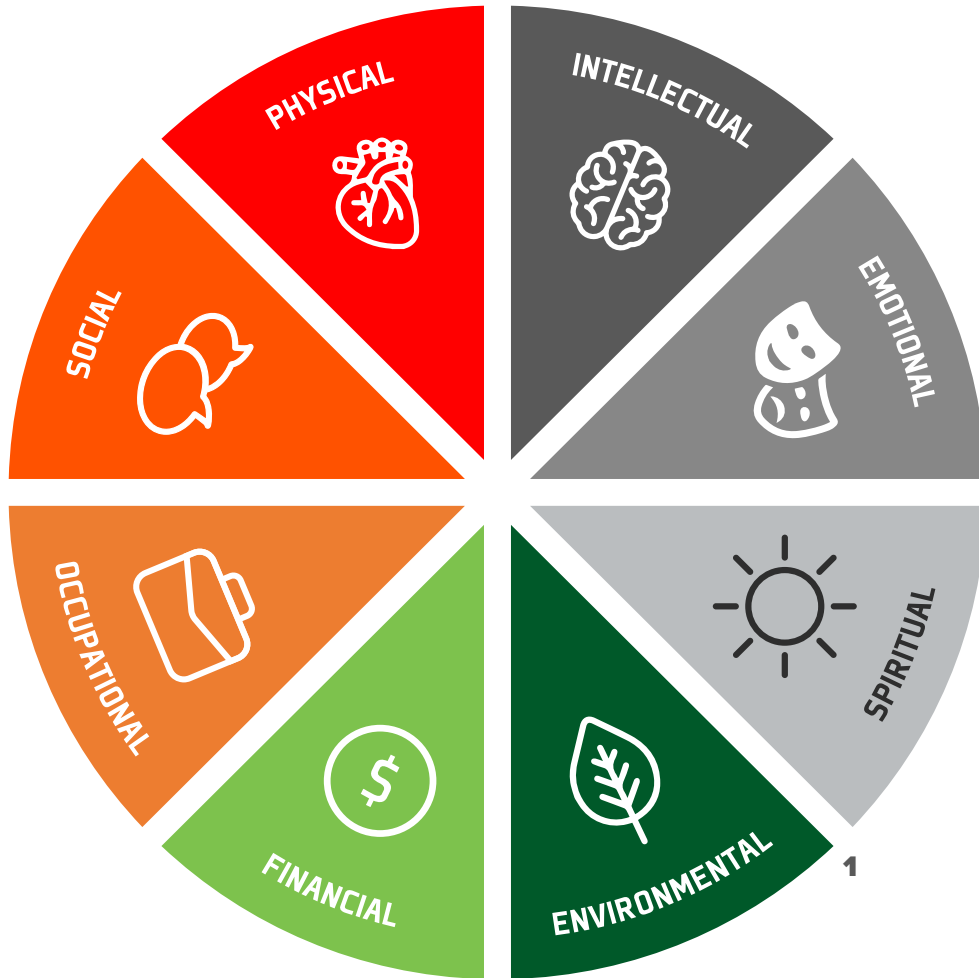




THE FEMALE ATHLETE: A NEW ERA OF MENTAL WELLNESS

Wendy Borlabi, Psy.D, MS, Director of Performance and Mental Health, Chicago Bulls



TECHNIQUES TO HELP YOU GROW MENTALLY

- My Sport Psychology Theory:
 - Self-awareness
 - Superpower... Strengths
 - Obstacles
- Self-Care Nuggets:
 - Give yourself grace
 - Honor your strengths
 - Self-love daily rewards

BOOK RECOMMENDATIONS

- *How Full is Your Bucket?*
Tom Rath & Don Clifton
- *How Full is Your Bucket? For Kids*
Tom Rath & Mary Reckmeyer

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LEA to REDs: THREADING THE NEEDLE FOR HEALTH & PERFORMANCE

Trent Stellingwerff, Ph.D, FACSM, Director R&D, Canadian Sport Institute Pacific

Many sports/events have some basic physics, physiological and energetic requirements for success that may dictate certain optimal body composition windows (ranges)!

- Should we even consider the above with younger/developing athletes?
- Do we/should we leave the above to chance in our senior elite/professional athletes?
- How do we thread the needle and deliver optimal performance, but at the same time keep our athletes healthy (physically and mentally)?

Take a performance determinants approach¹ to understanding the risk vs. reward of altering energy availability to impact on body composition, and potentially, performance.

1. What are the event/sport specific physiological, structural / neuromuscular and psychological determinants of success?
2. What are the individual athlete's gaps to these event/sport specific success determinants?
3. What are the exercise, training and recovery periodization decisions that are long used to address the individual athlete's gaps in the context of the event/sport determinants?
4. What are the associated purposefully periodized nutrition interventions that can support the periodized training and recovery to further enhance performance (or maximize health)?

What are the risks vs rewards of implementing a period of low energy availability and low carbohydrate availability (LEA & LCA) in attempts to improve body composition (BC) metrics and performance?

RISK

If athlete in adequate EA (energy availability) at baseline: Potential minor increased risk for injury/illness, decreased recovery profile, and if not supported/presented well, increased risk for ED/DE's (eating disorder/disordered eating).

Significant increase in the risk of injury (bones/tendons), emerging data on decreased blood values and training adaptation and increased risk for ED/DE's

ACUTE
(over days to weeks
to a few months)

CHRONIC
(over many months
to years)

REWARD

If athlete in adequate EA and body comp metrics suggest a decrease will not compromise LBM (lean body mass) or health and in a sport where force or power to weight ratio is linked to performance.

No published data suggests necessarily being in chronic LEA improves training adaptation (probably the opposite)



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Is periodizing LEA and body composition the best approach?²

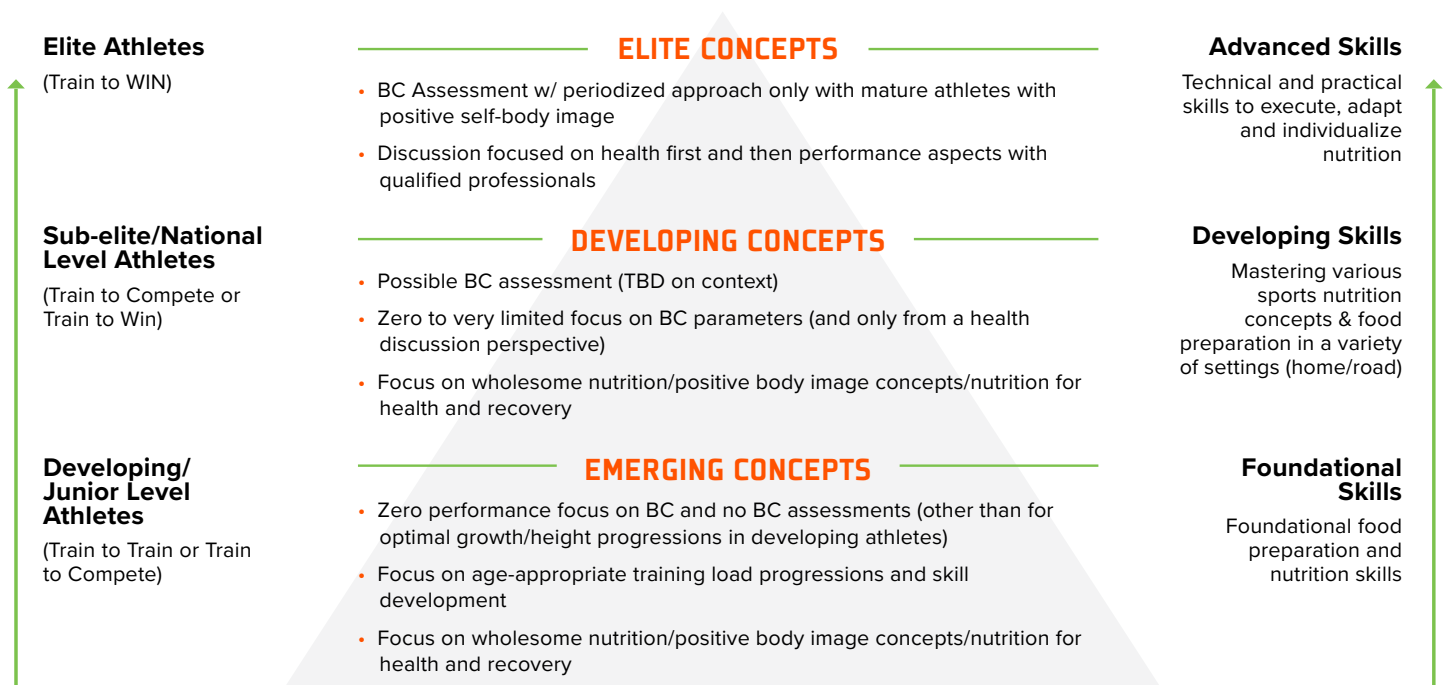
- In many instances, hard training with great recovery completely takes care of optimal body composition and no ‘intervention’ is required (although some monitoring to ensure health is on track might be wise)
- A periodized approach may be advantageous, in the right context (see below)

Key elements / flags to watch-out for to prevent chronic low-energy availability which may eventually results in Relative Energy Deficiency in Sport (REDs)^{3, 4}

(the more items identified, the greater the risk for poor EA – items in orange every athlete, coach or parent can help to identify)

- **Dietary restriction, all the way to eating disorders**
- **Constantly striving to be thin year-round**
- **Body mass index <17.5 or >5% BW loss in a month.**
- **<9 menses in last 12 months**
- **≥ 2 or more career stress fractures**
- **BMD Z score < -1.0 (if you have this data)**
- **Very inconsistent training (up and downs)**
- **Drop off in training and/or competition performance**
- **High levels of fatigue (sleeping a lot)**
- **Poor sex drive (or low measured sex hormones)**
- **Blood work (e.g. testosterone, T3, etc.)**

When should body composition assessments even be considered?⁵





LEA to REDs: THREADING THE NEEDLE FOR HEALTH & PERFORMANCE

Trent Stellingwerff, Ph.D, FACSM, Director R&D, Canadian Sport Institute Pacific

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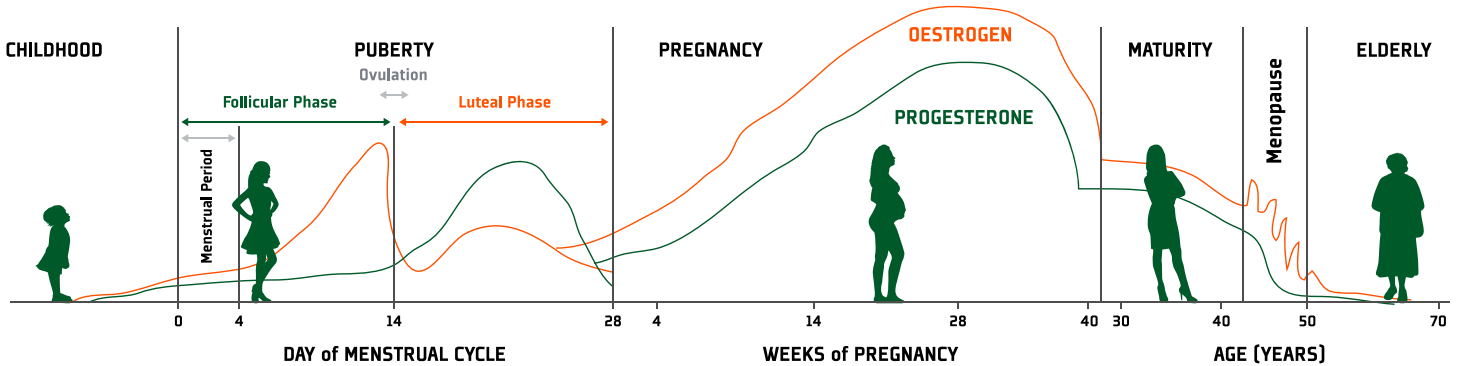




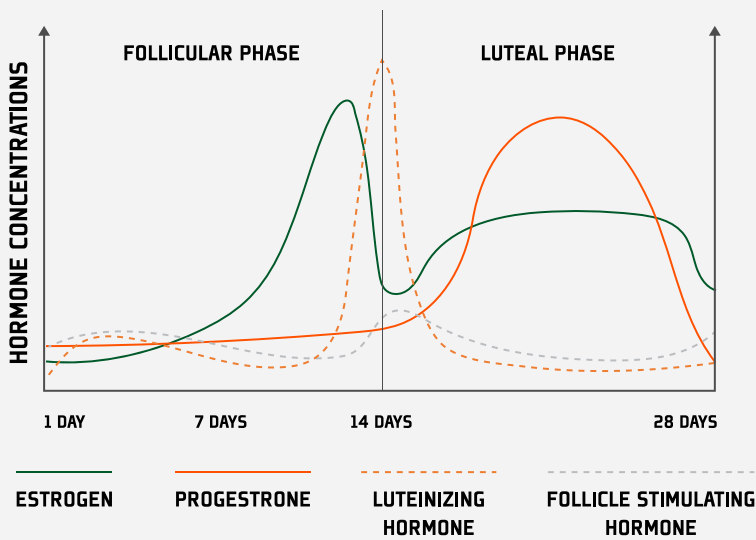
SCIENCE OF SUPPLEMENTATION FOR ACTIVE WOMEN

Abbie Smith-Ryan, Ph.D, CSCS*D, FNCSA, FACSM, FISSN, Associate Professor, UNC – Chapel Hill

Although more direct data in women is needed, based on physiological differences between men & women, some dietary supplements may benefit active women⁴



Changes in hormones across the menstrual cycle and across the female lifespan direct unique needs of women.



8 out of 10

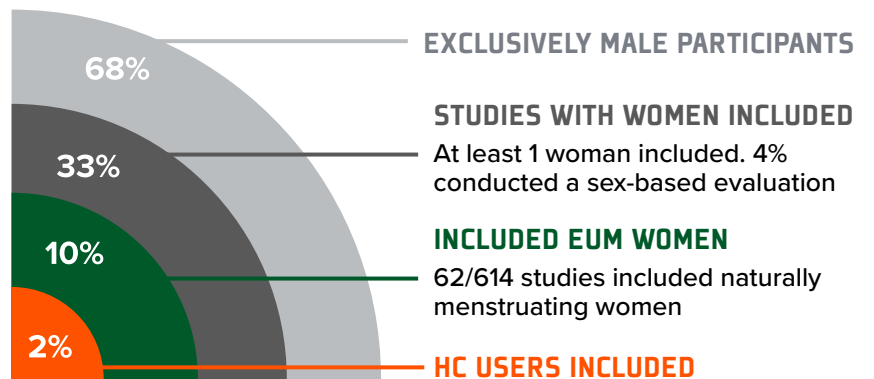


women consume dietary supplements and are the largest consumers. **Key reasons for supplementation include⁶:**

- Health
- Immunity
- Energy
- Nutrient Gaps

REPRESENTATION OF WOMEN IN SUPPLEMENT RESEARCH

Little data exists evaluating the effects of supplements in women, with less than 2% including women using hormonal contraception.³

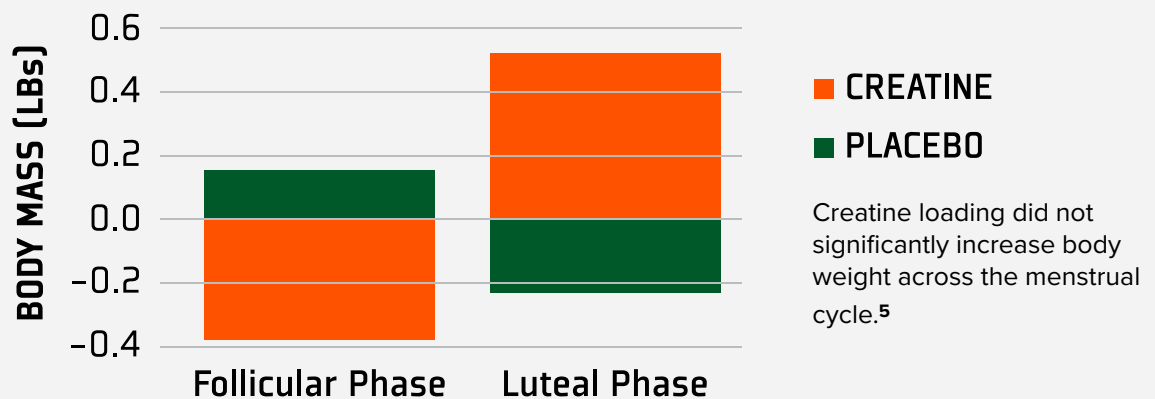


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POTENTIAL INGREDIENTS THAT CAN SUPPORT GOALS OF ACTIVE WOMEN¹

- **Beta-Alanine** - 4-6 g/day for 28 days to help with exercise tolerance & recovery
- **Caffeine** stays in the system longer for women, can help with energy, pain perception, and exercise
- Nitrates (increase blood flow) may help with performance and recovery around exercise. **[Beetroot extract, Citrulline, Pomegranate extract]**
- **HMB** helps preserve muscle mass and may reduce soreness, which may be more important for women as they age. 3 g daily
- **Creatine monohydrate** - may help with mental & physical health in women, particularly with low sleep and mild depression. 5 grams/day
- **Essential amino acids & protein** can be especially beneficial for active women as they age. Consuming around exercise is recommended.
- **Omega-3s** are difficult to get through the diet and can support inflammation, muscle soreness, and mental health. 2-3 g/day



OTHER SUPPLEMENTS TO CONSIDER^{1,2}

- Vitamin D (2000 IU/Day)
- Magnesium
- Probiotics
- Iron



SCIENCE OF SUPPLEMENTATION FOR ACTIVE WOMEN

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Associate Professor, UNC – Chapel Hill

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PROTEIN METABOLISM AND THE FEMALE ATHLETE

Sara Oikawa, Ph.D., R&D Senior Scientist, Gatorade Sports Science Institute

Skeletal muscle health is imperative for athletic performance, and it is well known that protein ingestion and exercise are potent stimulators of muscle growth and remodeling. However, to date, significant gaps exist in our understanding of sex-based differences in protein metabolism. Below, Sara Oikawa, Ph.D., a Senior Scientist at the Gatorade Sports Science Institute, will discuss differences in skeletal muscle morphology and provide an update on protein metabolism and protein recommendations for females.

BACKGROUND

- There are clear phenotypic differences in skeletal muscle morphology between males and females. For example, females typically display:
 - A smaller absolute amount of muscle mass
 - A greater fiber distribution of type I muscle fibers
 - A greater relative fiber area of type I muscle fibers

OUR CURRENT UNDERSTANDING OF PROTEIN METABOLISM IN MALES AND FEMALES

- In young adults (~18-50 years) there are no significant differences in muscle protein synthesis (MPS) between males and females:
 - At rest (in the absence of protein/amino acids and exercise) ¹
 - Following an insulin and amino acid infusion ²
 - Following resistance exercise ³
 - Following resistance exercise and protein ingestion ⁴
 - There are no differences in muscle hypertrophy between males and females following prolonged resistance exercise training ⁵
 - There are no differences in the satellite cell response to resistance training between males and females ⁸

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PROTEIN RECOMMENDATIONS FOR ATHLETES

- Current recommendations for protein to optimize performance are the same for both males and females despite that protein needs in athletes have been determined largely in cohorts of male participants
 - Protein following exercise is recommended at 0.24-0.31 g/kg ⁶
- A recent review of the literature in female athletes suggests that post exercise protein consumed at 0.32-0.38 g/kg/dose has been beneficial following resistance and intermittent exercise ⁷
 - Similarly, daily protein intakes shown to be beneficial for female athletes are similar to those recommended to male athletes (1.2-2.1 g/kg/d) ⁷
- To date, no studies have examined the dose response of varying protein amounts following resistance exercise in females
- Males and females consumer a similar amount of protein (per % of total calories per day) and the amount of plant and animal-based sources of protein consumed per day are similar between sexes

FUTURE DIRECTIONS

- The limited inclusion of females in protein metabolism research, limits the ability to create a recommendation specific to female athletes
- There is likely a small effect of menstrual cycle on protein metabolism however, further research is required in order to understand the impact this may have on performance or for the optimization of skeletal muscle health

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