



Recovery Nutrition

Practical Application for Maximizing Training Effect

Jordan Mazur MS RD
Coordinator of Nutrition
Team Dietitian
San Francisco 49ers

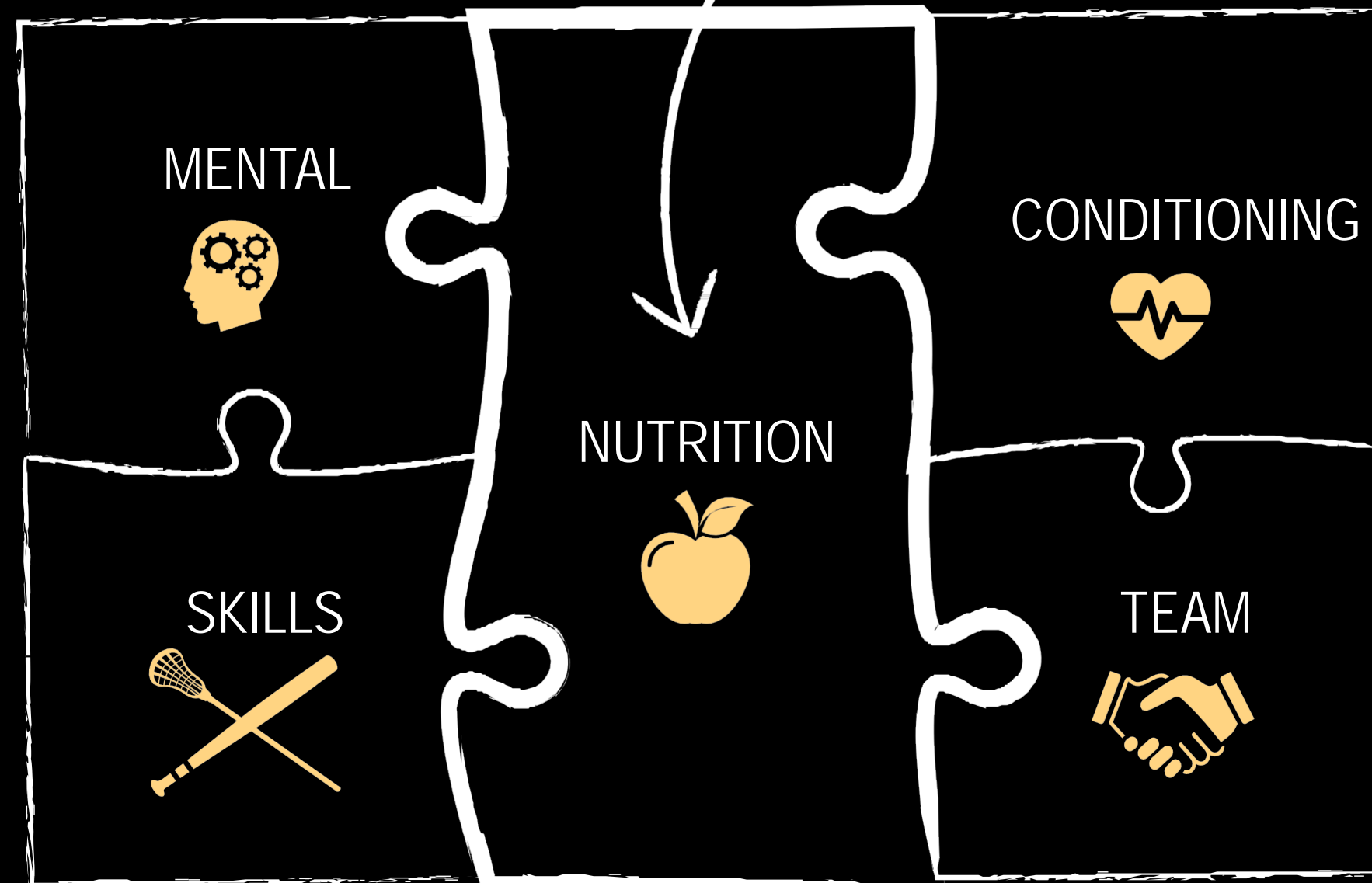
OVERVIEW

- **Foundation Nutrients for Performance Recovery**
- **Macronutrients for Recovery**
 - **Protein**
 - **Carbohydrates**
 - **Hydration**
- **Supplementation**

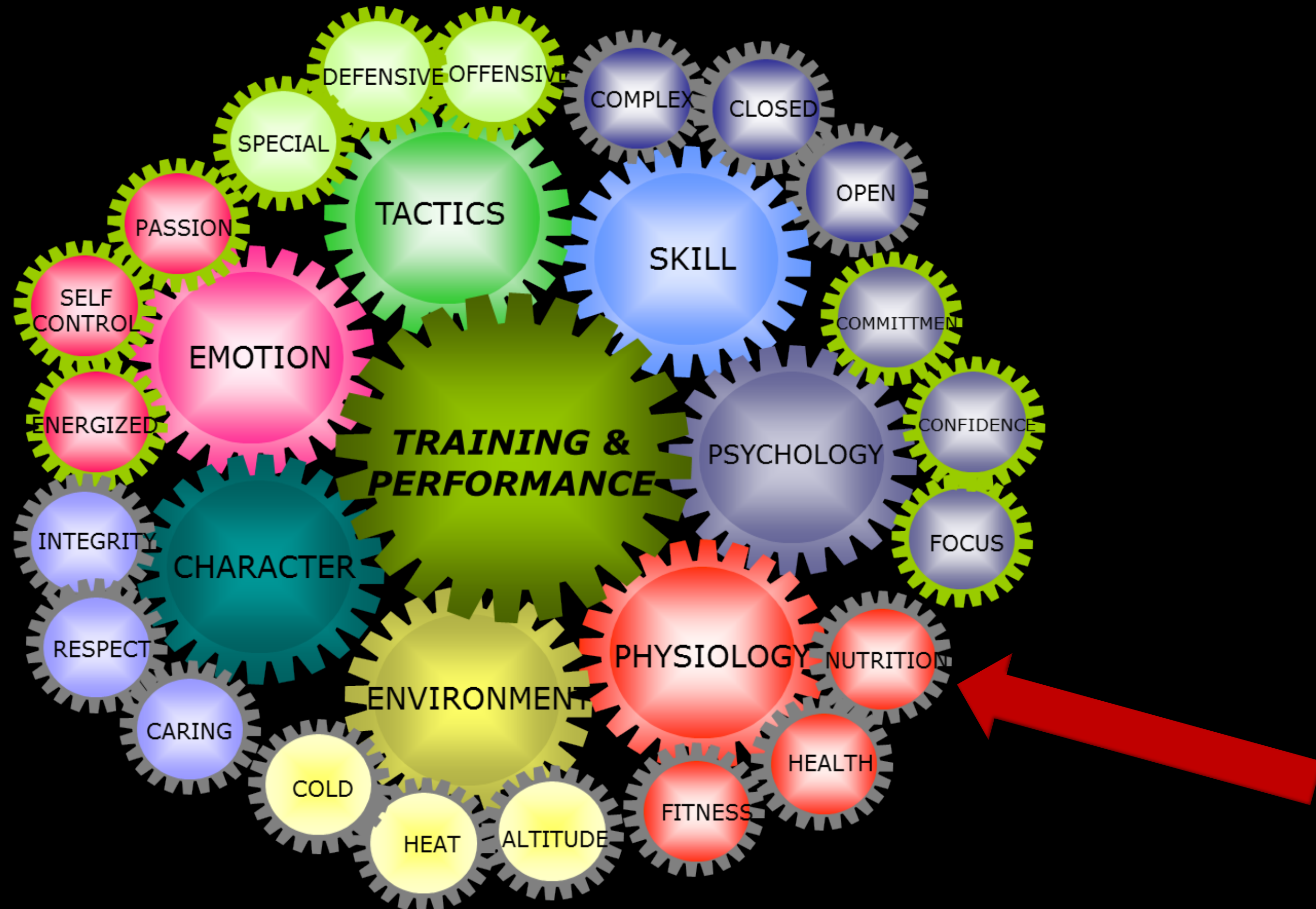
PUTTING THE PIECES TOGETHER FOR SUCCESS

Good nutrition starts with
the right fueling strategies.

This is the **core** of
improved performance.




HOW DOES NUTRITION FIT IN?



**"ATHLETE'S DON'T BUILD MUSCLE IN THE
WEIGHT ROOM."**

RECOVERY NUTRITION

- **Get more out of training** - progressive improvement in strength and power
 - **Next level prep** to be collegiate or professional athlete - you'll be ahead of the game.
 - **Get the competitive advantage** - your team's secret weapon.
 - **Improve energy and focus** - more scoring power, even into OT or 4th quarter when your team needs you most.
 - **Fuel** for back to back games.
 - **Recover faster** - less muscle soreness, fresh legs, not dead legs.
- 

FOUNDATION

NUTRIENTS

PROTEIN

WHY PROTEIN?

Athletes require more protein than the average person

Protein is a **vital** part of an athlete's diet, playing a role in:

- Muscle repair, growth and maintenance
- Supporting strong muscles, bones, ligaments, and tendons
- Moving oxygen to muscles
- Healthy weight
- Immune function
- Healing
- Reducing muscle soreness post exercise



PROTEIN IN MUSCLE IS LIKE BRICKS IN A WALL

- Our **muscles** are like a continuous **brick wall**.
- **1/3 of the protein** in your body is in your muscles.
- **Wall is made out of protein**, but is continuously building up and breaking down.
- Protein, unlike carbs and fats **cannot be stored** in the body.
- **Needs to** obtained from foods you eat.

EXERCISE STIMULATES MUSCLE GROWTH

Protein.



Muscles
Repaired!

- **When we exercise** - the wall is broken down even faster – training is only a stimulus
- **Protein consumed after exercise** helps rebuild the wall, and with training, builds a stronger wall.
- Taking high quality protein **after exercise** is an important step in helping your body improve with training.

WHAT'S YOUR NUMBER?

- **Protein needs depend**
on intensity, duration, and frequency of exercise
- **Professional athletes need extra protein for growth and repair**
- Experts recommend 0.5-0.9 grams per pound of body weight
- Easy math...


$$\text{BODY WEIGHT} / 2 = \text{BASE TARGET}$$

Training like crazy?

Almost same amount in grams as your body weight may be needed.

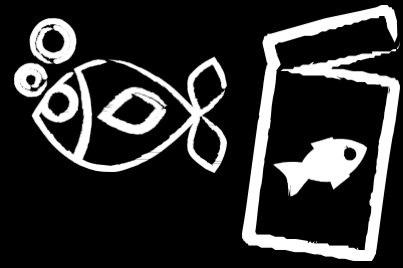
$$\text{BODY WEIGHT} \times 1.0 - 1.5 = \text{HIGH INTENSITY TARGET}$$

Table 1: Optimal daily protein intake in grams per kilogram of body weight (g/kg)

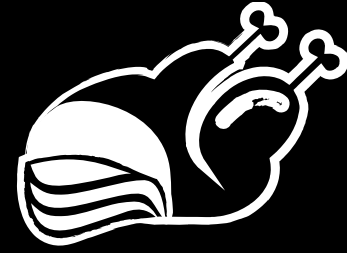
	Of healthy weight			Overweight or obese	Pregnant
	Maintenance	Muscle gain	Fat Loss		
Sedentary	1.2-1.8	n/a		1.2-1.5	1.66-1.77
Active	1.4-2.2	1.4-3.3	2.2-3.3		unknown

- IF YOU'RE OF HEALTHY WEIGHT AND SEDENTARY, AIM FOR 1.2–1.8 G/KG (0.54–0.82 G/LB)
- IF YOU'RE OVERWEIGHT OR OBESE, AIM FOR 1.2–1.5 G/KG (0.54–0.68 G/LB)
- IF YOU'RE OF HEALTHY WEIGHT, ACTIVE, AND WISH TO KEEP YOUR WEIGHT, AIM FOR 1.4–2.2 G/KG (0.64–1.00 G/LB)
 - TRY FOR THE HIGHER END OF THIS RANGE, AS TOLERATED, ESPECIALLY IF YOU'RE AN ATHLETE.
- IF YOU'RE OF HEALTHY WEIGHT, ACTIVE, AND WISH TO BUILD MUSCLE, AIM FOR 1.4–3.3 G/KG (0.64–1.50 G/LB)
 - EATING MORE THAN 2.6 G/KG (1.18 G/LB) IS PROBABLY NOT GOING TO LEAD TO GREATER MUSCLE GAINS, BUT IT CAN MINIMIZE FAT GAINS WHEN “BULKING” — I.E., WHEN EATING ABOVE MAINTENANCE IN ORDER TO GAIN (MUSCLE) WEIGHT.
- IF YOU'RE OF HEALTHY WEIGHT, ACTIVE, AND WISH TO LOSE FAT, AIM FOR 2.2–3.3 G/KG (1.00–1.50 G/LB)
 - SKEWING TOWARD THE HIGHER END OF THIS RANGE AS YOU BECOME LEANER OR IF YOU INCREASE YOUR CALORIC DEFICIT (HYPOCALORIC DIET).

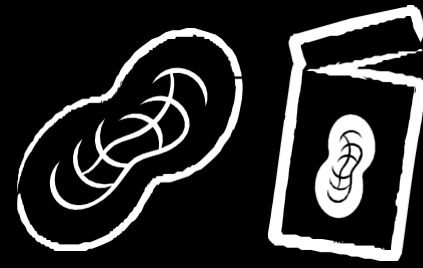
EASY POST-WORKOUT PROTEIN OPTIONS



TUNA POUCHES



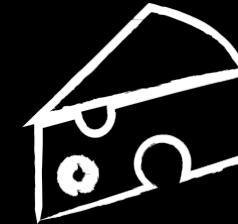
DELI MEAT
(TURKEY, CHICKEN,
HAM OR ROAST BEEF)



NUT BUTTER POUCHES



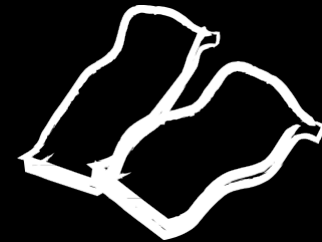
HARD BOILED EGGS



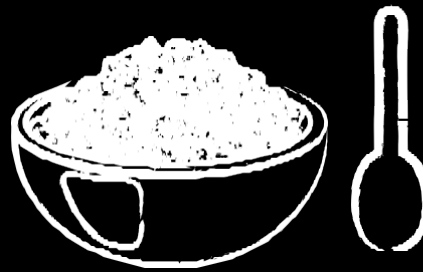
CHEESE SLICES OR
STRING CHEESE



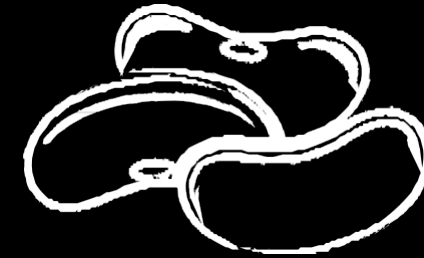
GREEK YOGURT



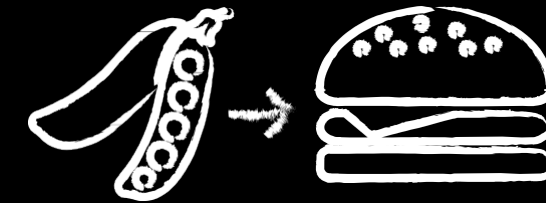
JERKY



COTTAGE CHEESE



BEANS



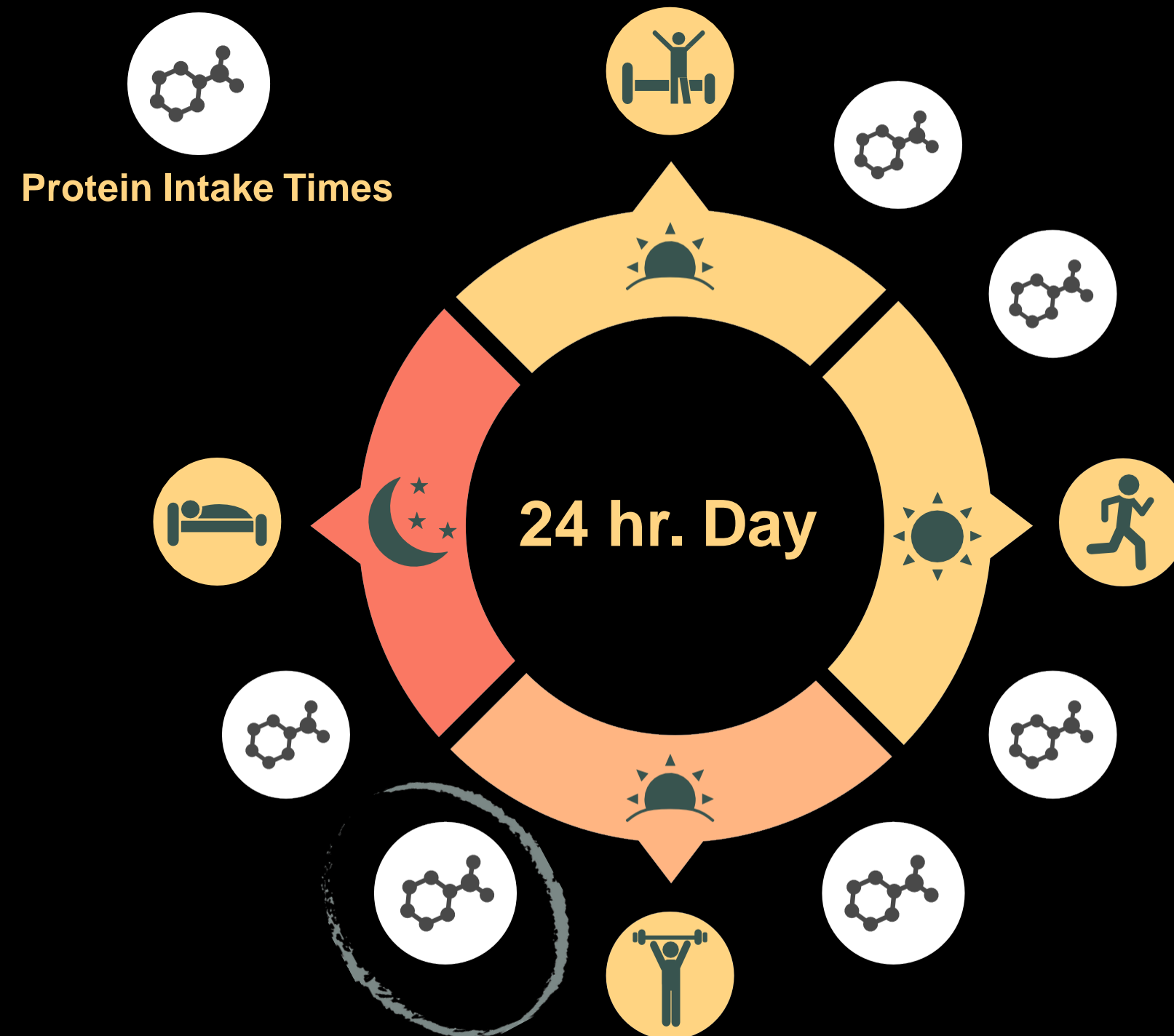
SOY VEGGIE BURGER



EDAMAME
(SOYBEANS)

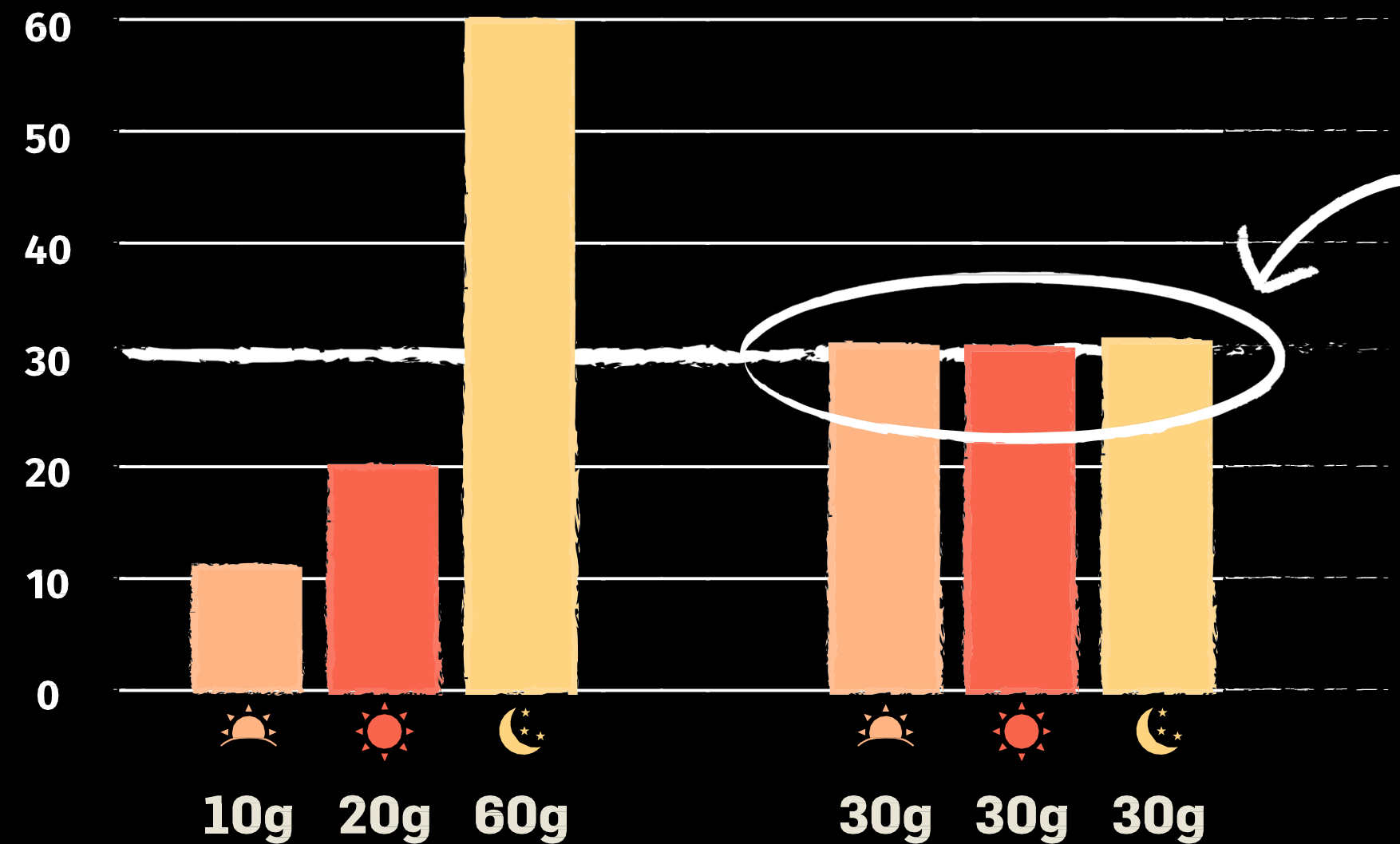
PROTEIN STRATEGIES

TIMING IS EVERYTHING



- Spread Protein throughout the day
- Protein pack your breakfast
- Include protein at all meals and snacks
- Protein before bed helps keep your muscles in positive balance to support muscle growth and recovery

→ OPTIMAL PROTEIN INTAKE



Maximize Muscle Building
Maximal protein synthesis

INADEQUATE
PROTEIN DISTRIBUTION



ADEQUATE
PROTEIN DISTRIBUTION

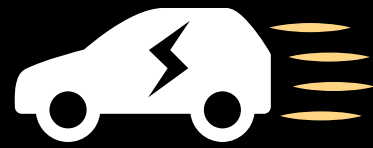


  BREAKFAST   LUNCH   DINNER

Try to consume
20-30 grams of
protein each meal.

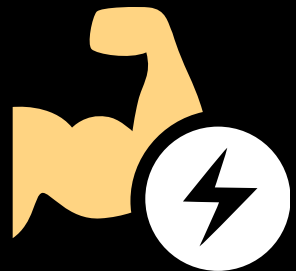
CARBOHYDRATES

WHY CARBOHYDRATES?



Fuel for your muscles

Like gas for a car



Carbohydrates are stored in your muscle and liver

Need to be replenished post-exercise to replace lost glycogen



They help us use the protein

for growth, repair, and energy



Eating too little carbohydrates may negatively affect your athletic performance and recovery between exercise bouts

DAILY CARBOHYDRATE NEEDS

$\frac{1}{2}$ **plate** carbohydrates: whole grains, beans, starchy vegetables



MORE ACTIVE DAYS
=
MORE CARBS NEEDED

- Most athletes need at least half their calories from carbohydrate foods (50-65% of calories from carbs)
- General recommendation for athletes:
 - 5-10 g CHO/kg body weight for athletes
 - 5-7 g/kg CHO body weight for moderate exercise
 - 7-10 g CHO/kg body weight for endurance athletes
 - 10-12 g CHO/kg body weight for ultra-endurance athletes

FAST CARBS VS SLOW CARBS

Fast-acting carbs give your body **quick energy** and are easy to digest.

Best eaten:
Before
and/or during
exercise

Examples:

White bread, bagels, fruit snacks, jelly, honey, sports bars, sports drinks, gummies and sport gels.

Slow-acting carbs provide **longer lasting energy** and usually contain more fiber.

Best eaten:
At meals 2-4 hours before
exercise or anytime
after exercise

Examples:

Whole grain breads, brown rice, oatmeal, whole wheat pasta, beans, legumes, sweet potatoes and fresh fruit w/ skin.

WHERE ARE THE CARBS?

CARB OPTIONS POST-WORK

- **Grains:** breads, bagels, cereals, oats, quinoa, rice, pasta, tortillas, crackers, pretzels, pancakes/waffles
- **Fruit:** fresh, canned, dried, 100% juice
- **Starchy Vegetables:** potatoes, sweet potatoes/yams, peas, corn
- **Milk & Yogurt**
- **Beans & Legumes**
- **Sports bars, drinks, and gels**
- **Protein Shake**

HYDRATION

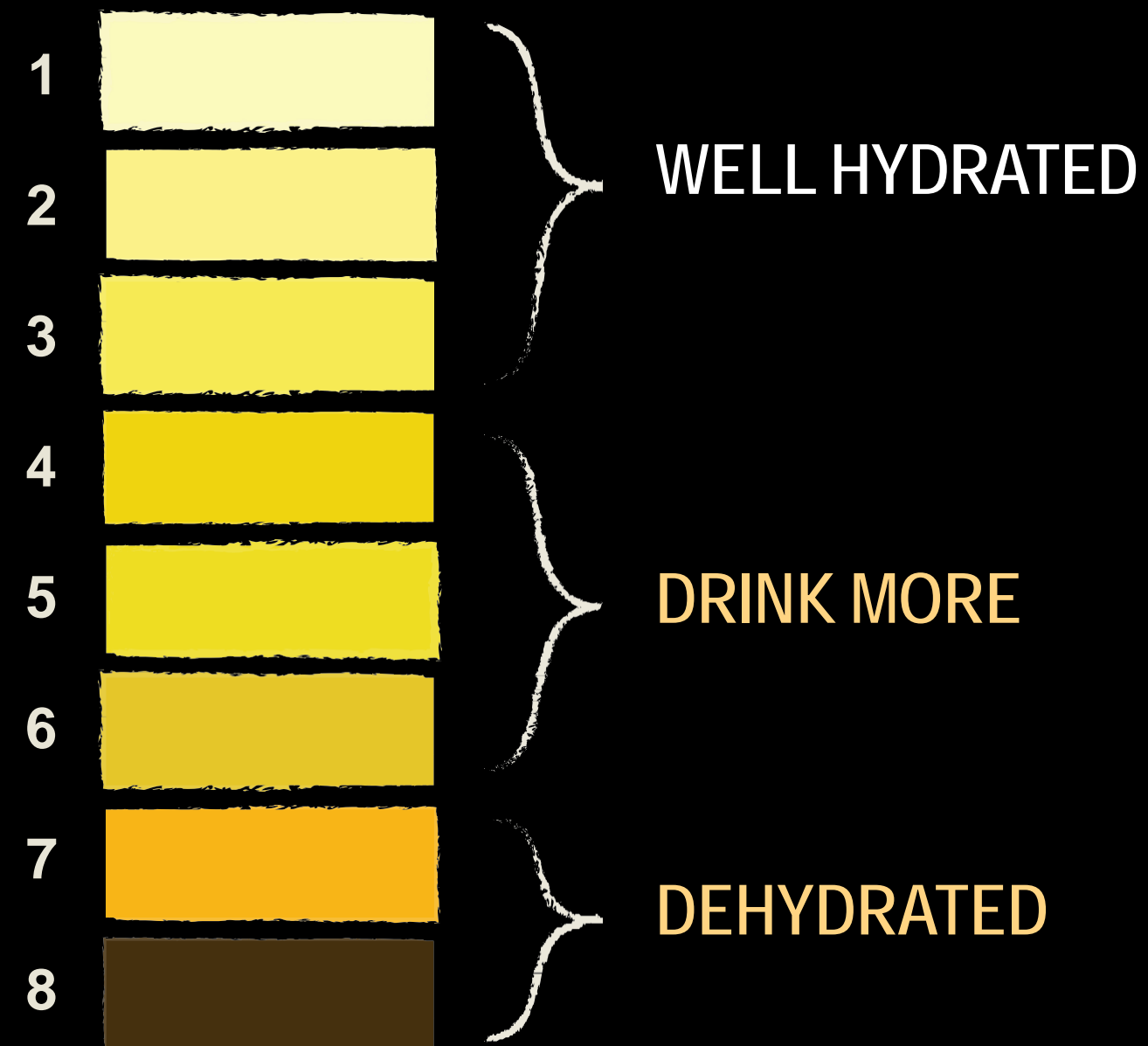
HYDRATION TIPS

- **Drink fluids** throughout the day, **all day**
- **When you sweat**, you not only lose fluids, but also electrolytes (such as sodium, chloride and small amounts of potassium, calcium and magnesium)
- **Preferred:** water, 100% juice
- **Limit:** soda, sugar sweetened drinks. Avoid soda on game day
- **Avoid:** energy drinks, alcohol
- **Don't confuse** energy from caffeine with energy from food
- **Caffeine does not fuel your muscles**

HYDRATION STRATEGIES

MAKE IT A DAILY FOCUS

Urine Color Chart

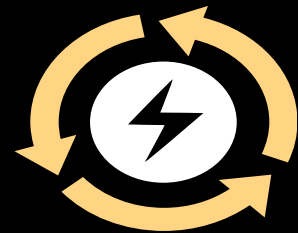


TIP:

Drink about
½ oz to 1 oz
per pound of
body weight
per day.

SUMMARY - RECOVERY STRATEGIES

Taking in nutrition within 30 - 60 minutes after exercise is ideal timing.



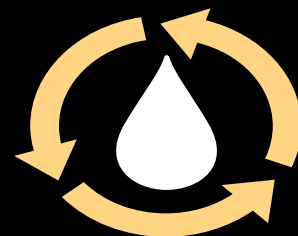
REFUEL: Refuel muscles with carbohydrates, especially if another game or practice is happening within 8 hours.

- Your body weight divided by 2. **Example:** 200 pounds = 100 grams of carbs



REPAIR: Repair and rebuild muscles with ~ 20-30g high quality protein.

- If you have a low appetite after exercise, a liquid option may be best



REHYDRATE: Rehydrate with fluids and electrolytes lost during exercise.

- Weigh yourself before & after exercise a few times per year to learn how much fluid you lose during exercise
- Drink 3 cups (24 fl. oz) fluids for every pound of weight lost during exercise



REST: Elite athletes need more sleep.

- Aim for 8-10 hours each night
- Athletes who sleep <8 hours have 1.7 times greater risk of injury

SUPPLEMENTS – ONLY WORK IF THE FOUNDATION IS SET

1. WHEY PROTEIN

- QUALITY MATTERS – LOOK FOR A HIGH LEUCINE CONTENT OF 3-5 GRAMS PER SERVICE TO INITIATE THE MTOR PATHWAY

2. OMEGA-3 PUFA

- RESEARCH SHOWS THAT THE ADDITION OF OMEGA-3 FISH OIL WITH PROTEIN CAN REDUCE POST-EXERCISE MUSCLE SORENESS FOLLOWING ECCENTRIC EXERCISE IN SOCCER PLAYERS

3. TART CHERRY JUICE

- SIGNIFICANT RESEARCH SUGGEST THAT THE ANTHOCYANINS IN TART CHERRY JUICE REDUCE MUSCLE SORENESS AND PROVIDE A HIGH ANTIOXIDANT LOAD

4. PROBIOTICS

- HEAVY TRAINING OR COMPETITION LOADS UNDERTAKEN BY ATHLETES CAN INCREASE THE RISK OF ACQUIRING AN UPPER RESPIRATORY TRACT INFECTION (URTI)

5. CURCUMIN (TURMERIC AND GINGER)

- CURCUMINOIDS DUE TO THEIR ANTI-INFLAMMATORY PROPERTIES MAY REDUCE MUSCLE DAMAGE AND IMPROVE MUSCLE SORENESS FOLLOWING A BOUT OF MUSCLE DAMAGING EXERCISE.