NUTRITION & SUPPLEMENTATION FOR WOMEN ACROSS THE LIFESPAN: LEVERAGING SCIENCE TO PROVIDE APPLICATION

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LADDER
HOLOGIC
FIFA
KYOWA

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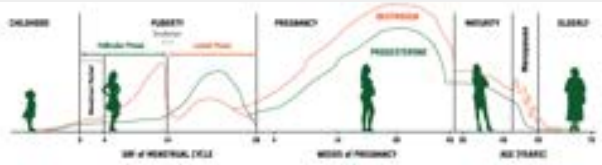
ACTIVE WOMEN – CONSIDERATIONS FOR LIFESPAN



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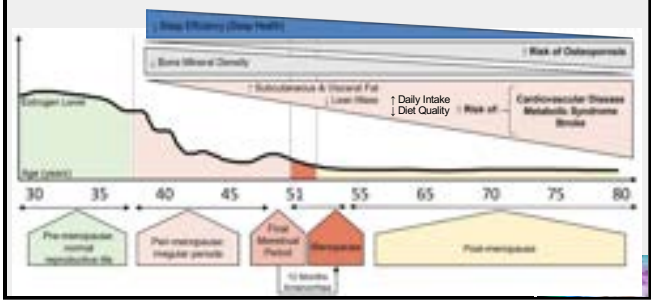
LIFE TRANSITION



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GENERAL OBJECTIVES

- Pre-Menopause
- Pregnancy
- Peri-Menopause
- Menopause

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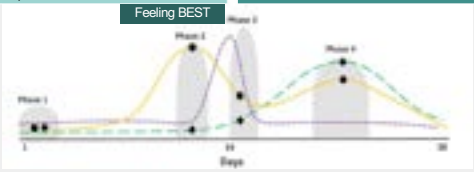
PRE-MENOPAUSE CONSIDERATIONS

Follicular	*Luteal*
↑ CHO utilization ↑ CK/IL6 (inflammation) ↑ Pain tolerance → ↑ potential for exercise volume ↓ Sleep	↑ Energy Expenditure ↑ Protein Oxidation (>1.5 g/kg) ↑ Fat oxidation ↑ Fluid Retention & ECF Shift → Dehydration ↓ Capacity for high intensity work

Feeling BEST



Elliott-Sale et al. Methodological considerations for studies in sport and exercise science with women as participants. Sports Medicine. 2021
Moore et al. Fuelling the female athlete: Carbohydrate and protein recommendations. EJSS 2021
Wohlgemuth, Smith-Ryan et al. Sex differences and considerations for female specific nutritional strategies. JISSN 2021

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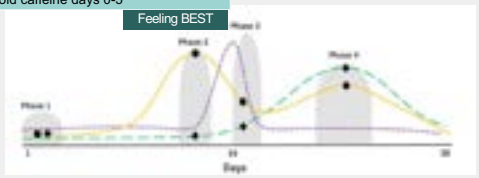
SEX SPECIFIC CONSIDERATIONS

Follicular

↑ Complex CHO
Omega 3 → Inflammation
Nutrient Timing = ✓✓
(soreness/recovery)
Avoid caffeine days 0-5

Feeling BEST



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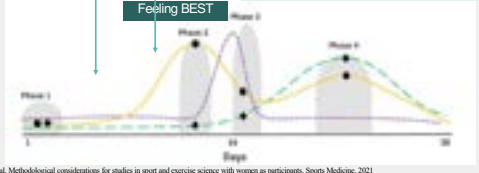
SEX SPECIFIC CONSIDERATIONS

Luteal

↑ Snack/Pre-Bed Feeding
EAA or Whey before exercise
Caffeine
Creatine (continue use or just after loading)
Beta-Alanine

Creatine Start
Beta-Alanine Start
Feeling BEST



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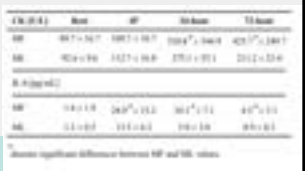
RECOVERY ?

Female Sex Hormones and The Recovery From Exercise: Menstrual Cycle Phase Affects Responses (2019)

Anthony Hackney, Ashley Kallman, Eser Aggon

- Greater variance in a variety of biomarkers response during the extended recovery period of women athletes
- 8 female eumenorrheic, no OC, runners
  - 90 minutes of running exercise at the mid-follicular and mid-luteal
  - CK and IL-6 measured over 72 hours of recovery



Greater CK/IL-6 in the MF – may need longer recovery.

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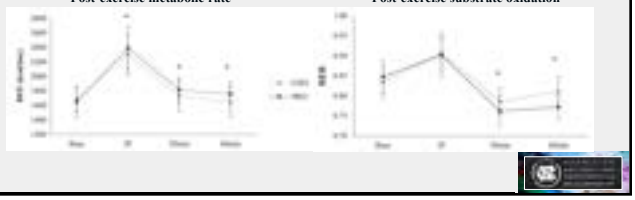
The acute effect of exercise modality and nutrition manipulations on post-exercise resting energy expenditure and respiratory exchange ratio in women: a randomized trial

- 20 EUM Women; HIIT vs. HIRT. Vs. AEE

30 min prior to exercise: 25g CHO (maltodextrin) **vs. 25g PRO** (whey isolate)

Post-exercise metabolic rate | **Post-exercise substrate oxidation**



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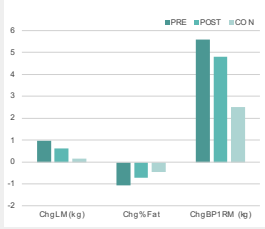
- Training volume was significantly lower in POST group.
- No significant body comp differences; PRE was 'better'
- Strength was better for both PRE and POST compared to CON
- **PRE resulted in significantly greater resting REE and greater fat oxidation before and 30 min post RT**



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PRACTICAL EXAMPLE

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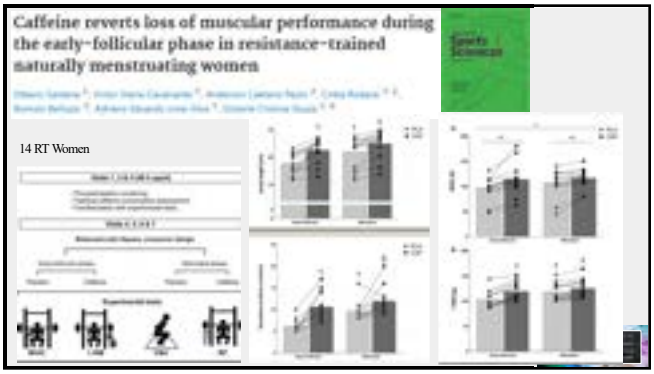
Caffeine reverts loss of muscular performance during the early-follicular phase in resistance-trained naturally menstruating women

14 RT Women



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Pre-Menopause

1. Understand your MC
2. Prioritize Exercise – but not too much
3. Eat more (protein), exercise less
4. Eat before exercise
5. Sleep more
6. Create habits now

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Peri-Menopause

1. Lift heavy weights
2. Do high intensity exercise → mitochondrial
3. Pay attention to symptoms/cycle
4. Eat even more (protein)
5. Eat around exercise
6. Prioritize YOU. Right. NOW

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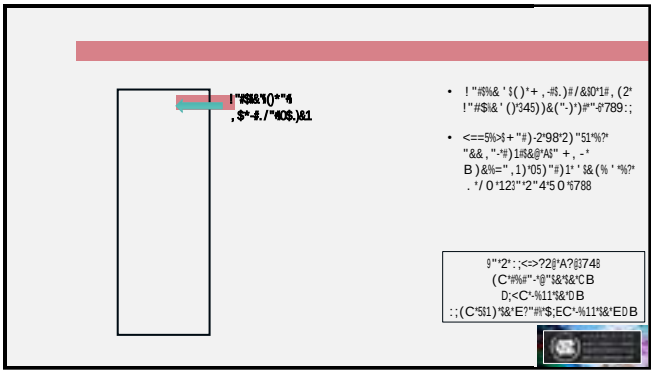

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AN EVALUATION OF BODY COMPOSITION AND MENOPAUSE SYMPTOMS ACROSS THE MENOPAUSE TRANSITION

Sam R. Moore [1,2], Hannah E. Cabre [1,2], Kelly E. Joniak [1], Alexandra N. Ladan[1], Abbie E. Smith-Ryan[1,2]

- %BF significantly related to TMS (r=0.464; p<0.001)
- %BF predicting 44% of variance in TMS
- LBM had no significant effect

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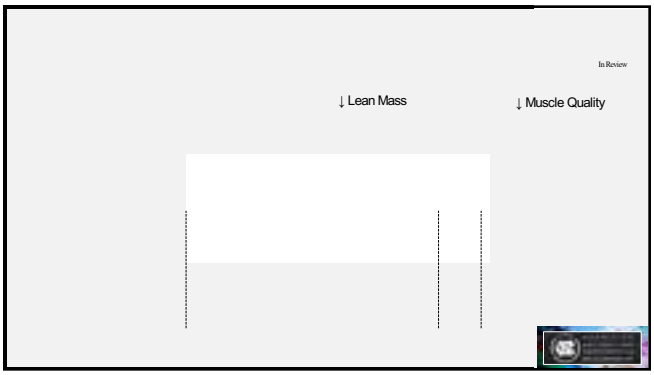

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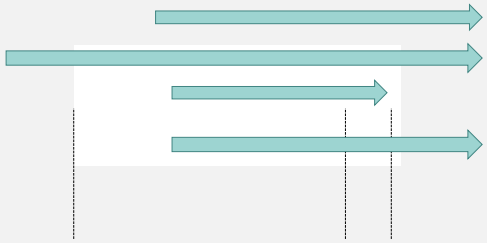
PHYSIOLOGICAL TARGETS



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MACRONUTRIENTS

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! Optimizing CHO:PRO
- 3.5-4:1 – normal US
- 2:1; 1:1

! 24 Women – 10 wk diet intervention
~1700 kcals

3.5 CHO:1 PRO
- 240g:68g

1.4 CHO:1 PRO
- 171g:125g

Layman et al. A reduced ratio of dietary CHO to PRO 2003

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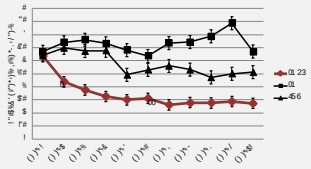

- The MR + Exercise > EX
  - **Body weight 83%** greater loss
  - **Fat weight 60%** greater loss
  - **Muscle mass 40%** greater gain
  - Cardiorespiratory fitness – 38% greater improvement
  - Upper body strength 20% greater increase
  - Lower body strength 17% greater increase

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NOOTROPICS/ADAPTOGENS

'substances that may improve cognitive function, memory, creativity, motivation in healthy individuals'

- **Rhodiola (Rosavins,salidsroside)**
  - Reduce Fatigue
  - Improve mood
  - Time to Exhaustion
  - Often diluted
  - 200-600 mg daily
- **Theanine - Neurotransmitter**
  - Often combined with caffeine- and can be synergistic
  - Relaxation/Attention
  - 100-200 mg (with caffeine)

Sellami et al. JISSN. 2018; Ishaque et al. BMC Complementary and Alt Med. 2012; Higashiyama et al. J of Funct Foods. 2011.

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CREATINE

- Creatine homeostasis changes throughout the menstrual cycle and lifespan
- Performance in women = ✓ (strength, sport, aerobic)
- Depression & mood = ✓
- Reductions in mental fatigue
- Improvements in cognition, especially under sleep deprivation

- Pregnancy
- Postmenopause → bone

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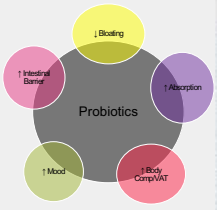
PROBIOTICS



Lamprecht et al. Probiotic supplementation affects markers of intestinal barrier, oxidation, and inflammation. JISSN 2012.
Jager, R. Ergogenic Sports Supplements. Eds. Smith-Ryan & Antonio. Sports Supplements and Nutrition. Linus 2013.

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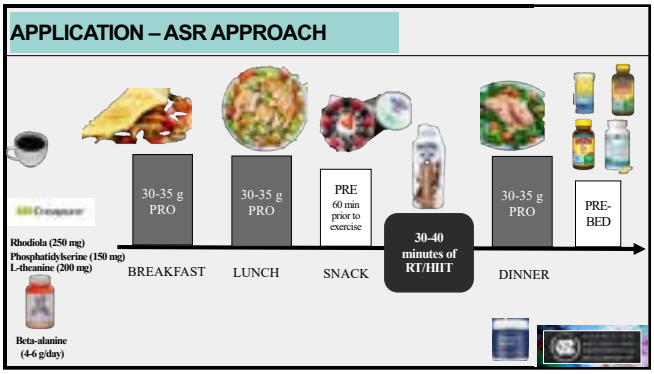
APPLICATION – ASR APPROACH
30-35 g PRO
30-35 g PRO
PRE 60 min prior to exercise
30-40 minutes of RT/HIIT
30-35 g PRO
PRE-BED
Rhodiola (250 mg)
Phosphatidylserine (150 mg)
L-theanine (200 mg)
BREAKFAST
LUNCH
SNACK
DINNER
Beta-alanine (4-6 g/day)

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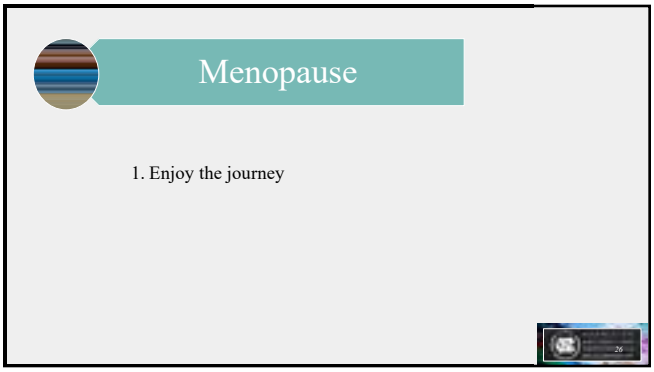
Menopause
1. Enjoy the journey

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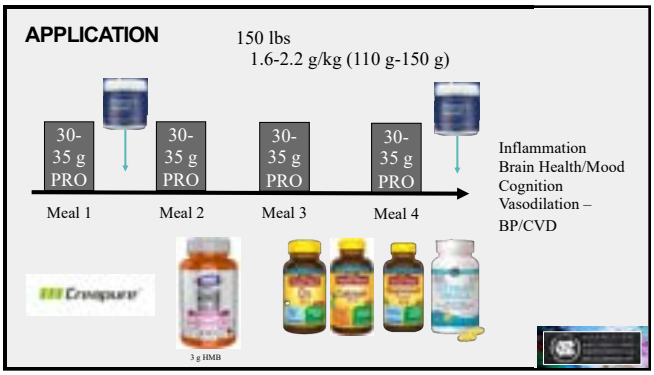
APPLICATION
150 lbs
1.6-2.2 g/kg (110 g-150 g)
30-35 g PRO
30-35 g PRO
30-35 g PRO
30-35 g PRO
Meal 1
Meal 2
Meal 3
Meal 4
Inflammation
Brain Health/Mood
Cognition
Vasodilation – BP/CVD
3 g HMB

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SUMMARY

- ✓ Menstrual Cycle/OC =
- ✓ 30 g of PRO
- ✓ Exercise routine
- ✓ ≠ Fast

Iron, Vit D, O3, Multi– Experiment!

Pre-Menopause

Pregnancy

- ✓ RT & Stamina
- ✓ ↑PRO, CHO, FATS
- ✓ Target neural development

Multi-, O3, Cr, Vit D, Fiber → Probiotics, PRO

- ✓ Do. All. The. Things
- ✓ Lift Heavy
- ✓ ↑PRO
- ✓ ≠ Fast
- ✓ ♥ YOU

EAAs, Vit D, O3, Cr, Nootropics, Mag, Probiotics

Peri-Menopause

Post-Menopause

- ✓ Live the life you Love

EAAs, Vit D, O3, Cr,

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THANK YOU

nutrition
metabolism
performance
body composition

APPLIED PHYSIOLOGY LAB

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