Menopause Matters

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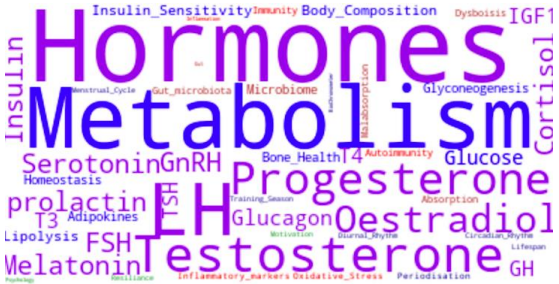
UCL

BAsem
Health 4 Performance

Menopause Matters

- Hormones “setting in motion”
- Horme goddess of effort energy and action
- Female Hormone Odyssey: perimenopause, menopause
- Harnessing Hormones: adapting behaviours with hormone changes
- Perimenopause or Relative Energy Deficiency in sport (REDs)?
- Let’s talk HRT
- Positive conclusions



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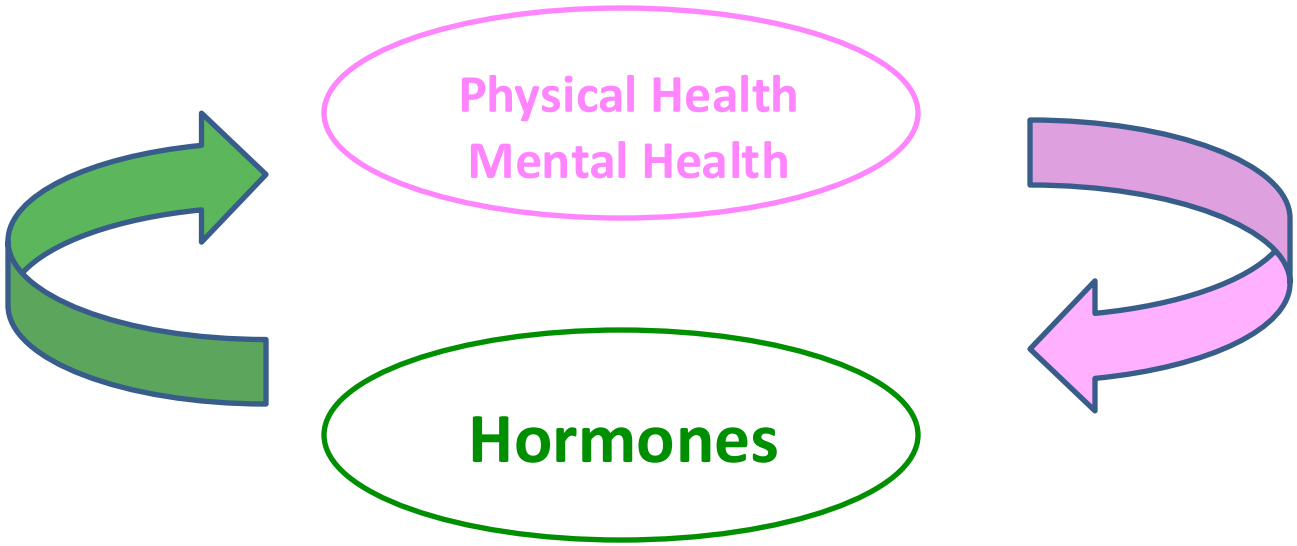
Hormone

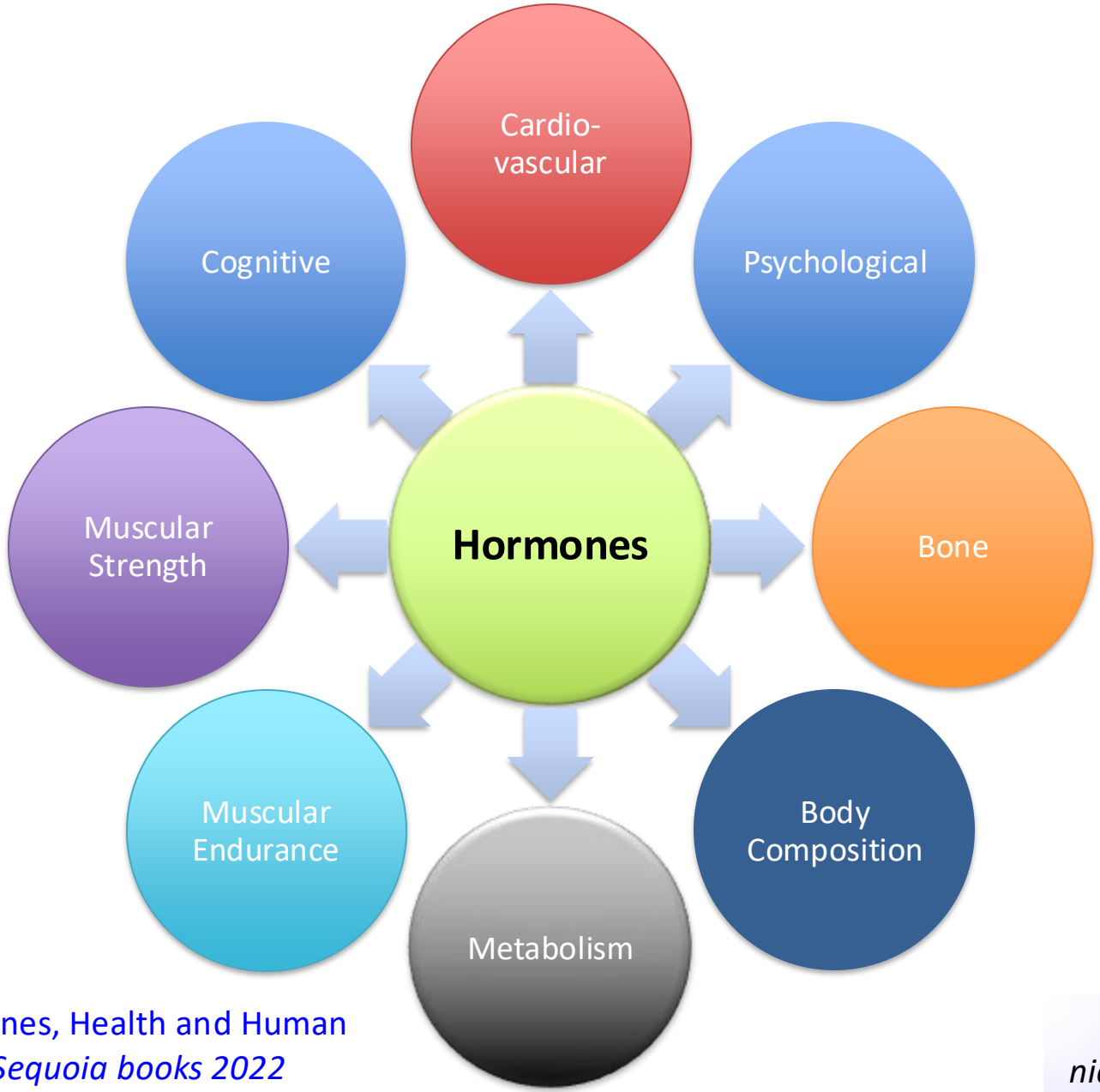
ὁρμῶν (hormon)

“Setting in motion”



N Keay. Hormones, Health and Human Potential. *Sequoia books 2022*

Hormone Network Effects on Performance



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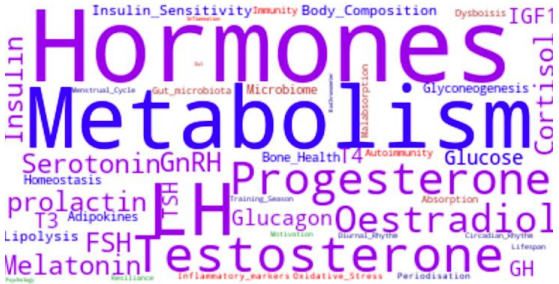

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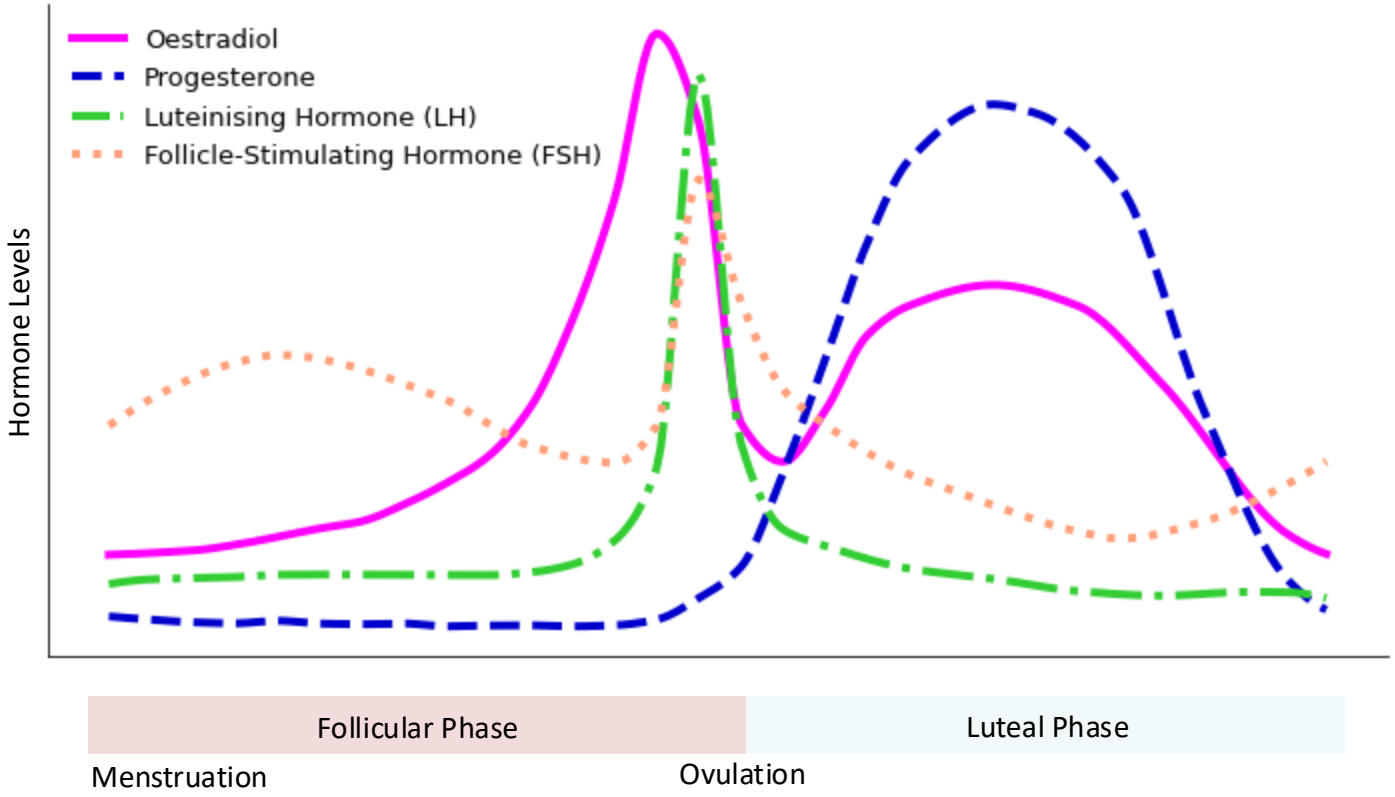
Ὁρμή (Horme)
Goddess of effort, energy, and action



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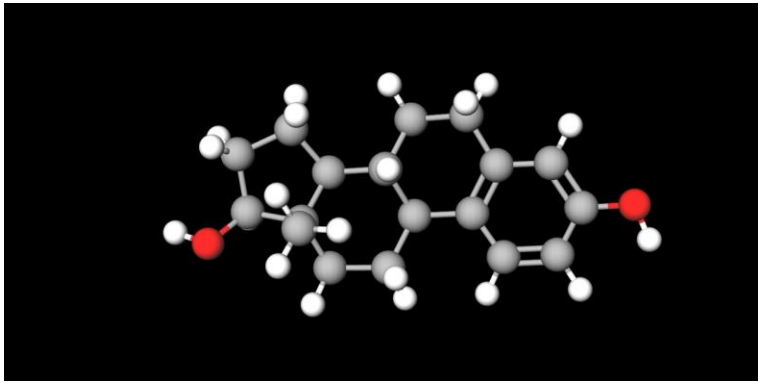
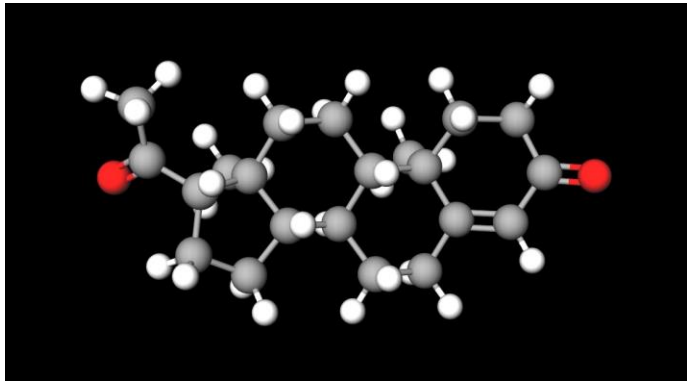
What's so good about Ovarian Hormones?



Oestradiol



Progesterone

Sex Steroid Hormones

- **MSK Bone and soft tissue health**: increased bone AND soft tissue injury risk *(Med & Sc in Sports & Exercise* 2017*)*
- **Cardiometabolic health**: adverse lipid profile, endothelial dysfunction, autonomic dysfunction *(J Cl Invest* 2014*)*
- **Neurological function**: neurotransmitters and neuromuscular control and cognitive function *(Melin et al. Med Sc Spots & Exercise* 2017*)*
- **Gastrointestinal function**: motility, absorption, gut microbiome *(IOC consensus statement REDs, BJSM* 2023*)*
- **Response to exercise**: cardiovascular and musculoskeletal *(IOC consensus statement REDs, BJSM* 2023*)*

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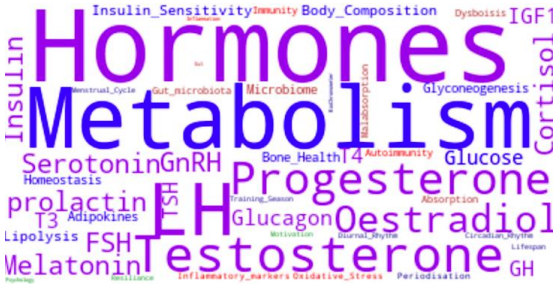

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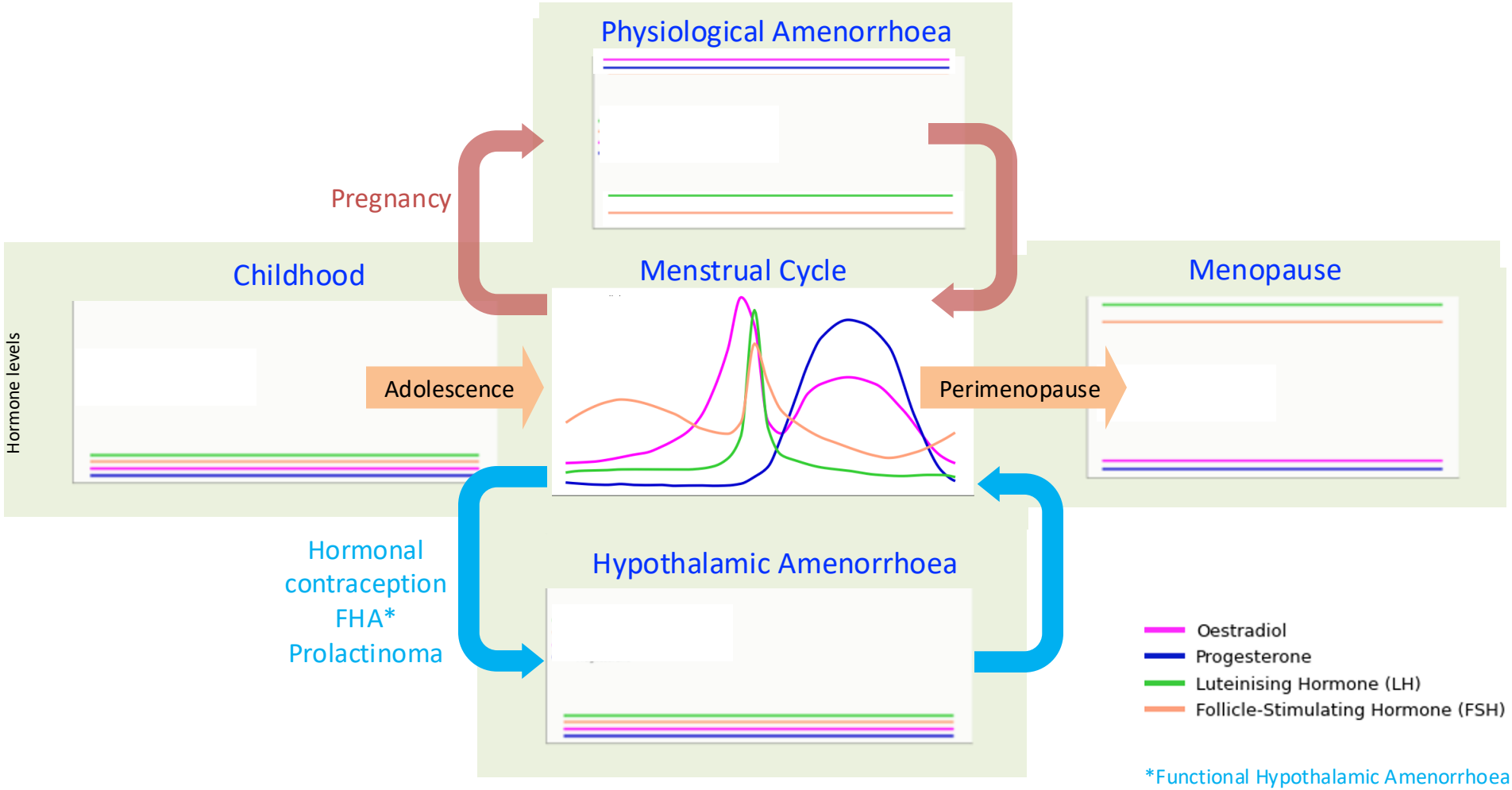
Female Hormone Odyssey



*Functional Hypothalamic Amenorrhoea

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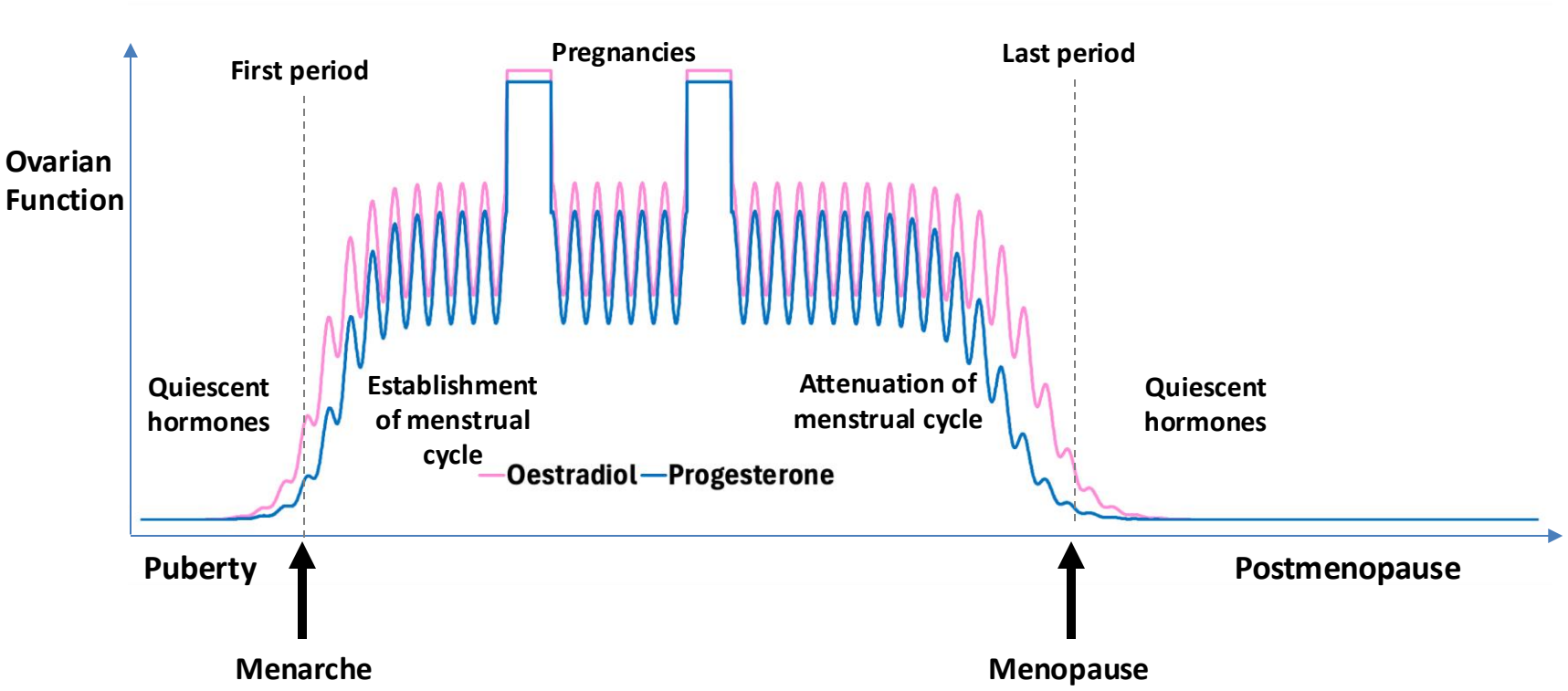
Asynchronous Ovarian Hormone Fluxes



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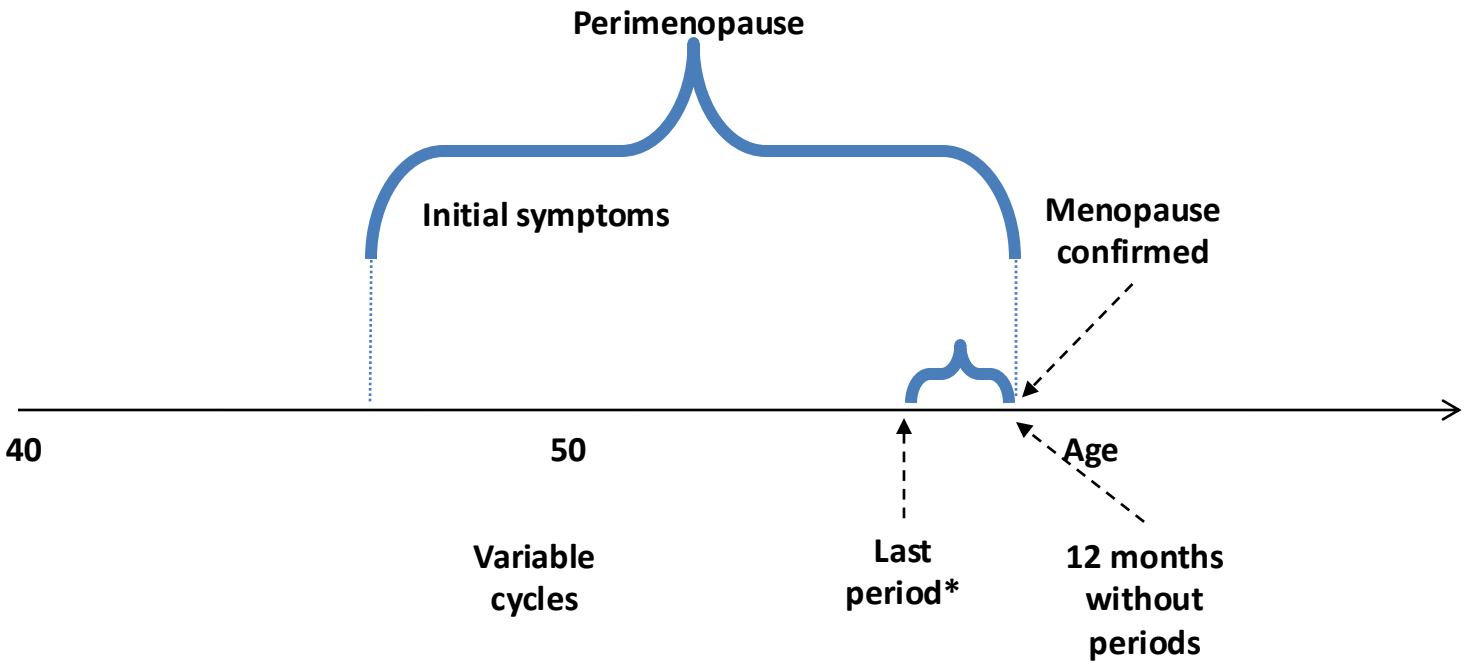
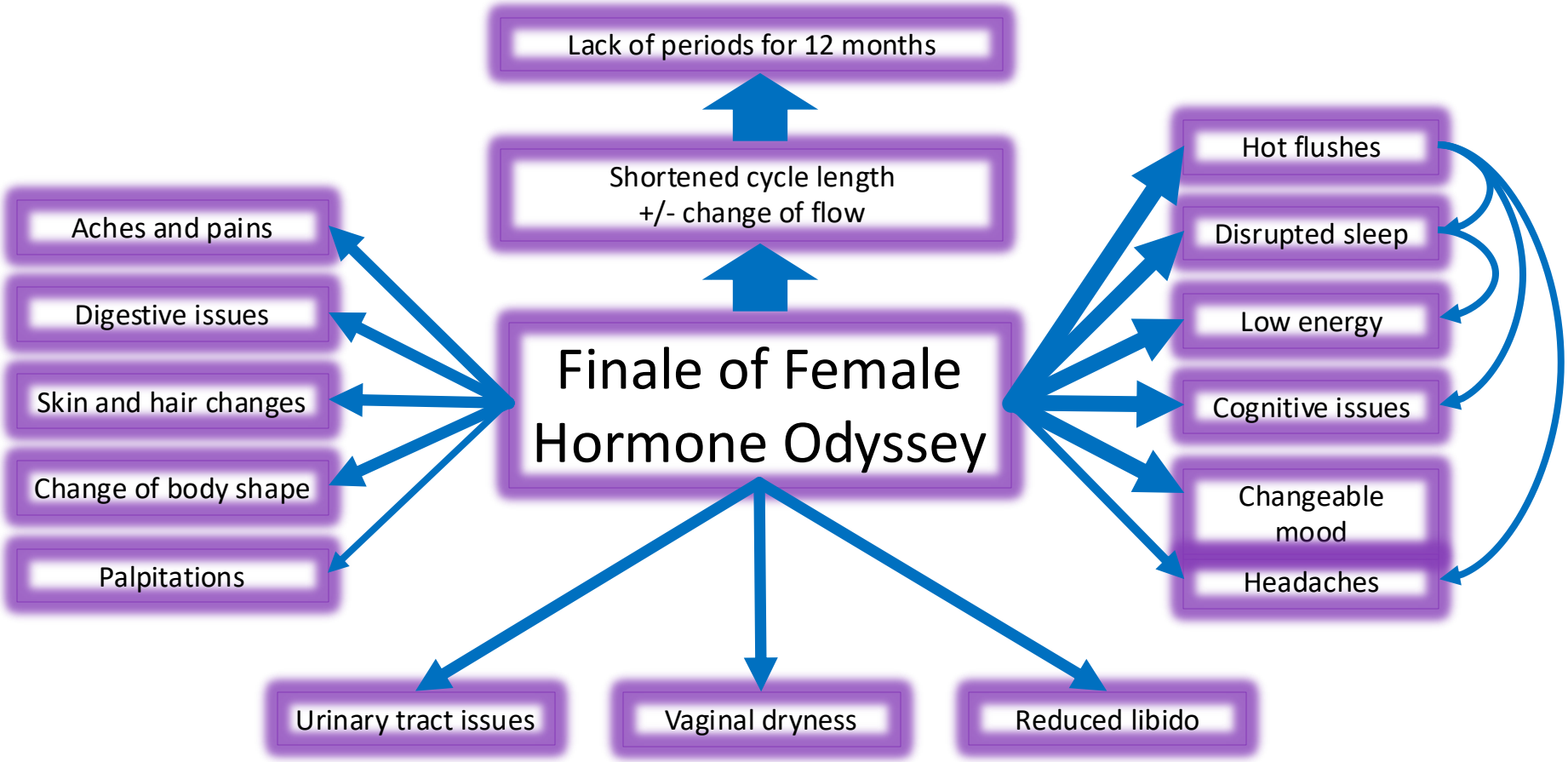
Perimenopause and Menopause



*Age of menopause varies around an average of 51

Multifaceted Menopausal Symptoms



Myths of Menopause. Edited N. Keay

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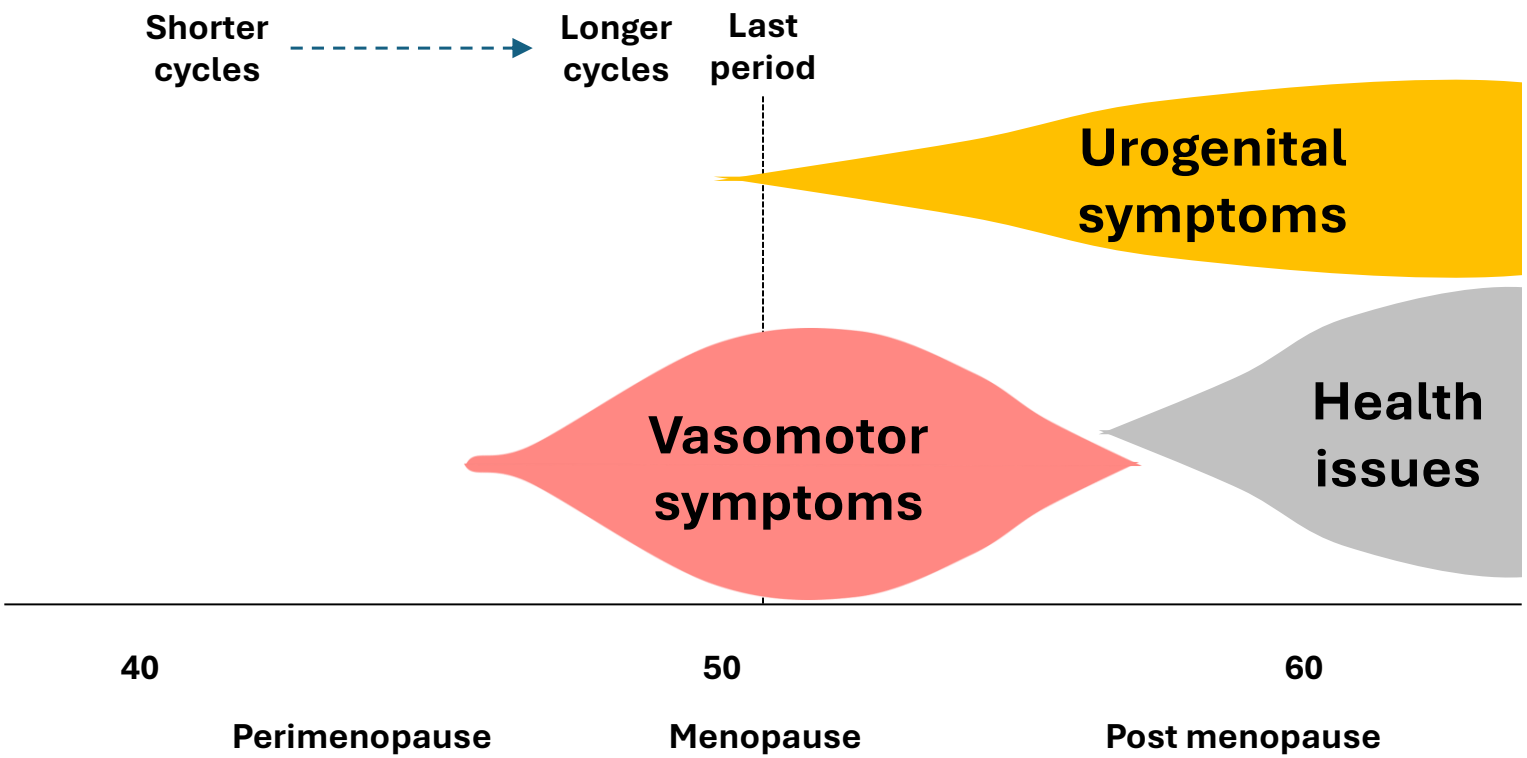
Typical Timing of Menopausal Symptoms



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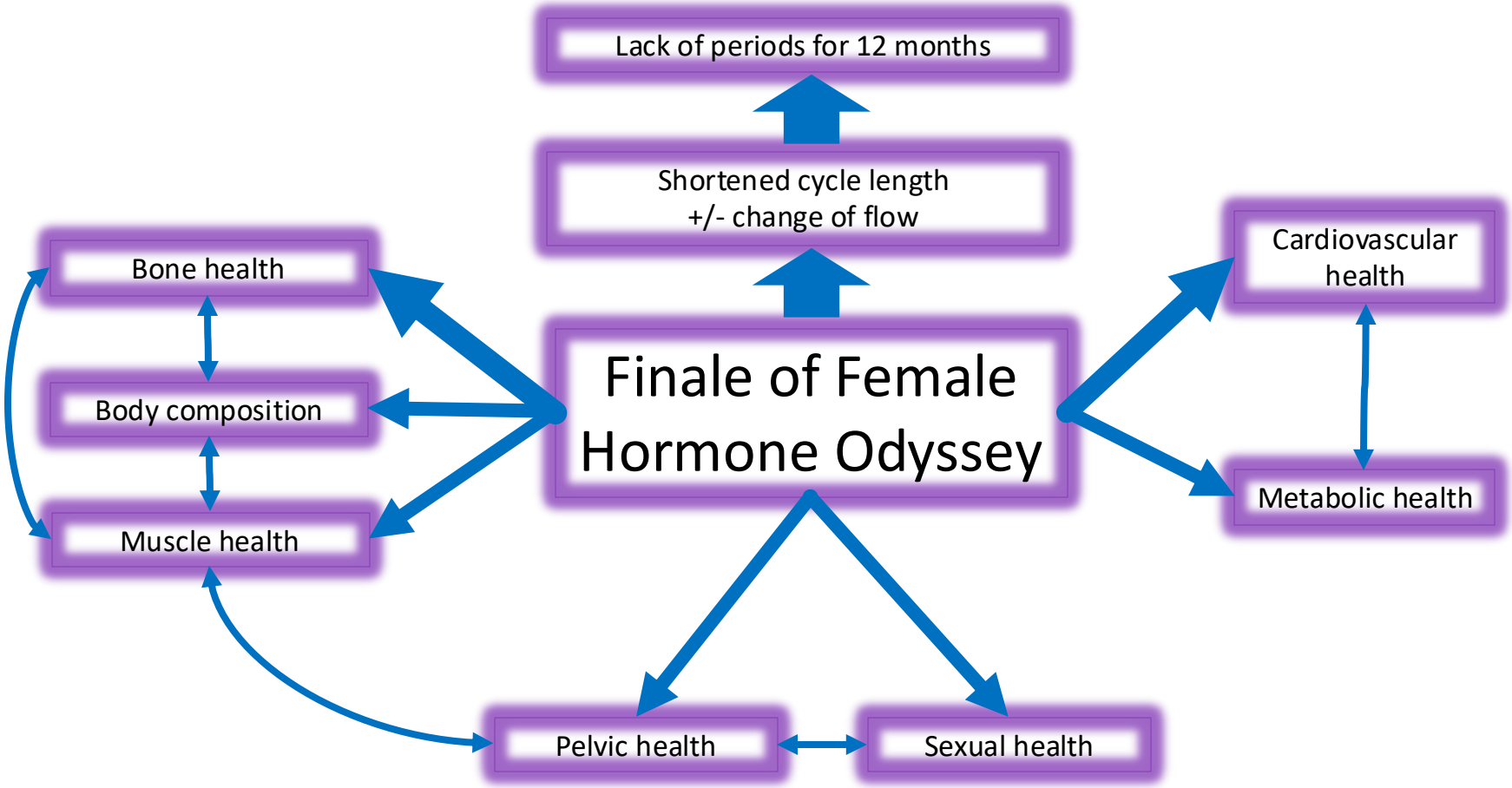
Multifaceted Menopausal Health



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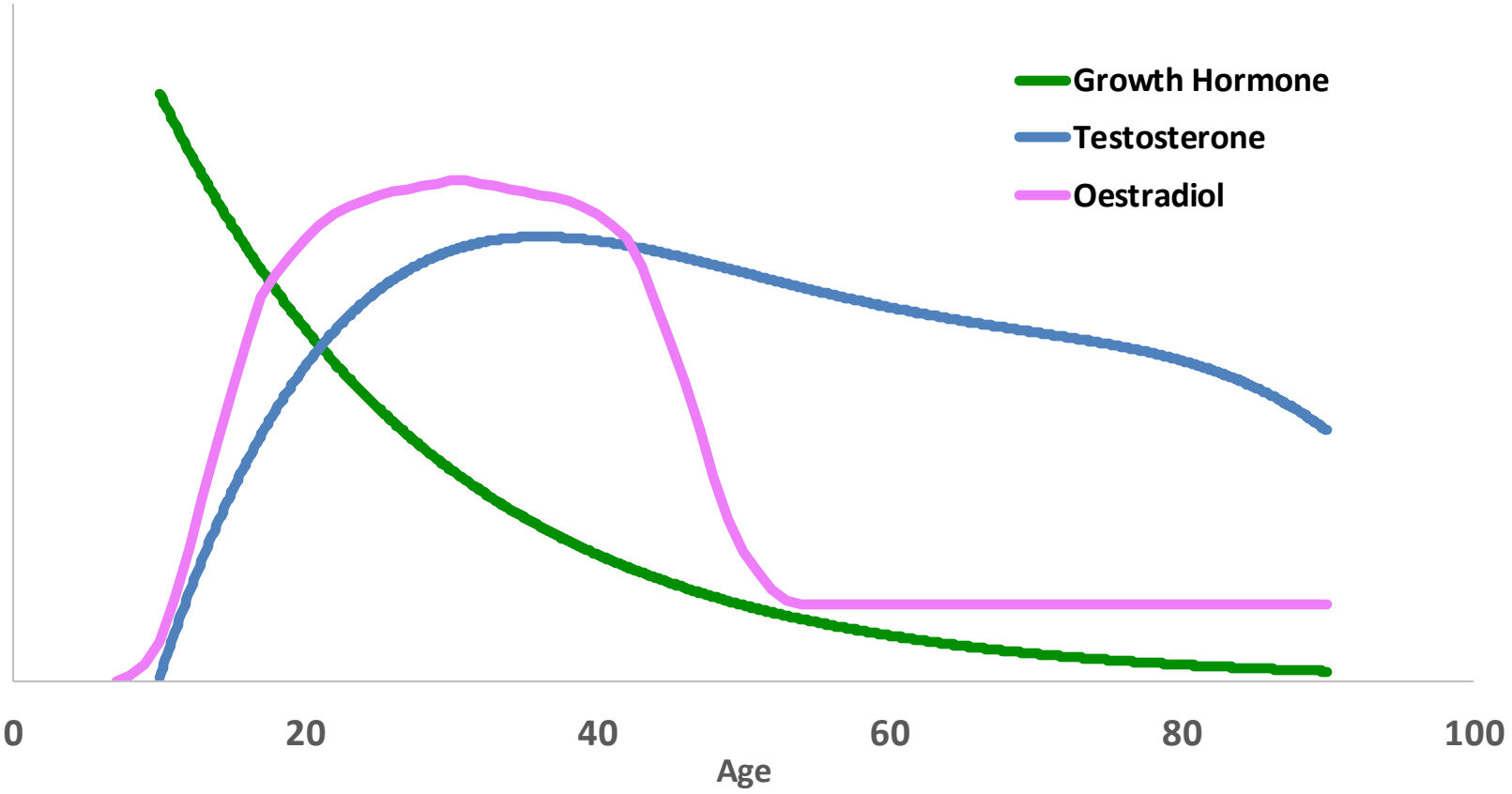
Decline of Anabolic Hormones with Age



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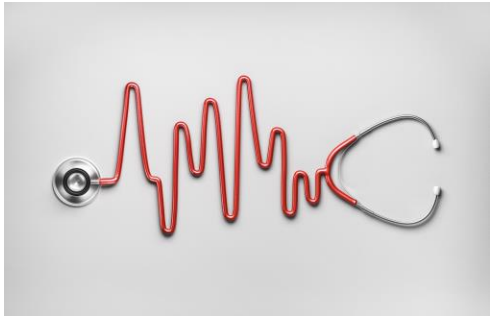
Challenges of Decline in Anabolic Hormones



- **Response to training decreased**
  - Cardiovascular function
  - Change energy systems reduced anaerobic capacity
- **Cardiometabolic health**
  - Adverse lipid profile, endothelial reactivity: ***risk CVD***
  - Decreased insulin and leptin sensitivity: ***risk diabetes mellitus and metabolic syndrome***

- **Body composition**
  - Decline in metabolically active, lean body mass: **risk *sarcopenia***
  - Increase in fat deposition: subcutaneous and visceral
- **Quality of tissues musculoskeletal system**
  - Muscle and collagen: tendon, ligaments
  - Bone: risk ***osteoporosis***

Potential increased risk injury in master athletes

N Keay. Health and Sports Performance *BJSM* 2017.
Management of the Menopause, sixth edition, British Menopause Society

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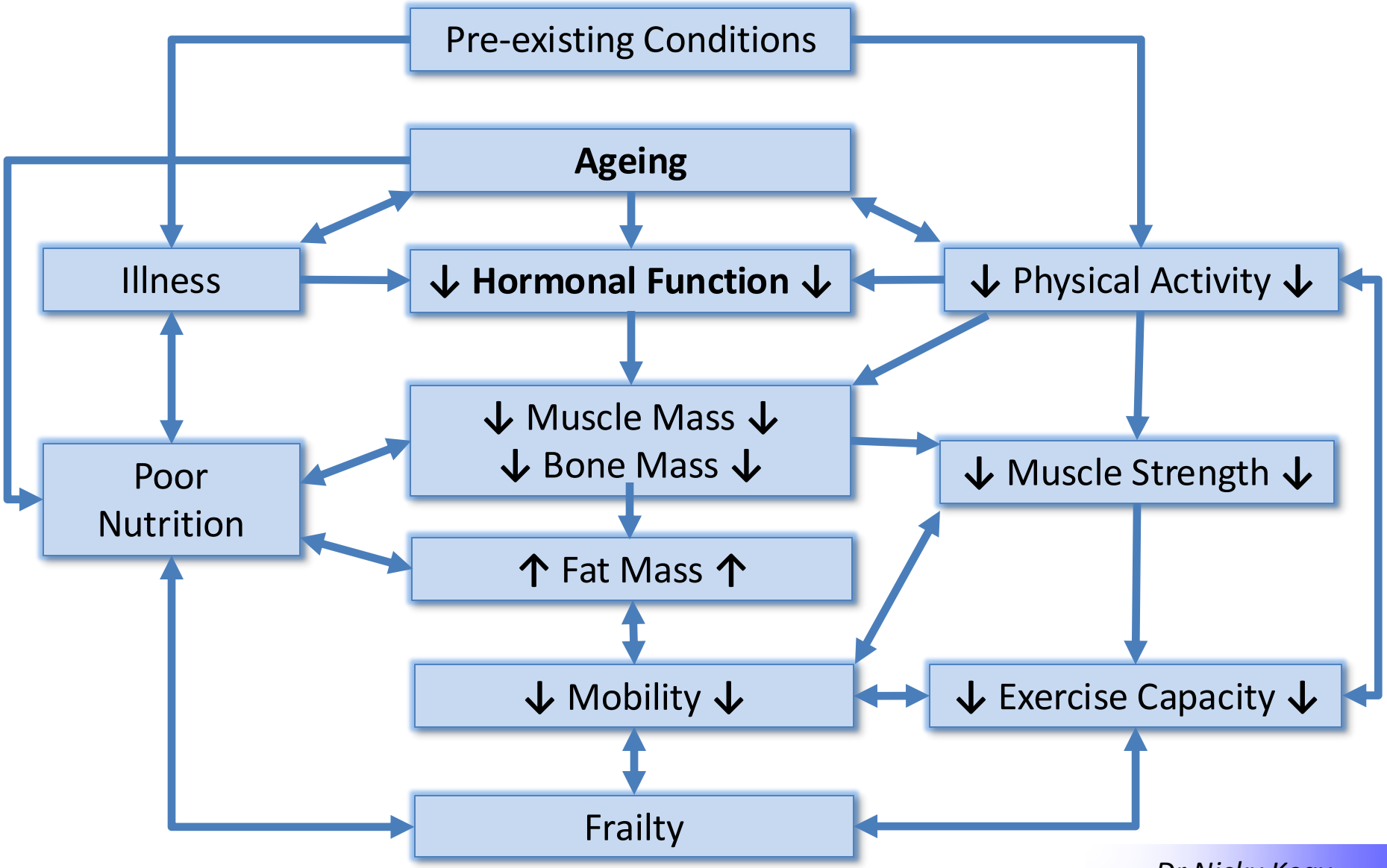
Model of Ageing, Hormones and Physical Function



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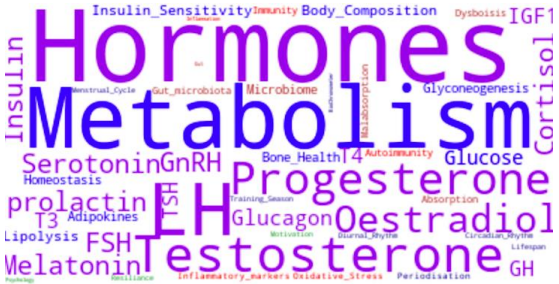

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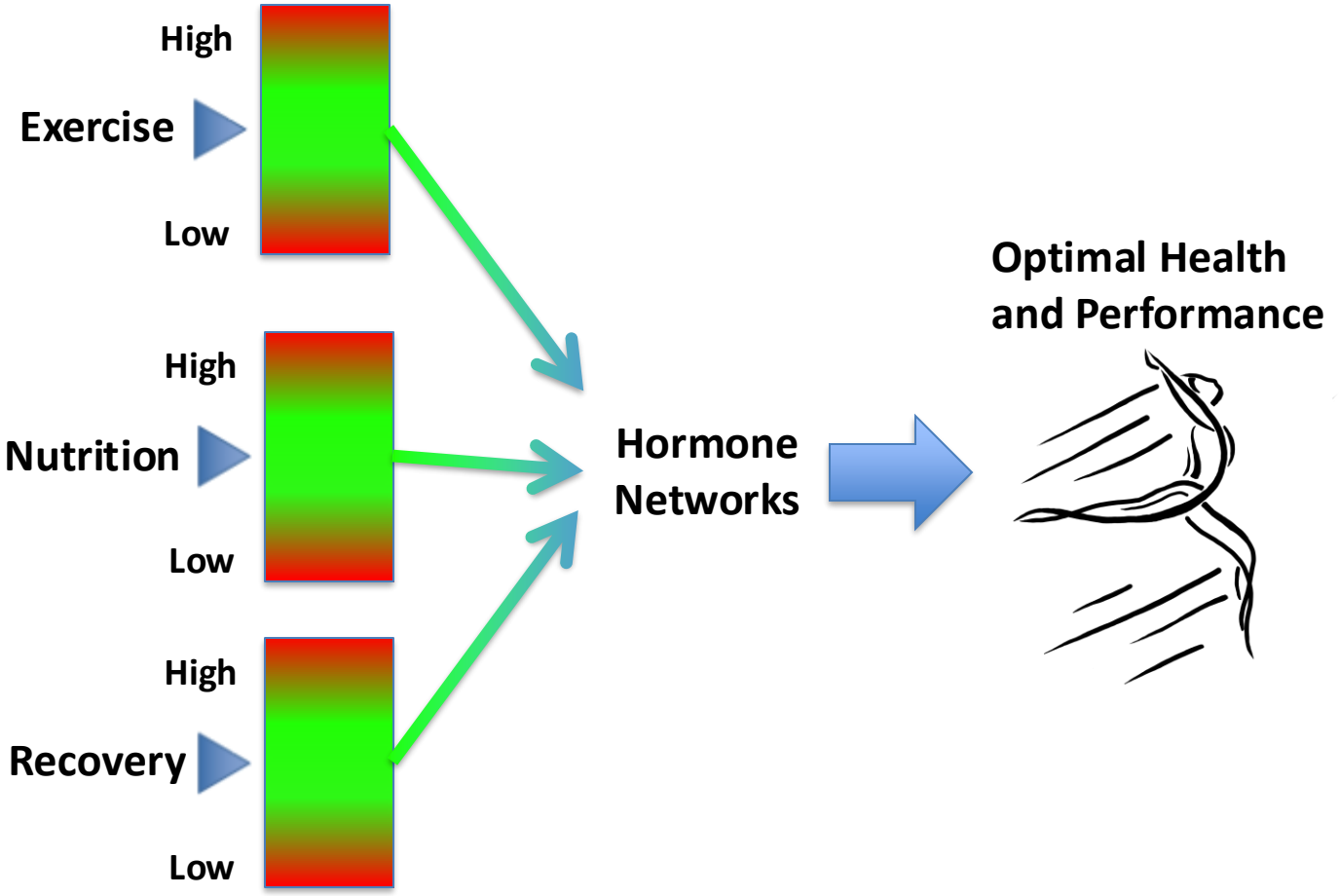
Harnessing Hormones to Optimise Health and Performance over your Lifespan



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Sleep

"Chief nourisher in life's great feast"

- **Hormone health**
  - Circadian alignment. Misalignment: ***metabolic syndrome***
  - Release of anabolic hormones eg growth hormone: you get fitter when you are asleep!
- **Metabolic**
  - Increase insulin and leptin sensitivity
  - Regulation appetite hormones
- **MSK health:** prevent ***osteopenia*** and ***sarcopenia*** Lucassen EA et al Poor sleep quality and later sleep timing are risk factors for osteopenia and sarcopenia in middle-aged men and women: The NEO study *PLOS one* 2017
- **Practicalities**
  - Sleep hygiene and sleep scheduling.

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Exercise/Training Schedule

- **Longer dynamic warm up**
- **Type of training**
  - For max **anabolic stimulus** for hormone production (growth hormone & testosterone)
    - Intensity intervals and polarisation
- **Strength work**
  - Favourable body composition (lean, fat, bone)
  - Cadiometabolic health
  - Prevention decline muscle fibre type II "fast twitch"
    - Body weight exercise can effective

- **Proprioception, Strength and Posture.** ***Terpsichore***

Royal Osteoporosis Society. Strong, Straight, Steady 2019

- **Recovery** for training response

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Nutrition: Protein

Muscle protein breakdown (MPB) > muscle protein synthesis = sarcopenia

Protein intake + anabolic training stimulus = mitigate sarcopenia

Protein intake

- 1.2 – 1.5 g / kg / day. Approx 40% energy intake Traylor A et al. Perspective: Protein requirements and optimal intakes in aging: Are we ready to recommend more than the recommended daily allowance? *Advances in Nutrition*, 2018.
- *Timing* crucial.
  - Daily intake split into 20-25 g portions of protein every 3-4 hours, ideally after an anabolic signal to avoid prolonged periods of MPB
  - Pre-sleep protein Trommelen J, van Loon L. Pre-sleep protein ingestion to improve the skeletal muscle adaptive response to exercise training. *Nutrients*, 2016

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Fuel for the work required on a forward-looking schedule

Eve of Training Day		High Quality Training Day (or Race Day)		Recovery Day
		08:00	Decent breakfast • Include complex carbs • Hydrate well	
		09:00	High intensity training/race • Hydrate well • Maintain glucose levels with gels/bars as required	Recovery
Forward looking		Upon completion	Refuel with recovery shake within 20 minutes Take an early lunch with complex carbs and protein	
Training starts here!			**Recovery day starts here!**	
19:00	Dinner (fuel for the work required tomorrow) • Include high carbs • Hydrate well • No alcohol	19:00	Lighter Dinner (ahead of recovery day) • Include high protein (to aid muscle building overnight) • Moderate complex carbs • Hydrate well	
Overnight	Build glycogen stores		Muscle building	Super-compensation

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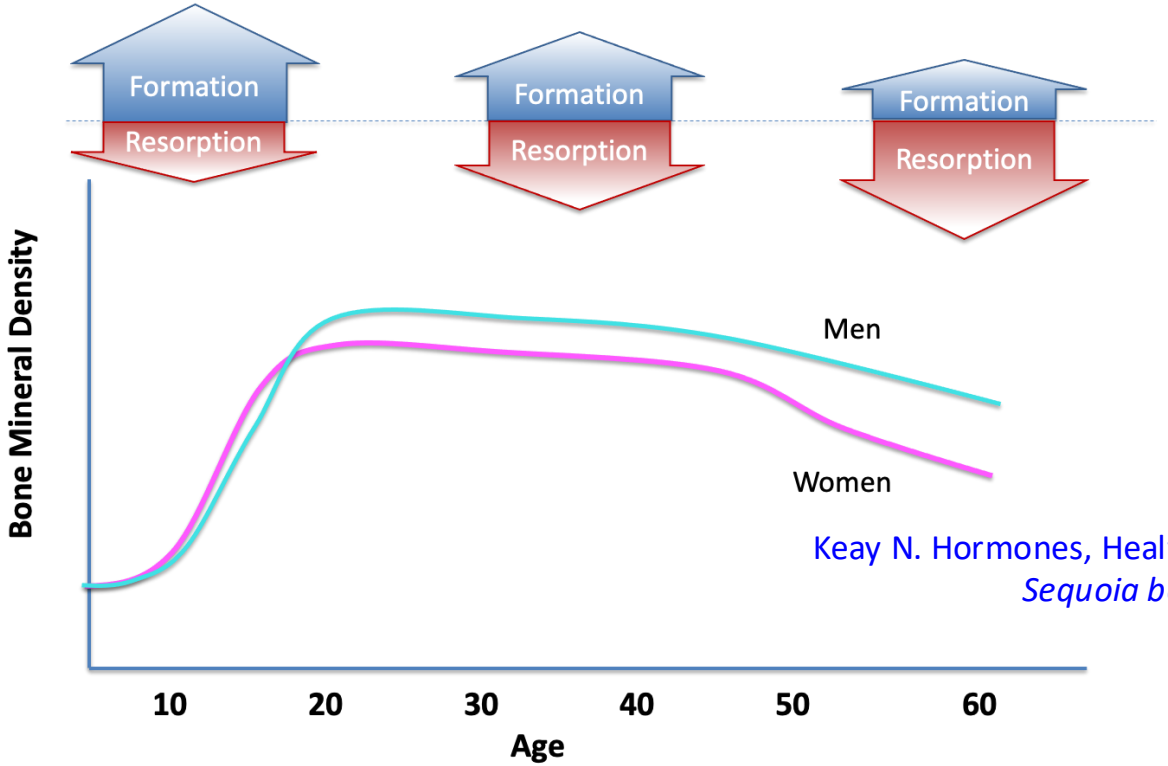
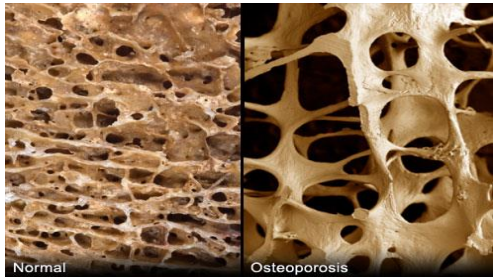
Bone Turnover with Age



Keay N. Hormones, Health and Human Potential. *Sequoia books* 2022

Multidirectional loading skeleton + nutrition = mitigate bone loss



Keay et al *BMJ Open SEM* 2018 and 2019
Watson et al. LIFTMOR study *JBMR*. 2018

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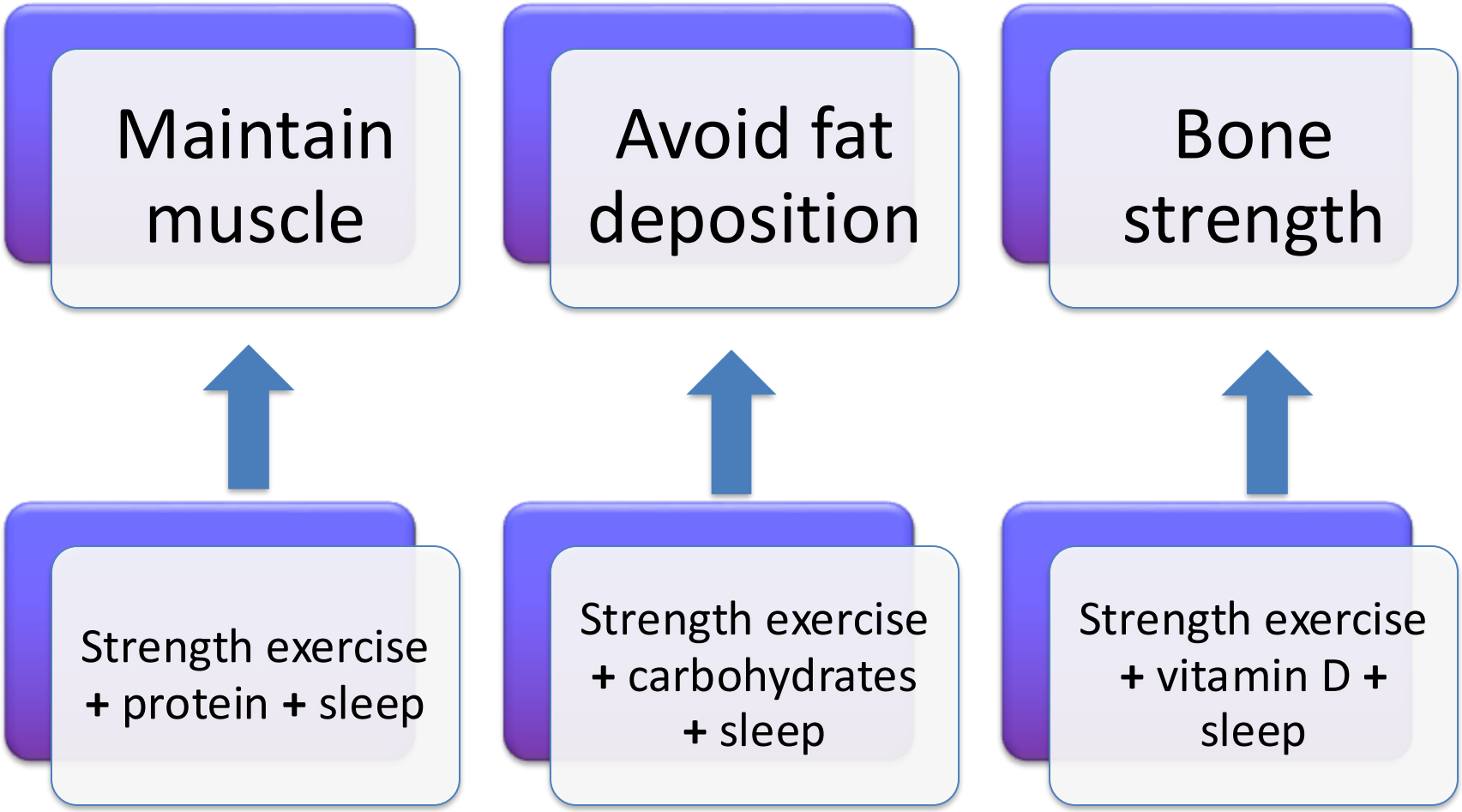
Adapting to declining Anabolic Hormones



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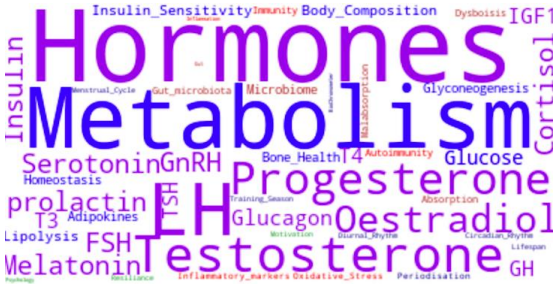

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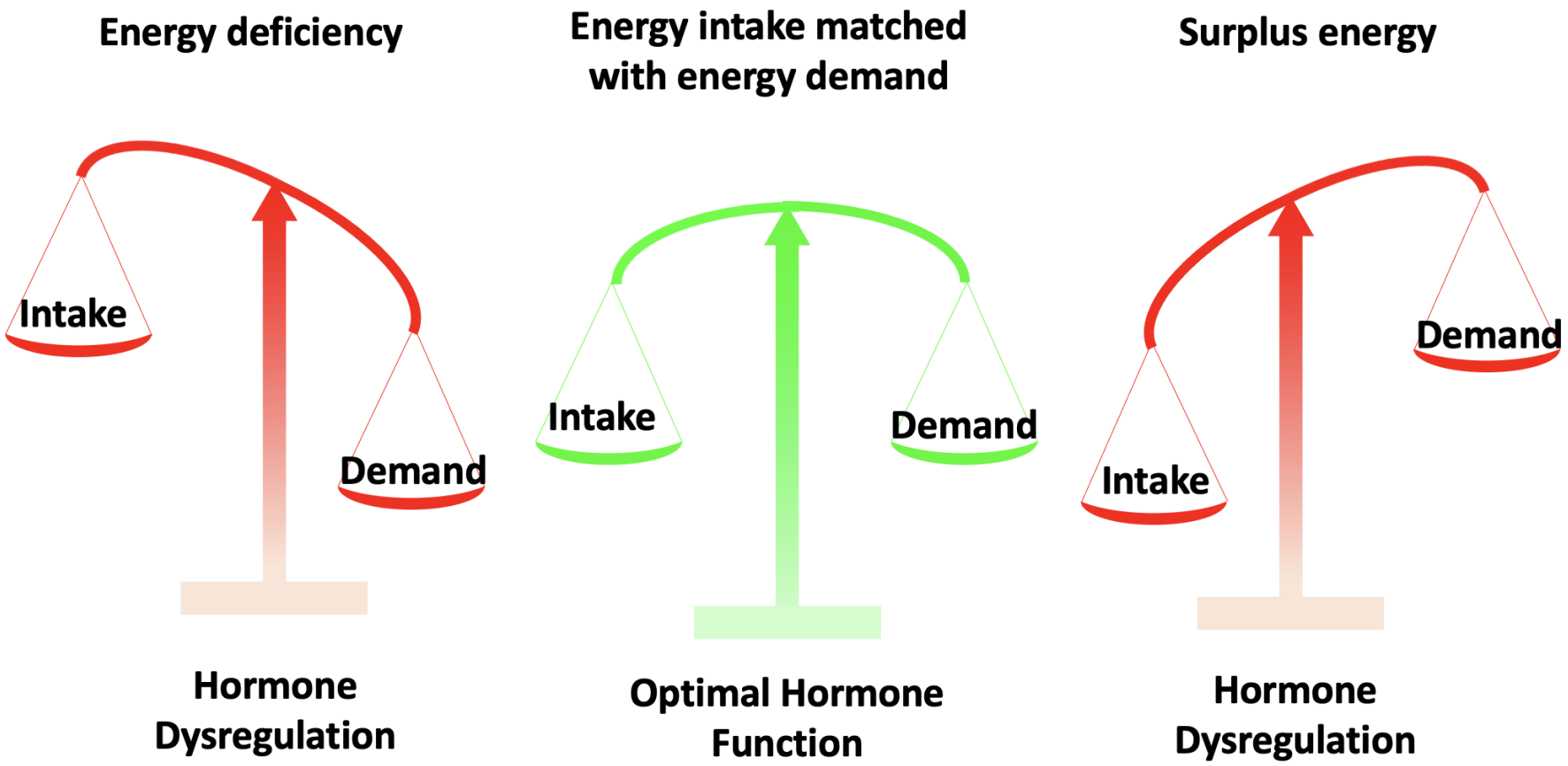
Energy Availability and Hormone Function



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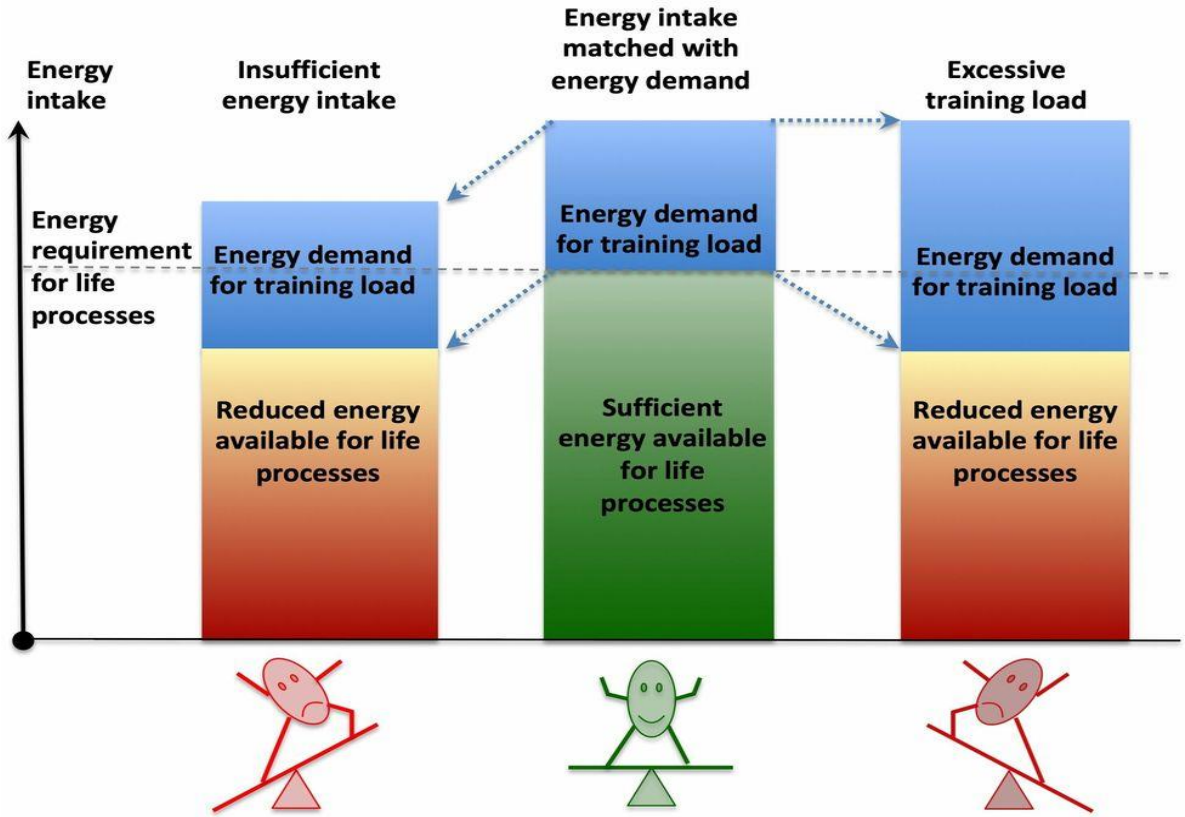
Energy Availability Concept
Matching Energy Intake with Energy Demand



Intentional
Low Energy Availability
Restricting energy intake in the hope that becoming even leaner might improve performance

Adequate
Energy Availability
Continually adapting energy intake to match training load

Unintentional
Low Energy Availability
Failing to increase energy intake to match a higher training load

Low Energy Availability forces the body to trigger hormonal responses that adversely affect normal life processes, leading to negative health and performance consequences

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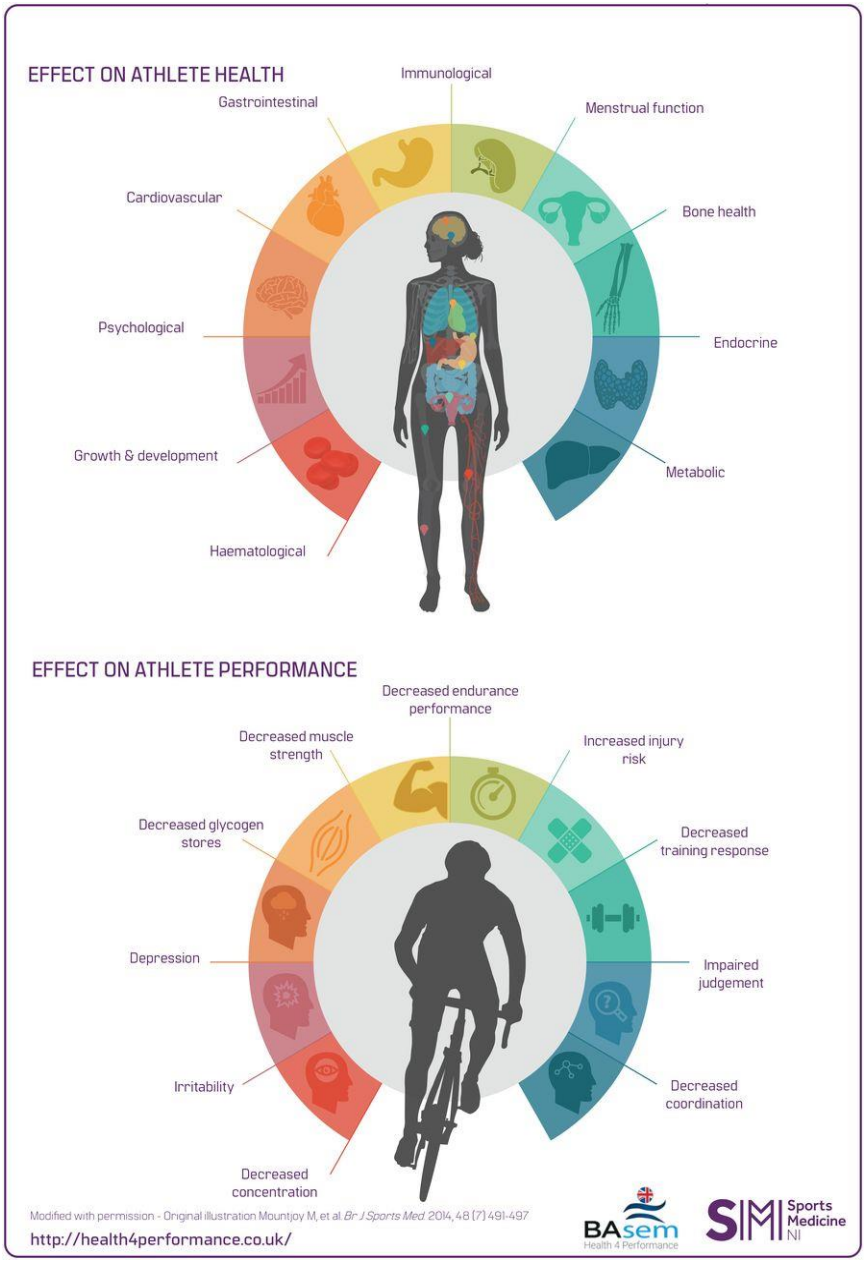
Nicola Keay, and Gavin Francis Br J Sports Med doi:10.1136/bjsports-2019-100611

Significance of relative energy deficiency in sport (REDs)



REDs syndrome of adverse effects on health and performance caused by chronic low energy availability

BJSM

Nicola Keay, and Alan Rankin Br J Sports Med doi:10.1136/bjsports-2018-100354

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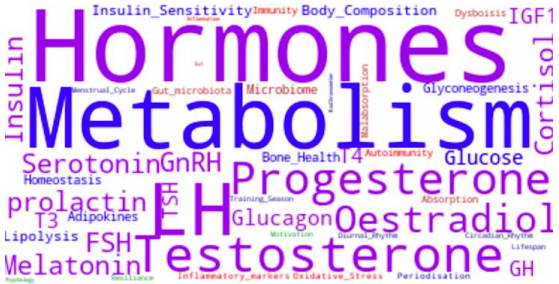

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Scylla and Charybdis?

Hormone Replacement Therapy (HRT)

- Main indication: quality of life
- Long-term health: decreases overall mortality
  - Primary support for poor bone health (including premenopausal women)
  - Reduce risk CVD main cause death in menopause

"Treat women as individuals not statistics"
Vice President Royal College Obstetrics and Gynaecology
British Medical Journal Editorial 2019

Hormone Replacement Therapy (HRT)

Scylla and Charybdis?

23 cases breast cancer per 1,000 women 50-59 years

- Extra 4 cases breast cancer with HRT. Same as taking COCP or drinking >2 units per day
- 24 extra cases breast cancer if overweight
- 7 fewer cases if taking 2+ hours moderately intense exercise per week
- Most effective start HRT asap menopause
- Transdermal oestradiol best metabolic health and micronised progesterone lowest risk breast cancer
- Testosterone
  - Testosterone only for reduced libido
  - Testosterone not permissible under WADA regulations

British Menopause Society

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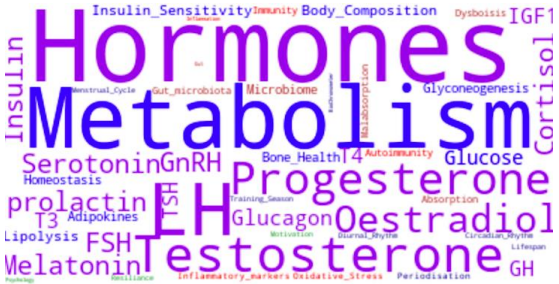

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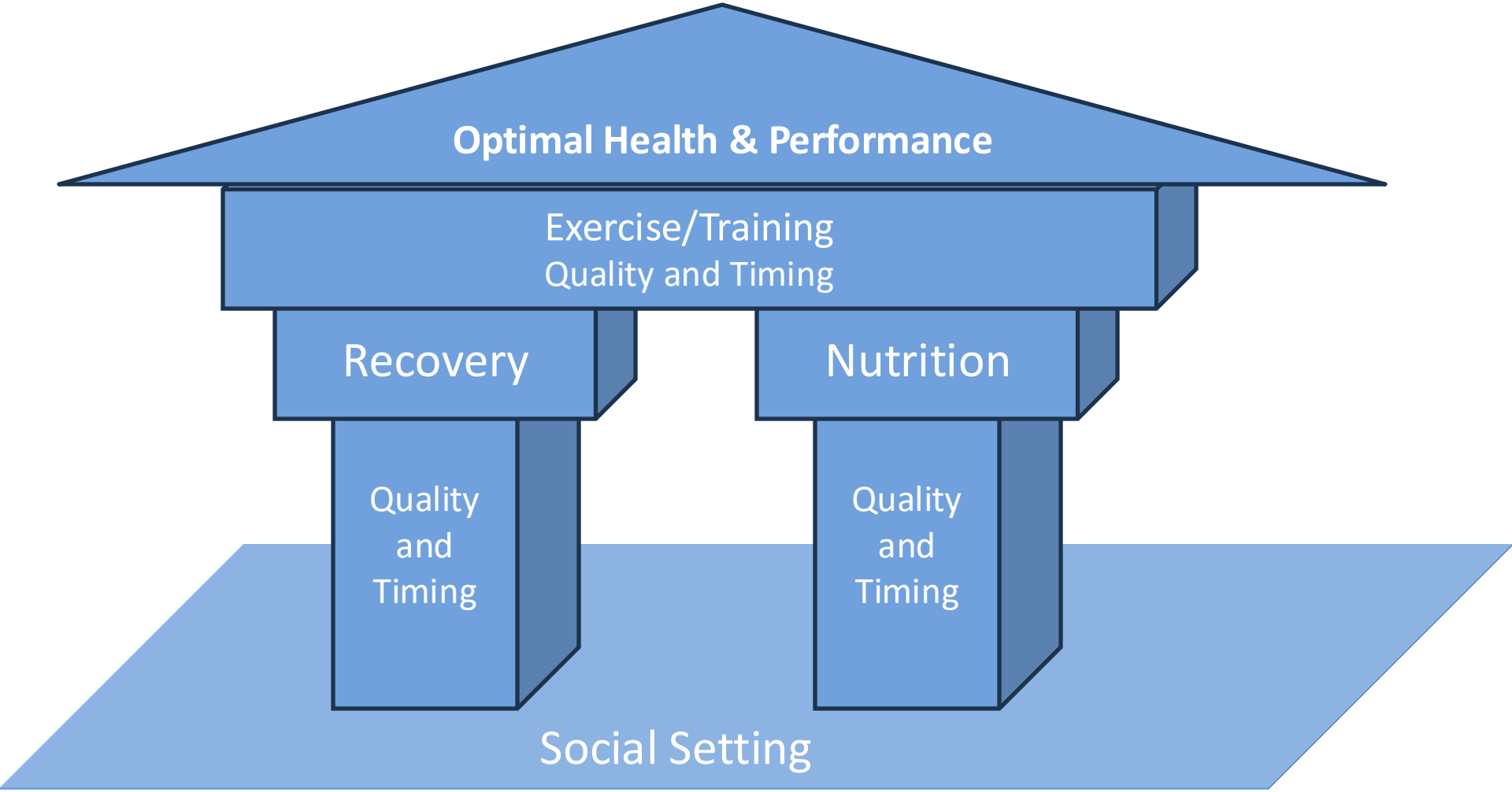
The Foundations of Optimal Health and Performance



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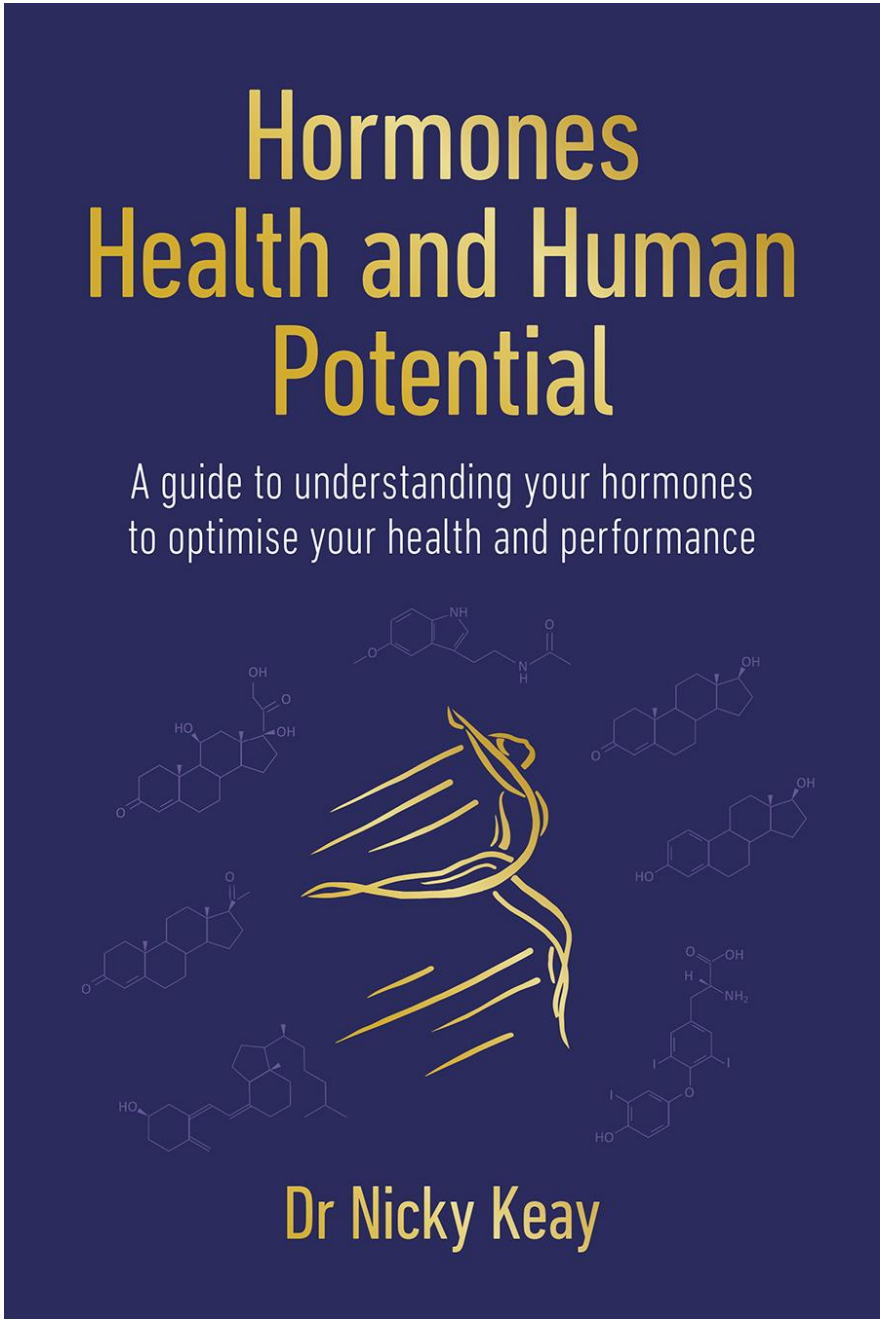

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Myths of Menopause

A guide to increasing your Menopause Wisdom

Edited by **Dr Nicky Keay**

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Advisory Appointments

Dr Nicky Keay offers individual advisory appointments on all aspects of hormone health for athletes all ages and levels.

See website for more details and send an enquiry email to find put more.

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