Performance Nutrition:
Translating Recommendations into Practice

Jacqueline Scaramella, MS, RD

Sports Dietitian

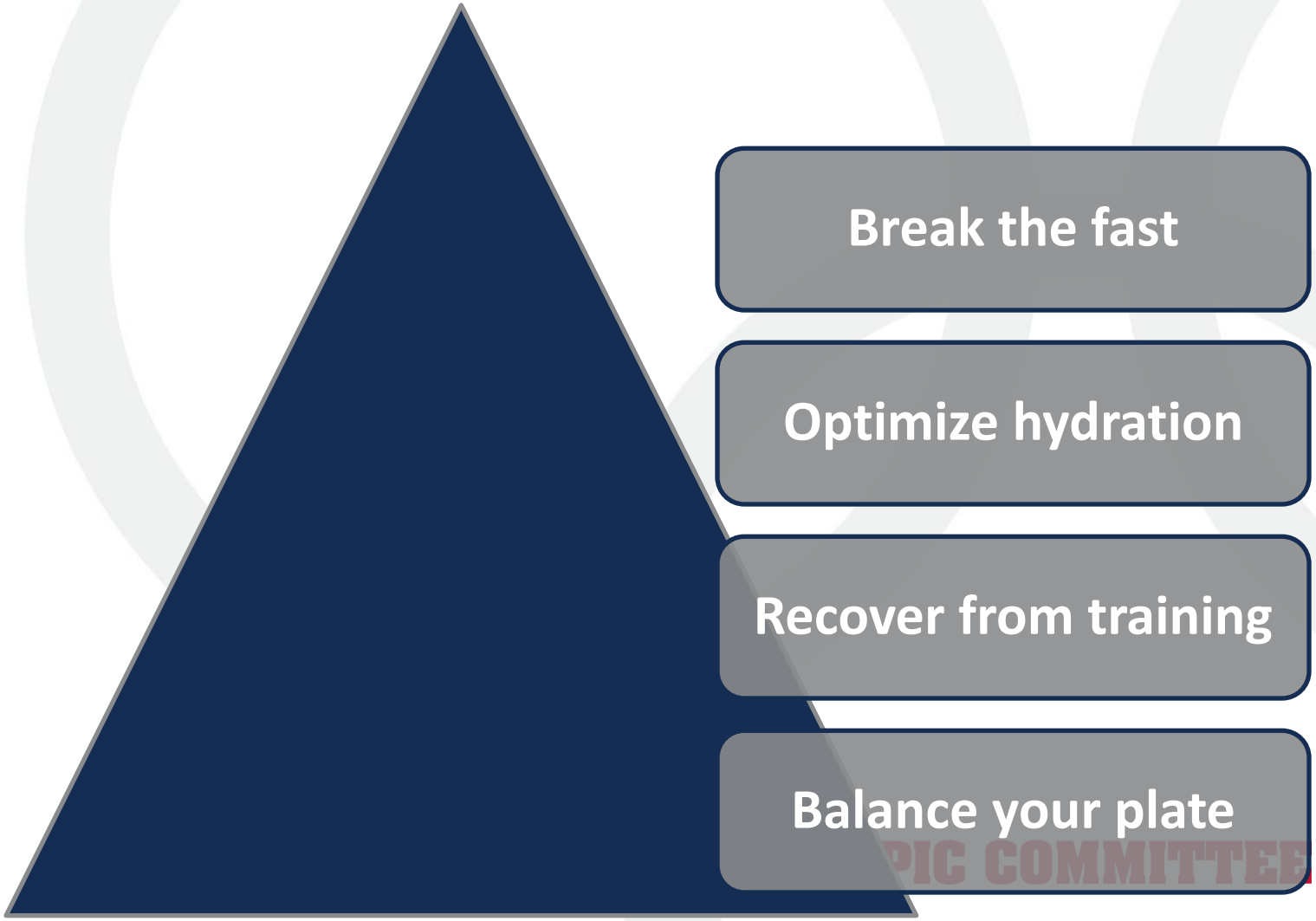
UNITED STATES OLYMPIC COMMITTEE

Topics Covered

- Athlete Plates
- Fueling Training
- Optimizing Hydration
- Recovery Nutrition
- Pediatric Sports Nutrition

UNITED STATES OLYMPIC COMMITTEE

Performance Nutrition Priorities



Balance Your Plate

What you need

vs.

What you want

Fueling Training

- Carbohydrate remains an important fuel source for moderate-high intensity exercise & brain function
- Insufficient CHO intake
  - Lowered mood state and inability to sustain load in heavy training phases
  - Reduced power output in high intensity intermittent exercise
  - Potential negative influence on immune function

Source: Liz Broad, PhD, RD

CHO Guidelines

Training load		Carbohydrate intake targets (g per kg of athlete's body mass)
Light	Low intensity or skill-based activities	3-5 g/kg/d
Moderate	Moderate exercise program (i.e. ~1 hour per day)	5-7 g/kg/d
High	Endurance program (e.g. 1-3 hours per day of mod-high-intensity exercise)	6-10 g/kg/d
Very High	Extreme commitment (i.e., at least 4-5 hours per day of mod-high intensity exercise	8-12 g/kg/d

Protein for Adult Athletes

120 lb female		180 lb male	
1.2 g/kg BM	1.6 g/kg BM	1.2 g/kg BM	1.6 g/kg BM
= 65 g protein	= 85 g protein	= 98 g protein	= 131 g protein

If 20g protein at each meal, only 5-25g protein for 'rest of day' (1 tub Greek yogurt = 14g)

If 20g protein at each meal and post-training, still has 20-50g protein to get in over rest of the day.

Source: Liz Broad, PhD, RD

Optimize Hydration

Begin training well-hydrated

Pre vs. Post weight

Replace sweat loss during training

Rehydrate after training

Starting point: Drink 2-4 cups

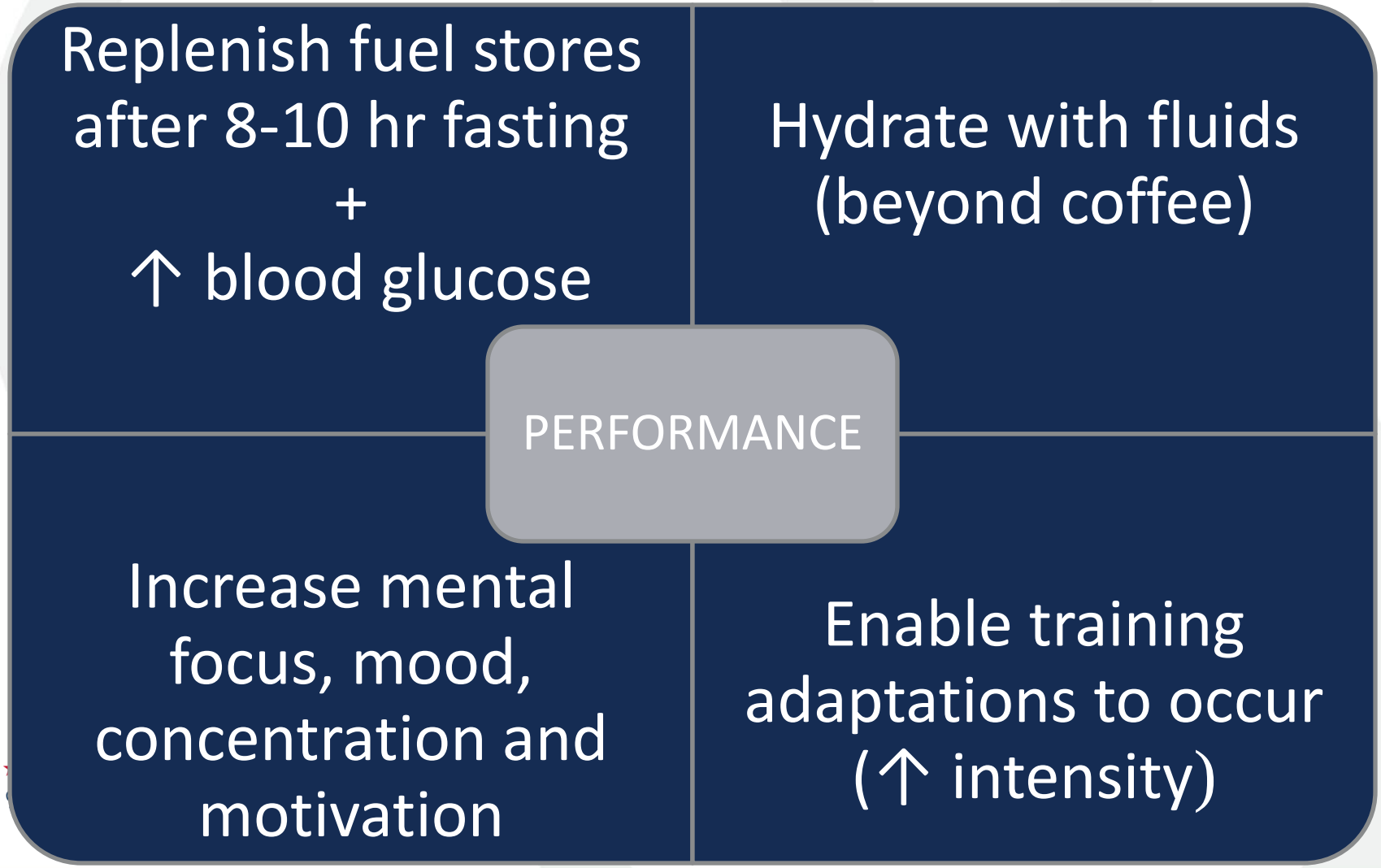
UNITED STATES OLYMPIC COMMITTEE

Hydration Tips

- Losing ≥ 2% BW can cause cramps, overheating, fatigue, nausea, delayed recovery, ↓ concentration, ↓ motor control
  - **Replace 125-150% of losses**
  - **Example: 1 lb. loss = 16 oz (replace with 20-24 oz)**
- Environmental factors
- Drink 1-2 cups water at all meals
  - Make a fruit smoothie for breakfast or a snack
  - Veggie soup at lunch or dinner

4 R's of RECOVERY Nutrition	FOODS / FLUIDS to CONSUME
Rehydrate with FLUIDS and ELECTROLYTES	Water, milk or sports drink (3 cups for every pound lost during activity)
Replenish muscle glycogen stores with CARBOHYDRATES (~1g carb/kg body mass)	Bread, fresh/dried/pureed fruit, pasta, rice, potato, couscous, quinoa, cereal, oatmeal, cereal bar
Repair and regenerate muscle tissue with high quality PROTEIN (15-25g protein)	Dairy products (e.g. chocolate milk, Greek yogurt, smoothie, cottage cheese), eggs, lean red meat, chicken, fish, legumes, nuts, jerky
Reinforce your immune system with antioxidant rich foods like FRUITS and VEGETABLES	Apples, bananas, oranges, berries, tropical fruit, spinach, kale, carrots, peppers, tart cherry juice, beets

Breaking the Fast



Breakfast Strategies

- Pre-training meal
  - Easily digestible CHO, low fat, low fiber, lean protein
- Serving sizes based on
  - Body weight
  - Type & goal of training session
  - Timing before training session
  - Number of training session that day
  - Prior meal or snack
- Hydration during meal (2 cups)

Breakfast Ideas

- 1 ½ c Kashi cereal, 1 c 1% milk, 1 medium orange, 1 large hard-boiled egg
- ½ c low-fat granola, 8 oz low-fat fruited Greek yogurt with ½ c blueberries
- Smoothie: 1 ½ c non-fat milk, 1 medium banana, 1 c sliced strawberries, ice
- 1 slice whole wheat toast topped with 1 Tbsp. almond butter, 1 c diced fruit, 1 large hard-boiled egg, 8 oz non-fat milk

Pediatric Sports Nutrition

Demands = Training + Growth/Development

- ↑ deficiency risk – calcium, vitamin D, iron
- High supplement use (high school, college)
- Targeting kids: sports food/beverages, energy drinks, supplement industries
- Limited scientific evidence
- Resource: https://www.sportsdietitians.com.au/factsheets/children/nutrition-for-the-adolescent-athlete/

Protein for Adolescent Athletes

- Additional requirements for growth/development & increased training loads
- Nutrient timing, high quality sources
- Adequate total calorie intake to spare protein
- Reported intake similar to adults (1.2-1.6 g/kg)

Gender	Age	RDI (g/kg/d)
Boys	12-13	0.94
	14-18	0.99
Girls	12-13	0.87
	14-18	0.77

Fluid for Adolescent Athletes

- Less effective at body temp regulation
  - ↓ Sweating capacity
- Lower exercise tolerance in heat
  - Greater surface area-to-body mass ratio
    - ↑ Heat gain on hot day
    - ↑ Heat loss on cold day
- Inappropriate uniforms/practice clothes
- Sweat sodium losses are lower in adolescents
  - Water over sports drinks for most

Micronutrients for Adolescent Athletes

- Iron – depleted iron stores (ferritin <35 µg/L)
  - 31% male, 57% female
  - Negative effect on performance & training adaptations
    - ↓ Oxygen transport & ATP production
- Calcium – increased recs for bone growth
  - Intakes are below 1300 mg/d
- Vitamin D – home location, indoor training, sunscreen
  - Suboptimal levels impair performance & ↑ injury risk

Energy Availability

Energy Availability = Energy Intake – Energy Expenditure

- Positive E balance during maturation
- Negative E balance
  - Risks
- No predictive equation ideal for RMR in adolescent athletes
  - Schofield equation
  - Assess growth & development markers against reference values

Body Image & Eating Behaviors

- Positive relationship with sports & self-esteem
- Aesthetic & weight class sports
  - Inappropriate dieting + training
  - Coach & parental pressures
  - ↑ Rates of ED
- Educating on role of nutrition in performance

SUPPLEMENTS

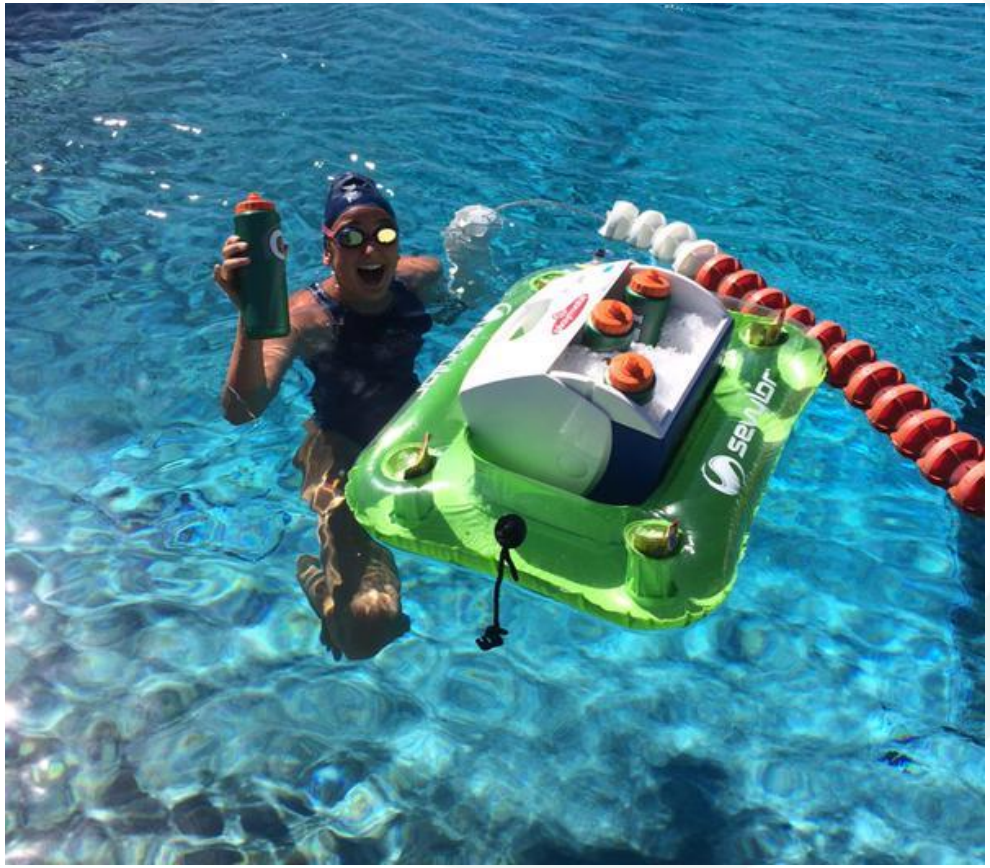
- Meant to supplement the diet, not be a substitute for food
- Younger athletes will ↑ performance more through
  - growth/development, experience in sport, proper training, nutrition & rest
- Unregulated, profit-driven industry
- Highly recommend 3rd party testing

NSF Certified for Sport® www.nsf.org

INFORMED-CHOICE.ORG Trusted by sport

UNITED STATES OLYMPIC COMMITTEE

Questions?



follow us on twitter
@Nutr4TeamUSA

@Nutr4TeamUSA

Website:
www.teamusa.org/nutrition

UNITED STATES OLYMPIC COMMITTEE