

Recovery

Training (i.e. consistent and purposeful exercise) is physically, psychologically and even emotionally demanding on our bodies, so it helps to have a solid and effective recovery routine. Here are five elements that can work together to help optimize your performance during workout time.

1. Sleep
2. Nutrition
3. Hydration
4. Self Myofascial release
5. Stretching

These five can be part of your daily or weekly routine, and will help your body heal from, and stay energized through the challenges of training.

There are 168 hours in a week (24x7). So if you have, for example, 16 hours of scheduled training per week, that means you have 152 hours to recover from practices. Since your recovery matters as much as the training you do during practice, and starts as soon as you finish a practice, it follows that what you do immediately following a practice, and leading up to the next one, affects your future performance. This is true to an increasing degree as you get older, as well as the fact that you get better at planning as you get older. Executing an effective recovery routine does take some planning, but if you take the time, you'll find the planning and execution are well worth your effort.

Sleep

Benefits of Sleep to Athletes

1. Improves memory (learning new skills)
2. Enhances recovery rate
 - allows faster cell regeneration
 - reduces inflammation
 - naturally increases human growth hormone
3. Improve performance
 - Increases explosiveness
 - Improves reaction time
 - Improves focus
4. Strengthens immune system
5. Lowers chance of injury

How can I get better sleep?

1. Get on a regular schedule. Go to bed every night and wake up every morning at the same time as often as possible.
2. Avoid sleep medication, caffeine and sugar.
3. Go to bed earlier to get more sleep before midnight. This is especially important if your wake-up time doesn't change.

More sleep guidelines:

1. Most people need ideally between seven and nine hours of sleep every night. Athletes may need more. If you are following the nutrition and hydration guidelines below, and are still fatigued more than you should be based on current training, you may be one who needs nine hours or more.
2. If you can't possibly get at least seven hours of uninterrupted sleep in a certain 24 hour period, a midday nap will help, but won't entirely make up for it.
3. Growth hormones are released during deep sleep. It is believed that the longer the deep sleep, the more hormones are released.

All of this only works if sleep is planned. Like everything else in this packet, if it only happens whenever convenient, its probably not happening often enough.

Nutrition & Hydration

How Much Should I Eat?

- 1.) You can find this out by going to <http://www.bmi-calculator.net/bmr-calculator/>
 - a.) First, calculate your BMR.
 - b.) Then click on the Harris Benedict Equation to find out your daily calorie needs.
Multiply your first number (BMR) by your activity level to find out daily caloric intake.

What Kind of Fats Should I Eat/Ovoid?

- 1.) Good fats are Monounsaturated and Polyunsaturated fats.
 - a.) These fats often contain Omega-3 fatty acids, which help brain function, and lower bad cholesterol. They will also increase your natural testosterone.
 - b.) Good sources of fat are: Olive oil, nuts, the fat from fish, egg yolks, coconut oil and avocados.
- 2.) Bad fats are Saturated and Trans fats.
 - a.) These fats contain no nutritional value, and generally come from processed foods.
 - b.) Bad sources of fat are: Fried food, cookies, cakes, muffins, microwaved popcorn.

What Kind of Carbs Should I Eat/Ovoid?

- 1.) Carbs should make up anywhere from 50% to 70% of your total calorie intake, depending on the intensity of training.
 - a.) To determine an appropriate amount of carbs to eat based on your bodyweight, use this formula: $bodyweight \times 2.5 = total\ grams\ of\ carbs\ per\ day$ (light training). For heavy training, use $bodyweight \times 6.0 = total\ grams\ of\ carbs\ per\ day$.
- 2.) Complex carbs are slow digesting carbs, which are the best carbs for athletes to eat. They keep blood sugar levels sustained, which gives sustained energy.
 - a.) Good sources of complex carbs are: Brown rice, sweet potatoes, oatmeal, whole wheat bread/pasta, whole grains, quinoa, fresh fruit.
- 3.) Simple carbs are fast digesting carbs, which spike energy levels and provide a crash afterwards. These are most carbs containing sugar.
 - a.) Sources of simple carbs are: Most breakfast cereals, juice, white bread, white rice, pizza dough, candy.

The Importance of Protein

- 1.) Protein aids in recovery by repairing muscle tissue that is damaged by strenuous activity. There are no bad sources of protein.
 - a.) Foods high in protein are: Meat, eggs, nuts, beans, legumes, and dairy products.
 - b.) As an athlete, it is better to eat too much protein than not enough. To get a better idea of how much you need, here is a formula that can help: Athletes need between .54 and .64 grams of protein per pound of body weight. So $body\ weight \times .54 = grams\ of\ protein\ per\ day$.
 - c.) Remember that whey protein digests quickly, while casein protein (found mainly in dairy products) digests over a longer period of time.
 - d.) Also remember that your body can only use a certain amount of protein at a time, so it is best to break your appropriate amount of protein into smaller increments throughout the day.

Fruits & Vegetables

1.) USA Swimming recommends that each meal you eat contains foods that represent at least 5 different colors. This is best accomplished by incorporating fruits and vegetables into your diet. They are rich in vitamins and minerals that help you recover and turn food into fuel for your body to use.

Post Workout Meal

1.) This is the most important meal of the day. This meal decides how quickly you will recover from your practice.

a.) Focus on eating within 30 minutes of practice ending, and focus on consuming a lot of high quality carbs and protein (generally more carbs than protein). The carbs will replenish glycogen, and the protein will help repair/rebuild the muscles.

b.) A solid recovery routine for your diet, for example, would be to drink a chocolate milk and eat a fruit & nut bar as soon after practice as you can. This will get something in your system while you get changed and get home. For dinner, grilled chicken with brown rice and a salad with mixed greens will balance out your meal and supply your body with simple and complex carbs, a variety of proteins, and vitamins, minerals and antioxidants. Add a small serving of fruit for desert and you've done just about everything you can to recover nutritionally.

The Importance of Water

1.) Your body is 60% water. Without water your muscles and organs can't work properly. Water is needed to transport nutrients to the muscle; without water a perfect diet is useless.

a.) You should be drinking 1-2 gallons of water a day. If you are thirsty, you are dehydrated and need to drink water immediately. Being proactive, and drinking when you are not thirsty, is key in preventing dehydration.

b.) Juice and other beverages do not count as water. Beverages that contain electrolytes should be consumed mainly during training sessions; water should be the beverage of choice outside of practice.

Summary

- Eat monounsaturated and polyunsaturated fats. Ex.) Nuts
- Eat complex carbs to replenish glycogen. Ex.) Oatmeal
- Eat protein to help repair muscle tissue. Ex.) Meat
- Drink 1-2 gallons of water a day
- Juice/beverages do not count as water.
- Eat within 30 minutes of workout.
- More calories=faster recovery

Self Myofascial Release

Foam rolling can be done once every 24-48 hours. Problem areas can be targeted, and worked around if rolling directly is too uncomfortable. It may take 5-30 seconds for discomfort to subside, so take your time and focus your mind on relaxing. Avoid rolling your lower back, neck, bones and joints.

Stretching

Dynamic stretching can be useful before training to slightly elevate heart rate and increase blood flow to muscles (activation). It can also be useful on days off from training as an aid to recovery. Takes about 10-15 minutes.

Static stretching can be used carefully after training sessions, or at a time not connected with training. It can also be used in tandem with foam rolling to test/re-test the range of motion/ problem area you are working with.

Top 30 Foods for Swimmers

Foods	Featured Nutrients				
	Carbohydrate	Protein	Antioxidants	Fiber	Other
1. Blueberries	✓		✓ Anthocyanins		
2. Blackberries	✓		✓ Anthocyanins		
3. Strawberries	✓		✓ Vitamin C		
4. Oranges	✓		✓ Vitamin C		Heperidin
5. Mango	✓		✓ Vitamin A, Vitamin C		
6. Broccoli			✓ Vitamin A, Vitamin C	✓	Vitamin K
7. Carrots			✓ Vitamin A, Vitamin C	✓	Vitamin K
8. Tomatoes			✓ Vitamin A, Vitamin C	✓	Lycopene
9. Sweet Potatoes	✓		✓ Vitamin A (beta-carotene), Vitamin C		Potassium, Iron, Copper, Manganese
10. Avocado				✓	Vitamin K, Folate, Potassium
11. Spinach			✓ Vitamin A		Vitamin K, Folate, Iron, Manganese, Magnesium
12. Mixed Greens			✓ Phytonutrients		
13. Potatoes	✓		✓ Vitamin C		Vitamin B6, Copper
14. Bananas	✓		✓ Vitamin C		Vitamin B6, Potassium
15. Almonds			✓ Vitamin E (gamma-tocopherol)		
16. Cranberries	✓				Hippuric acid
17. Oatmeal	✓	✓		✓	Manganese
18. Granola	✓	✓		✓	Manganese
19. Olive Oil			✓ Vitamin E		Oleic acid
20. Black beans	✓	✓	✓	✓	Folate
21. Yogurt	✓	✓			Calcium, Phosphorus
22. Milk	✓	✓			Calcium
23. Orange juice	✓		✓ Vitamin C	✓	
24. Whole grain bread	✓	✓		✓	Manganese
25. Whole grain pasta	✓	✓		✓	Vitamin B
26. Eggs		✓			Vitamin K, Choline, Leutin
27. Beef		✓			Iron, Zinc, Vitamin B12
28. Salmon		✓			Omega-3 fats
29. Shrimp		✓			Selenium, Vitamin D, Vitamin B12
30. Chicken		✓			Selenium, Niacin

Energy Zones

	Activities	HR	Duration of Effort	Uses	Energy Supply
Recovery	Warm-up, cool-down, active recovery	<60% of MAX or <150bpm	variable	replenishing oxygen stores, decreasing lactic acid, skill development	oxidative
Aerobic	warm-up, cool-down, active recovery, low-intensity endurance training	70% of MAX or 150-170bpm	variable	training aerobic capacity, skill development, recuperation	oxidative
Threshold	high-intensity endurance training	80% of MAX or 170-190bpm	5-60 minutes	Aerobic capacity, endurance for all distances, efficiency of energy systems	mix, oxidative and non-oxidative
Anaerobic	sprints, pace, b.i.p.	90% of MAX or 190-210bpm	10 secs - 3 minutes, generally 100-200s	race specific training, fast-twitch muscle development	non-oxidative (ATP)
MAX	lactate sets, shortest reps of highest intensity, VO2max	100% or >210bpm	could be >15 seconds, 15 - 50 yards/meters. could be more if lactacid development or VO2max	explosive drills i.e. starts, turns, breakouts, finishes, sprint drills, test sets	Creatine Phosphate

Recovery Log

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday