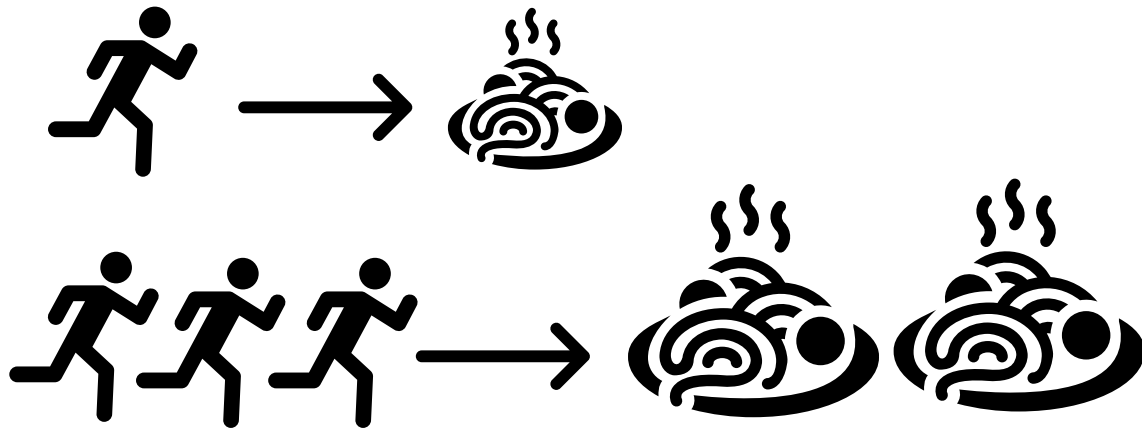
Post-training



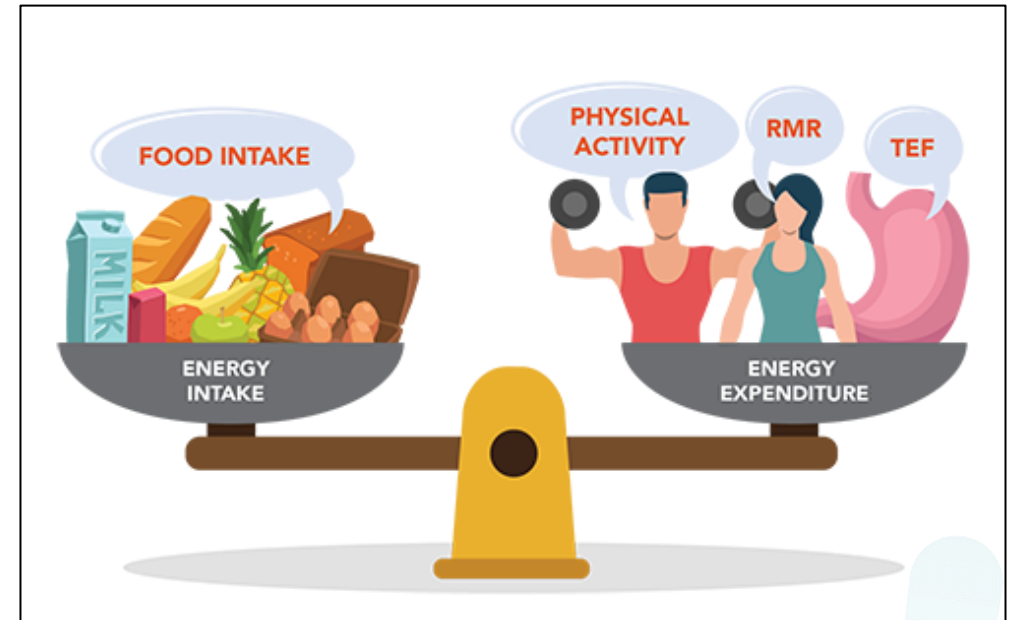
Supper

Energy balance

- Food intake = energy expenditure.



- \uparrow training = must also \uparrow food!
- Important to remember during intensified training (e.g., training camps)



Energy availability in athletes - LEA

- Energy expenditure exceeds energy intake = energy deficit
- Aka - Low Energy Availability (LEA)

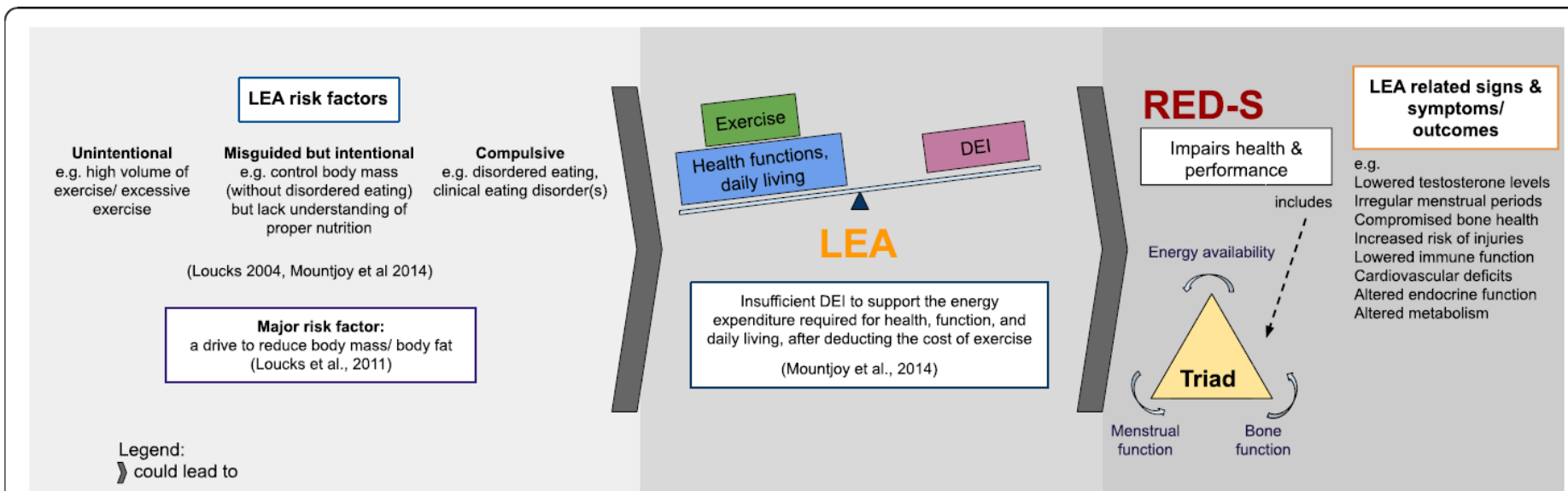
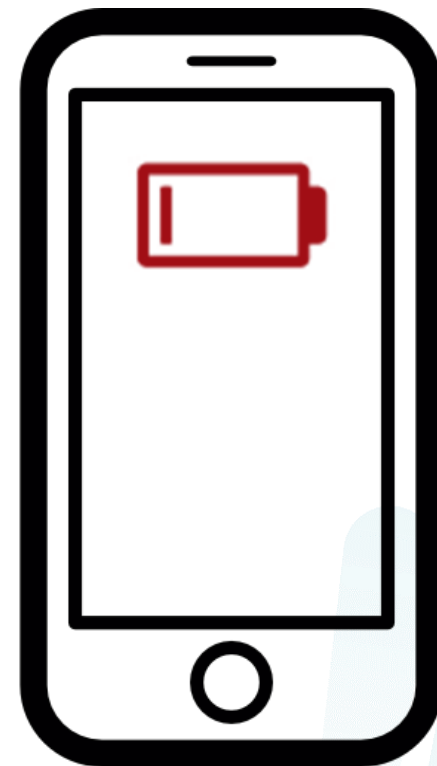


Fig. 1 Unintentional, misguided but intentional, and compulsive behaviors are risk factors for low energy availability (LEA). These risk factors can result in a decrease in Dietary Energy Intake (DEI) and/ or increase in exercise energy expenditure (EEE). Overtime, these lead to Relative Energy Deficiency in Sport (RED-S), with concomitant health and performance consequences. These can present as signs, symptoms and outcomes in both male (e.g. lowered testosterone levels) and female (e.g. irregular menstrual cycle) athletes. RED-S encompasses the earlier identified condition Female Athlete Triad (Triad)

Myths and LEA

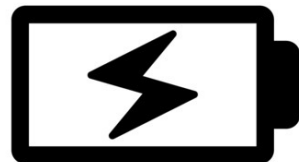
“But why is LEA bad? Doesn’t losing weight improve performance?”

“I heard that athlete XYZ won her race because she didn’t eat before competition”

- Body mass change = always talk to **medical professionals** (i.e., sport dieticians).

“My friend saw an awesome diet on TikTok; we want to copy it”

- Ignore the myths, scams, frauds and fads!
- Remember: food is fuel for training and recovery



Energy availability in sports

- What sports and athletes are most at risk of LEA?
- ‘Aesthetic’ sports:
 - gymnastics, figure skating, ballet dancing, body building




- Endurance sports:
 - distance running, triathlon etc



- Weight-category sports:
 - weight-class rowing, various combat sports, jockeys

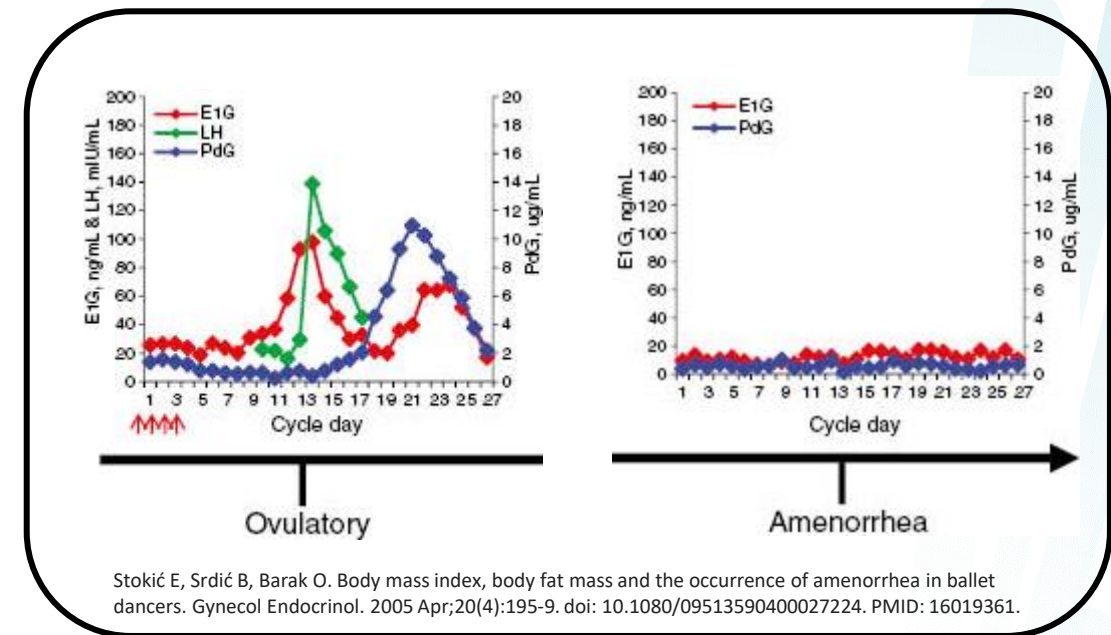


LEA – signs and symptoms

- Female athletes are at a greater risk of LEA (vs males)
- Missing period =  **warning sign** of energy imbalance (LEA)
- LEA = menstrual cycle disturbances
 - e.g., amenorrhea (loss of menses)
- Does this matter? Is amenorrhea bad?
 - **Yes.** Possible long term health consequences.
- NB: HC users

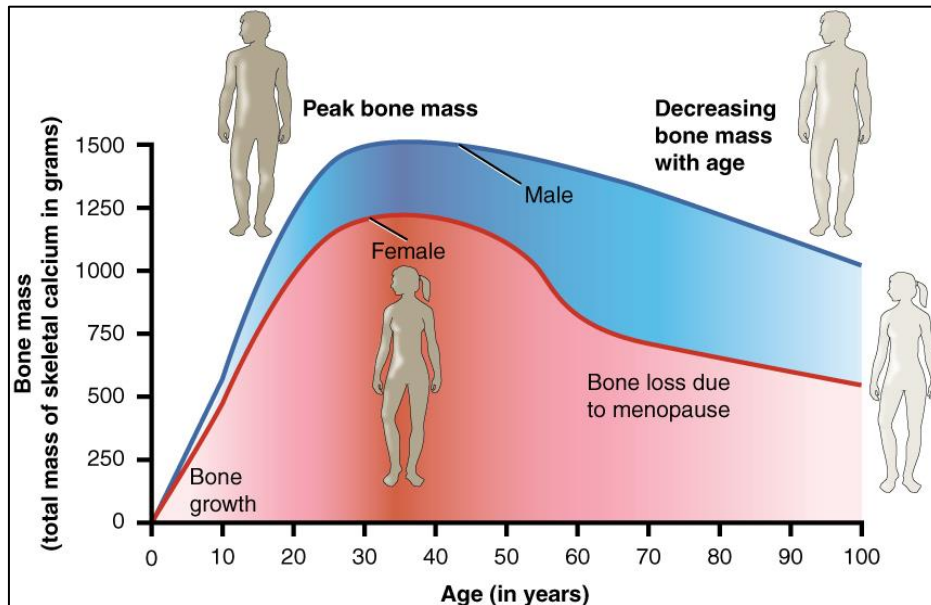
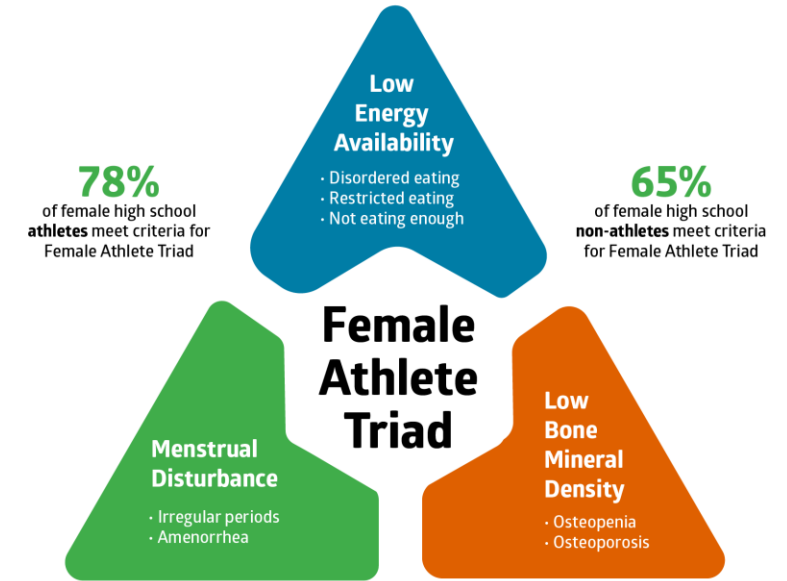
Myth

**If you're menstruating =
not training hard enough**



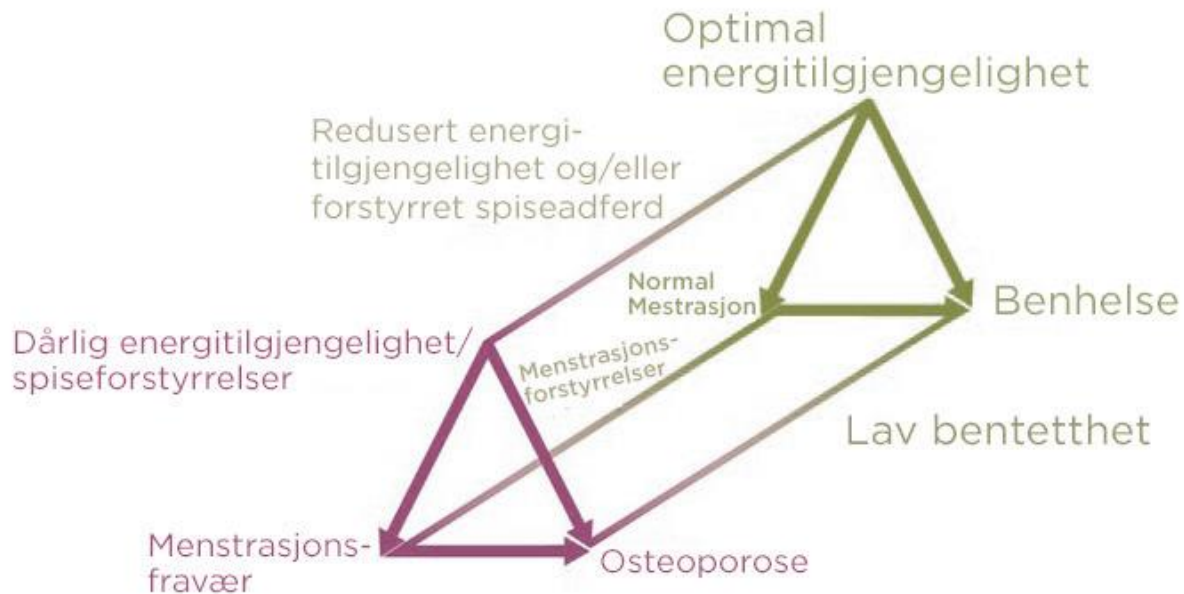
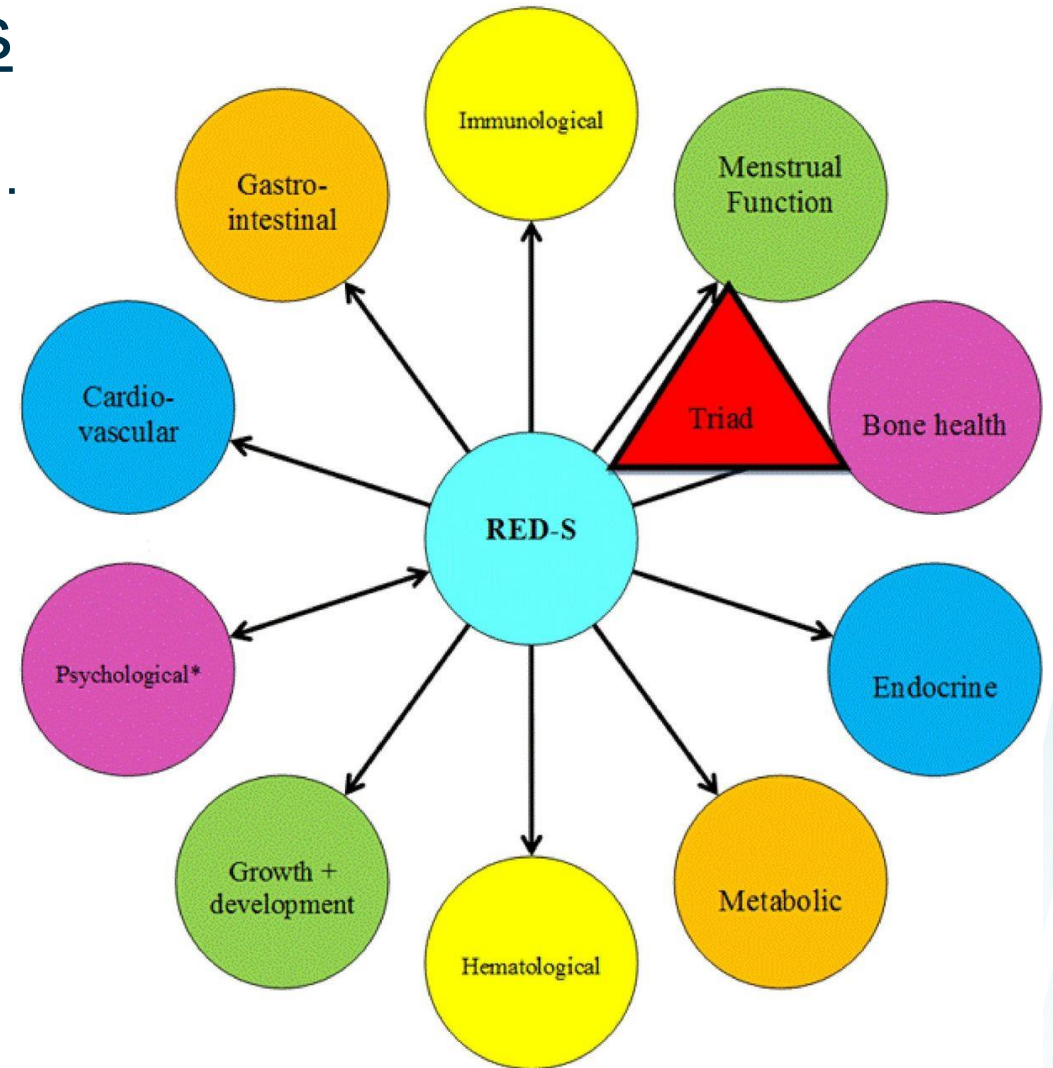
Energy availability in athletes – Bone health

- Female athletes with LEA and MC dysfunction = ↑ risk of bone problems
- Osteopenia develops to osteoporosis (long term)
- Also issue for certain male athletes (e.g. jockeys) but lesser extent



Energy availability in athletes – RED-s

- More than just females, and just 3 conditions...
 - RED-S (Relative Energy Deficiency – Sport)
 - Impacts multiple different systems



Energy availability in athletes – males

- Not just in female athletes
- Males = low testosterone, low/abnormal sperm and reduced sex drive

Endurance Exercise Training and Male Sexual Libido
HACKNEY, ANTHONY C.^{1,2}; LANE, AMY R.¹; REGISTER-MIHALIK, JOHNA¹; O'LEARY, COLIN B.¹
Author Information
Medicine & Science in Sports & Exercise: July 2017 - Volume 49 - Issue 7 - p 1383-1388
doi: 10.1249/MSS.0000000000001235
FREE Metrics

Energy Deficiency
Calories Used > Calories Consumed



Impaired Bone Health
Risk of Stress Fractures or Shin Splints



Reproductive Suppression
Reduced Testosterone + Abnormal Sperm



Conclusion
Exposure to higher levels of chronic intense and greater durations of endurance training on a regular basis is significantly associated with a decreased libido scores in men. Clinicians who treat male patients for sexual disorders and/or counsel couples on infertility issues should consider the degree of endurance exercise training a man is performing as a potential complicating factor.

Burke, L. M., Close, G. L., Lundy, B., Mooses, M., Morton, J. P., & Tenforde, A. S. (2018). Relative Energy Deficiency in Sport in Male Athletes: A Commentary on Its Presentation Among Selected Groups of Male Athletes, *International Journal of Sport Nutrition and Exercise Metabolism*, 28(4), 364–374. Retrieved Sep 12, 2022, from [https://journals-humankinetics-com.mime.uit.no/view/journals/ijsnem/28/4/article-p364.xml](https://journals-humankinetics.com.mime.uit.no/view/journals/ijsnem/28/4/article-p364.xml)

Summary - energy availability and LEA

1. Food is the FUEL used for exercise, training, recovery etc
2. Need to ensure food intake = energy expenditure
3. Try and eat multiple, small/moderate meals throughout the day.
4. LEA in females may lead to amenorrhea = can reduce bone health
5. Prolonged poor bone density = development of osteopenia/porosis
6. A loss of menses should be considered a warning sign – get medically checked
7. Not just female triad anymore – now RED-s
 - a. Males in certain sports are also more susceptible to LEA



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