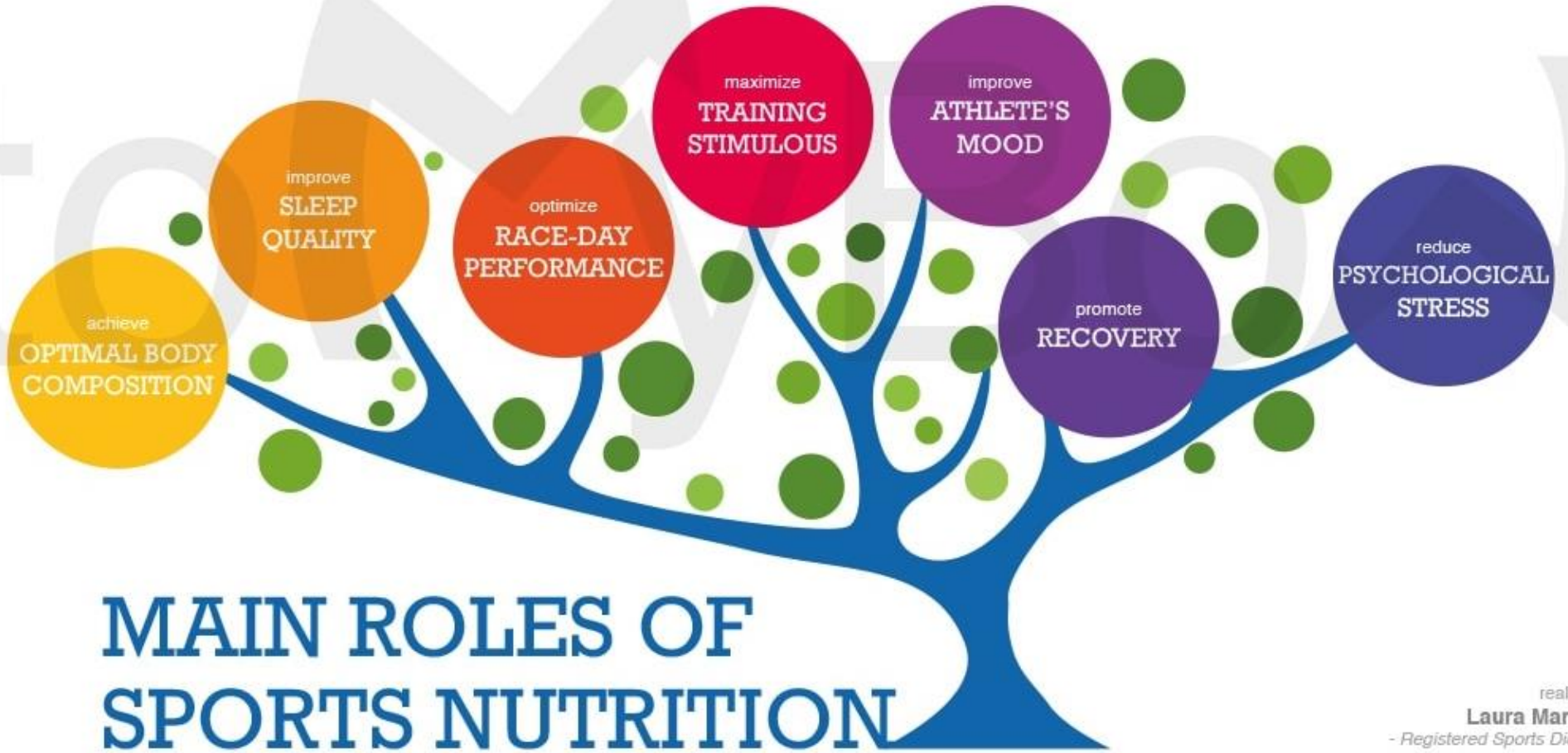
How to be a healthy swimmer

Swimmers Health

THE IMPORTANCE OF A TAILORED SPORTS NUTRITION



MAIN ROLES OF SPORTS NUTRITION

realized by
Laura Martinelli
- Registered Sports Dietitian -

Pre pool

The warm ups should be performed in the order:

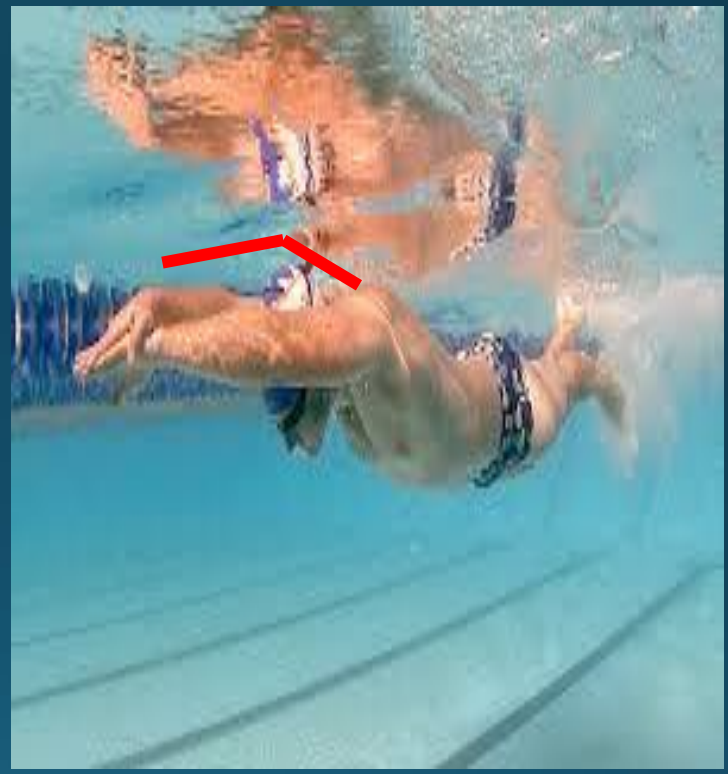
1. Raise – Raise body temp, heart rate, blood flow
2. Mobilise – Move joints through full ROM in dynamic fashion, swim specific movement patterns
3. Activate – Stimulate key muscle groups involved in swim performance
4. Prime – Powerful/dynamic swim activities that improve effectiveness. High force / intensity

GET BODY AND MIND READY TO EXERCISE!

Stretching & Flexibility

- Post pool
- Every day especially when growing
- Yoga / Pilates
- Injury prevention
- Increase mobility of joints e.g. shoulders
- Muscle fibres lengthen causing more force when contract
- Become more streamline and fluid in water
- Range of movement round joints – ankles, shoulders etc

Shoulder Flexibility



Shoulder Flexibility

Stand with your back and buttocks against the wall. Your feet can be slightly in front.

• Place your head (chin tucked), your shoulders, elbows and wrists against the wall with shoulders and elbows at 90 degrees.

• Keeping the entire body in contact with the wall, slowly slide your arms upward along the wall.

• Breathe normally during movement and slowly return to initial position.

• Take your arms as far as possible without the back arching or head dropping forwards

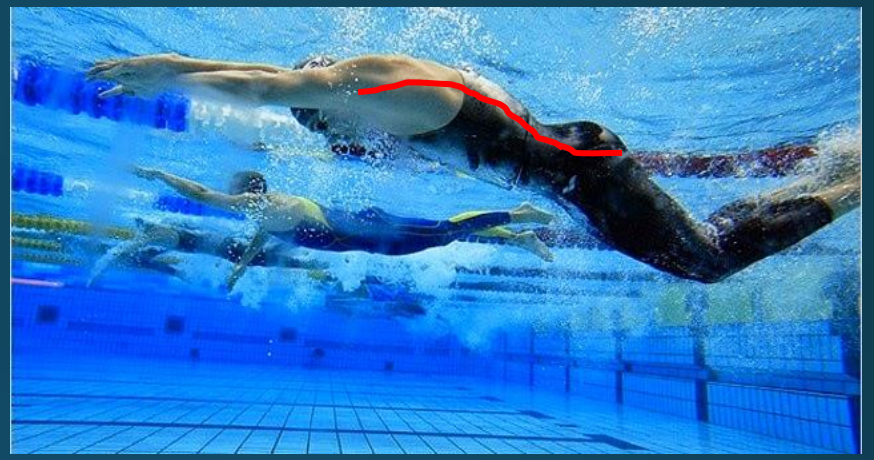
Exercises to Increase Lats Flexibility

On all fours, bring the buttocks onto (or as close as you can) your heels and lengthen the arms (palms up) in front as far as possible without moving the buttocks.
• Keep the head down and aligned with the spine.

Hold a stable object in front of you with one hands with an overhand grip. Lean forward by bending at the hips while pushing the hips backward.
• Turn your hips slightly to one side to accentuate the stretch along the opposite side of your armpit and shoulder blade.
• Hold the position.
• Switch sides.

Thoracic Flexibility

- Flat thoracic spine allows better shoulder and lower back position



Thoracic Flexibility

- Lying on the front
- Streamline the hands and see how far they come off the floor or bed

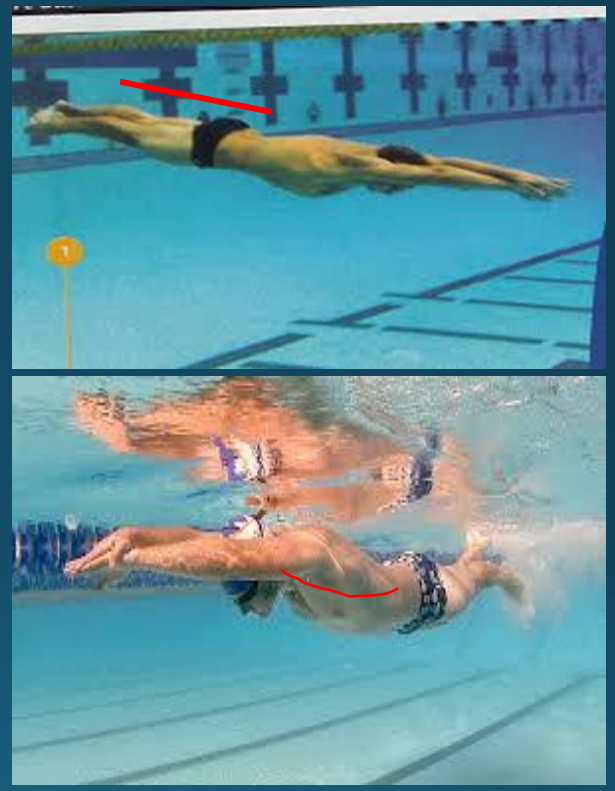
Thoracic Spine Exercises

Lay down on your stomach with a small rolled towel under your forehead.
• Lift the head off the towel and upper chest off the floor.
• Hold slightly then lower.
• Make sure to keep your feet on the floor at all times.
Make sure the lower back does not arch

Lie down with the arms outstretched on a rolled towel placed lengthwise on the spine and make sure that the neck is supported.
• Hold the position and slowly slide the arms upwards towards the head
• Do not let the lower back arch

Lumbar Spine Stability

- Streamline requires a stable flat back position
- Core needs to work to maintain this flat back during underwater phase
- Cannot get good core with tight hip flexors



Lumbar Spine Stability Exercises

Lie on your back and place both knees and hips bent to 90 degrees and both arms pointed
towards the ceiling.

• Activate your lower abdominals (transversus abdomininis) by bringing your belly button inward
and by activating your pelvic floor muscles 20 to 30% of a maximal contraction.

• Maintain a steady abdominal breathing while you lower one leg straight and lower the opposite arm over the head.

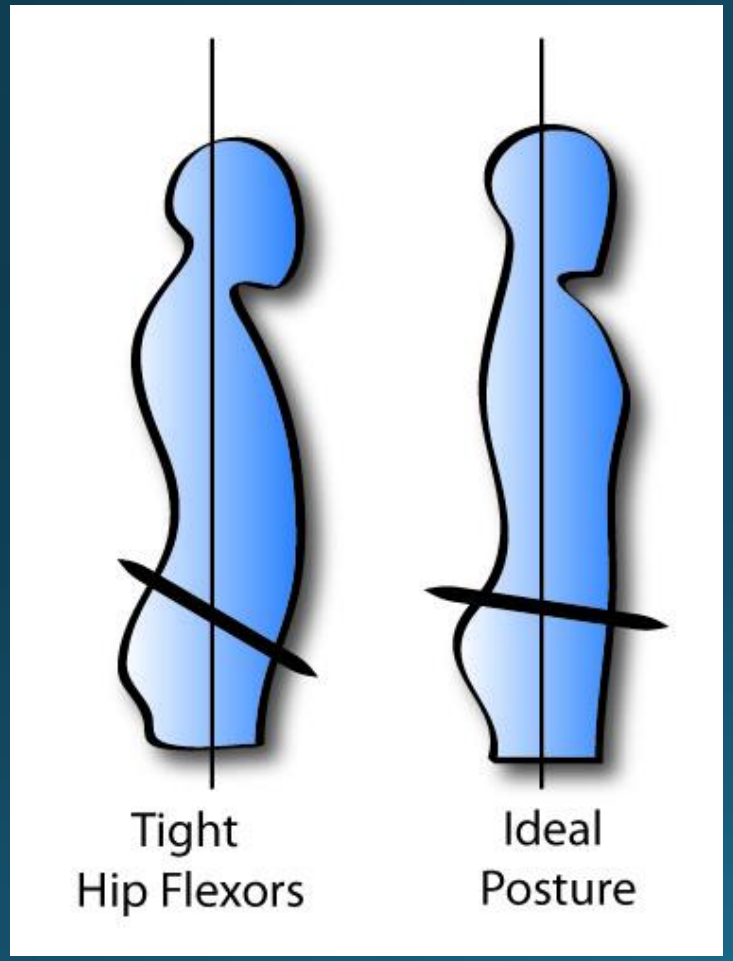
• Just before you touch the ground return the leg and arm to the starting position and repeat with the other leg and opposite arm.

Lumbar Spine Stability Exercises

- Get on your hands and knees (four point position) with your knees directly under your hips
and your hands directly under your shoulders.
- Your back is in a neutral position (slightly arched) and your chin must be tucked in.
- Tighten slightly your abdominals and lumbar muscles, then lift one arm and the opposite leg without allowing the trunk or pelvis to move or rotate.
- Try to grab something far away in front of you with your hand and touch an imaginary wall far behind you with your foot instead of just lifting them up.
- Lower your leg and arm back to the floor and repeat with the other leg and the opposite arm.

Lie on your back with your knees bent and your back in a neutral position (slightly arched).
- Engage your core by recruiting your pelvic floor and transverse abdominis.
- Lift one knee towards your chest to 90 degrees (vertical) without holding it.
- Maintain a steady abdominal breathing while you slide the other foot out until your leg is straight, keeping your back and pelvis completely still.
- Return slowly to the initial position and repeat the entire sequence beginning with the other
leg.

Hip Flexibility



- Tight hip flexors
- Increased lower back arch
- More drag with legs
- More resistance through the water

Hip Flexibility

- Need good hip extension for streamline
- Should keep the thigh on the bed with the other leg fully flexed
- Limited by tight hip flexors

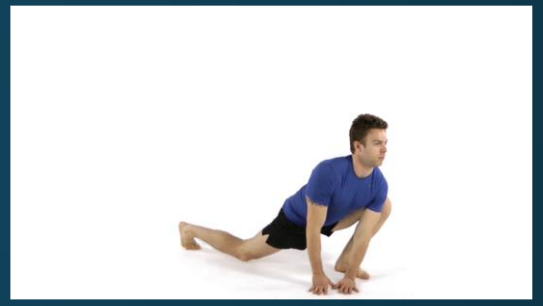
Hip Flexor Mobility Exercises

Kneel on one knee creating a 90 degree angle with the opposite hip and use a chair for support.

• Tilt your pelvis backwards to flatten your lower back and transfer your weight forward until you feel a gentle stretch on the anterior aspect of your hip of the lower leg.

• Maintain the position and relax.

• Maintain your upper body upright and your lower back flatten (not arched).



Walking Spiderman

Take an exaggerated lunge step forward and push the hips forward while keeping the chest up to prevent lower back rounding.

• Bring the hands to the ground (for increased stretch, bring the same-side elbow than the forward leg toward the heel/ground).

• Go as low as your flexibility allows..

• Keep the upper back rounding to a minimum.

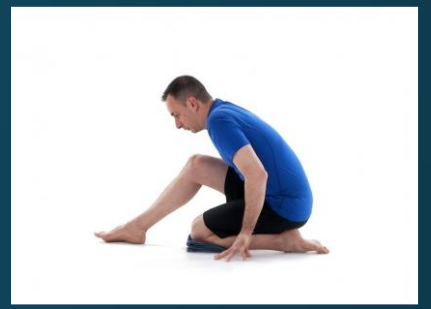
• move forwards with the back leg and take the front leg backwards in one movement

Ankle Flexibility

- Better ankle flexibility reduces drag

Ankle Flexibility

Stand beside a chair and place your foot on the chair as shown.
• Press on your heel to increase the stretch and maintain the position for 30 seconds
• Relax and repeat.



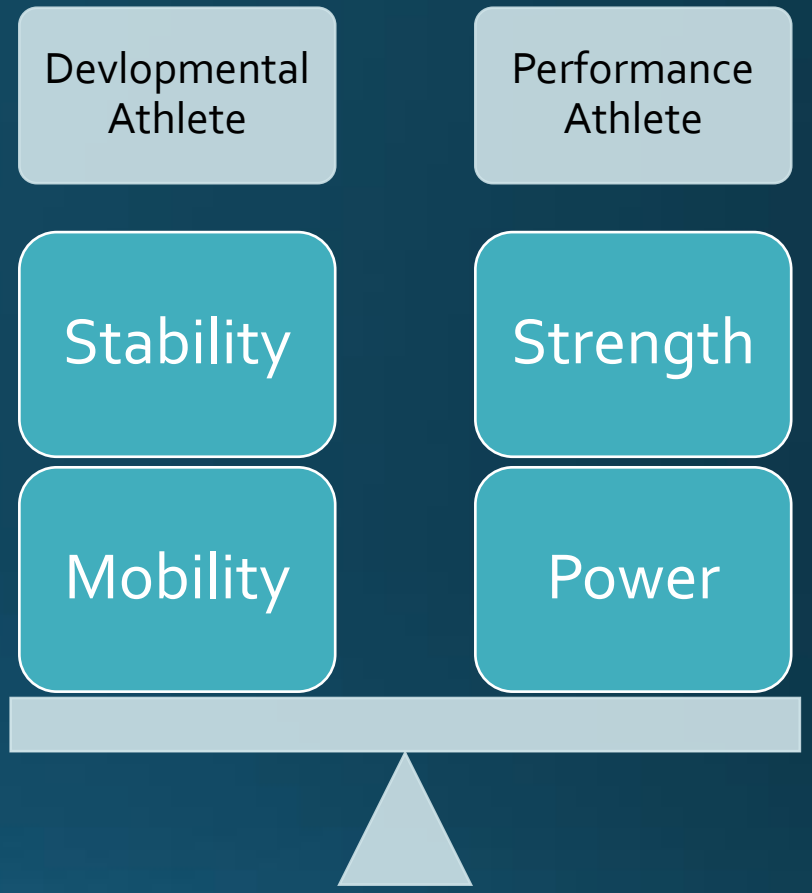
Kneel on one knee and slowly sit back, lowering your buttocks towards your heel until a
stretch is felt on the front of your ankles.
• Maintain the position for 30 seconds and relax.

Self checks / screening

We screen to ensure that we have an effective and appropriate functional base on which we can build.

We screen to identify 'weakness' or restrictions that may limit performance development or lead to injury.

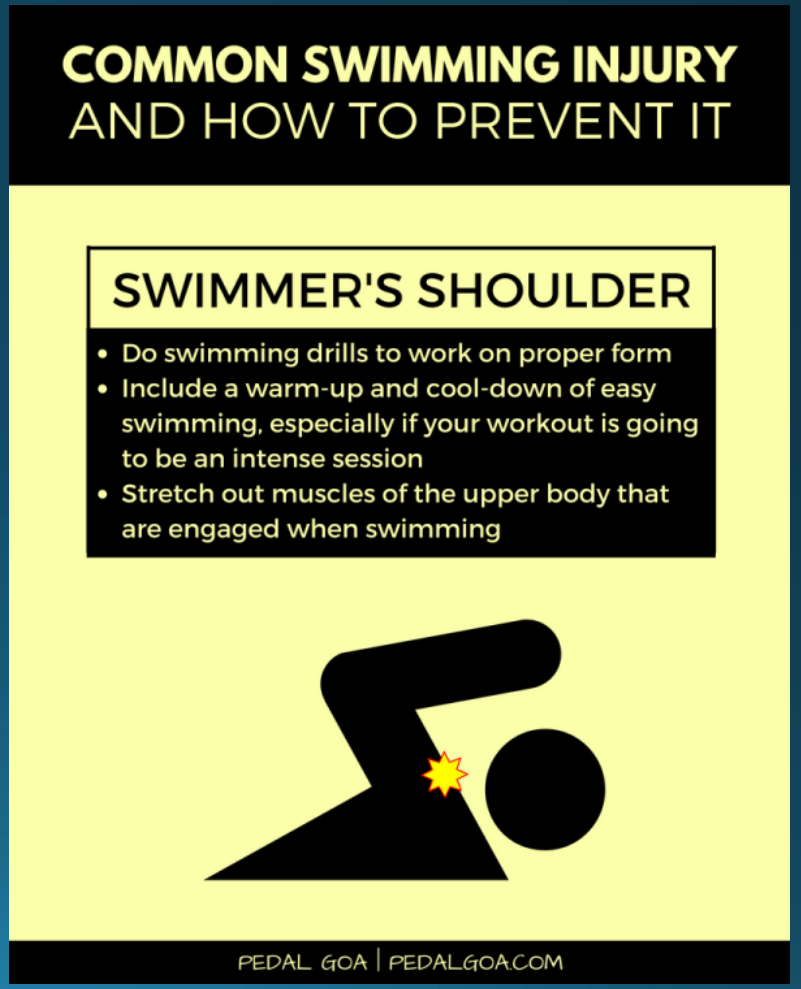
Its an opportunity to fix the issues identified in the screen so that swim performance can be progressed in the pool.



Injury Prevention

Stability Mobility Strength Co-ordination

- Land and pool warm ups of all muscles, joints and ligaments
- Risk identification and then management
- Understand demands of the strokes
- Understand the demand of movements in skills
- Core strength and posture
- Correct technique



How to Affect Technical Change

Identify Technical Stroke Fault

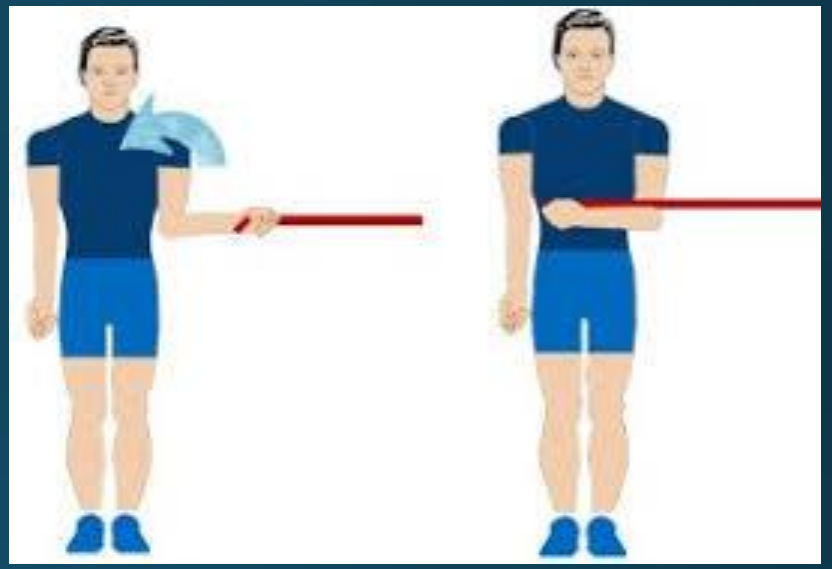
Reinforce Correct Movement Pattern (Water)

Reinforce Correct Movement Pattern (Land)

Remove Physical Restriction preventing the execution of correct technique

Injury Management

- Assessments and diagnosis
  - Broken bones / soft tissue damage / repetitive injury
- Treatment & Rehab planning
- Clinical Treatment
- Rehab exercise prescription
- Monitoring
- Rest



Eatwell Guide

Use the Eatwell Guide to help you get a balance of healthier and more sustainable food. It shows how much of what you eat overall should come from each food group.

Check the label on packaged foods

Each serving (150g) contains

Energy	Fat	Saturates	Sugars	Salt
1046kJ 250kcal	3.0g LOW	1.3g LOW	34g HIGH	0.9g MED
13%	4%	7%	38%	15%

of an adult's reference intake
Typical values (as sold) per 100g: 697kJ/ 167kcal

Choose foods lower in fat, salt and sugars

Eat at least 5 portions of a variety of fruit and vegetables every day

Fruit and vegetables

Raisins
Chopped tomatoes
Frozen peas

Choose wholegrain or higher fibre versions with less added fat, salt and sugar

Potatoes, bread, rice, pasta and other starchy carbohydrates

Potatoes
Whole grain cereal
Cous Cous
Porridge
Whole wheat pasta
Bagels
Rice
Spaghetti

Beans, pulses, fish, eggs, meat and other proteins

Lentils
Beans lower salt and sugar
Tuna
Lean mince
Plain nuts
Chick peas

Eat more beans and pulses, 2 portions of sustainably sourced fish per week, one of which is oily. Eat less red and processed meat

Dairy and alternatives

Low fat soft cheese
Semi skimmed milk
Soya drink
Plain Low fat Yoghurt

Choose lower fat and lower sugar options

Oil & spreads

Veg Oil
Lower fat spread

Choose unsaturated oils and use in small amounts

6-8 a day

Water, lower fat milk, sugar-free drinks including tea and coffee all count.

Limit fruit juice and/or smoothies to a total of 150ml a day.

Sauce
Crisps

Eat less often and in small amounts

Per day 2000kcal 2500kcal = ALL FOOD + ALL DRINKS

Source: Public Health England in association with the Welsh Government, Food Standards Scotland and the Food Standards Agency in Northern Ireland

Nutrition for Swimmers—Breakfast Ideas


Banana Bread


Muesli and Berries


Low fat breakfast Bar


Waffles and Strawberries


Scrambled Egg—On Toast


Fresh Fruit Salad


Toast with Jam


Poached Egg—On English Muffin


Fruit Smoothie—Low fat milk, yoghurt and fruit


Pancakes & Berries


Omelette—Ham, Cheese


Porridge—Honey and Sultanas


French Toast with Berries


Yoghurt and berries


Low Fat Muffins

www.NutritionForSwimmers.com

12 FOODS TO EAT FOR ENERGY

facebook.com/WorkingOut101


HONEY


APPLES


EGGS


SWEET POTATOES


SALMON


ORANGES


BANANAS


OATS


BEANS


SPINACH


YOGURT


ALMONDS

Foods to Refuel

1 

Lean Protein

Helps maintain and grow muscles

Healthy Fats

Provides longer lasting engery for your workouts

2

3 

High in Vitamin C

Important for joint health and to keep your immune system healthy

High in Iron

Important for red blood cell production and to prevent fatigue

4

5 

Fluids

Be stronger, faster, and last longer by drinking enough and at the right time

Vitamins D & K

Important for bones and muscles

6

7 

Good Grains

Provide a more rapid form of energy to fuel your muscles during workouts

High in Potassium

Important for muscle contraction and fluid balance

8

Eating at Competition

The nutritional demands of a swim meet are quite different to a normal training day. You should carefully consider what and when you are eating in order to maximise your racing performance.

Here's a quick guide of nutrition Do's and Don'ts on race day

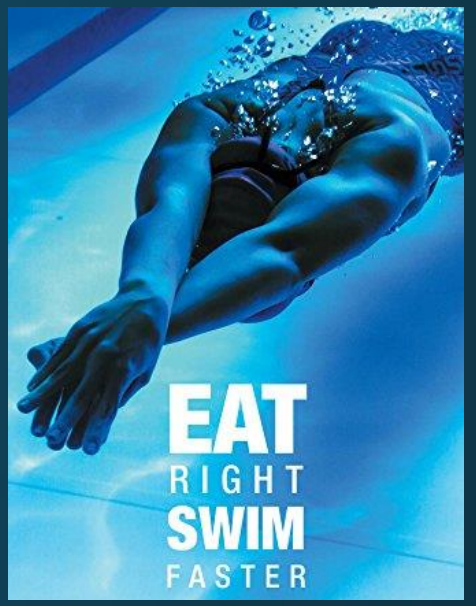
RACE DAY NUTRITION DO'S & DON'TS		
✓	**KEEP THE QUALITY HIGH**	Race day isn't an excuse to eat junk food and low quality snacks. Continue to focus on nutrient-dense foods just as you would at home.
✗	**OVEREAT**	Unless you are swimming multiple events or rounds in the same day then your energy needs will probably be lower than a training day.
✓	**HAVE A PLAN**	Don't leave things to chance. Bring snacks/meals with you and always know where you can access good quality food close to the pool.
✗	**PANIC EAT**	Don't cram cereal bars and energy drinks just before you race. These won't have time to digest and may cause stomach upset.
✓	**USE FLUIDS IF YOU'RE FELING NERVOUS**	Milk, smoothies and juices can be great sources of nutrition if you are nervous and don't feel comfortable eating.
✗	**EXPERIMENT WITH NEW FOODS**	Always trial new foods in training first, never on race day.
✓	**SAVE BIG MEALS FOR AFTER YOUR RACE**	Eat more after you race instead of before. Your biggest meal of the day should be at the end of the day after you have finished racing.
✗	**FORGET TO DRINK**	Keep sipping on water throughout the meet. You will lose a lot of fluid even when not racing.

PRE-TRAINING SNACKS

Topping up **glycogen** stores before training can **enhance performance**. Aim for around **1g/kg of carbohydrate 30-60min** before training plus some fluids to ensure you start training well hydrated.

Here are some ideas along with their approximate **carbohydrate content per serving**.

Nutrition



Sources: Vitamins and Minerals

Calcium:

Dairy • Dark leafy green vegetables • Fortified Dairy alternative

Iron:

Red meat • Dark leafy green vegetables

Omega 3:

Oily fish (salmon, tuna, mackerel, anchovies, sardines) • Seeds (flaxseeds, chia seeds)

Vitamin D:

Sunlight • Oily fish (salmon, tuna, mackerel, anchovies, sardines) • Egg yolk • Dairy • Mushroom

Nutrition

Sources: Carbohydrates

Pasta

Seeds / Grain breads / bagels etc

Potatoes

Cereals

Grains:

• Rice • Quinoa • Pearl Barley • Cous cous • Bulgar Wheat

Sources: Proteins

Dairy Eggs Meat / Fish Nuts and Seeds Beans, Lentils, Pulses

BASICS ABOUT...

PROTEIN

WHAT?	Proteins are fundamental structural and functional elements within every cell of our body – therefore they are essential for growth, repair and the maintenance of good health. Proteins are long chains of amino acids, when we eat proteins we breakdown these chain down into the constituent amino acids and use them to build new proteins for our body.
WHY?	Protein is the second most abundant compound in the body (following water) and plays both structural and functional roles. For example, the protein in our organs, hair and skin plays an important structural role whilst the proteins in our muscles allow them to contract and produce force.
HOW?	Our protein needs change over the course of our lifetime but a growing and exercising body will need more protein for optimal repair and growth.

Amino Acids and Protein Sources

There are 20 different amino acids of relevance to the human body. Of these, seven of them are considered essential (i.e. we must consume them from our diet). Protein from animal sources contain the full range of essential amino acids whereas plant-based sources are often missing some or do not have them in sufficient amounts.

Some excellent sources of protein which promote repair & recovery:

Dairy & Egg

Beef, Poultry & Seafood

Nuts & Seeds

Beans & Pulses

Each gram of protein provides 4kcal

Some plant-based proteins complement each other to provide all the amino acids e.g. beans on toast

Protein supplementation isn't necessary to meet your daily protein needs!

The RNI for protein is 0.75g per kilogram of bodyweight per day for adults. But swimmers will need more to optimally grow and recover.

DAILY INTAKE	**1.4-2.0g/kg/day** i.e. 98-140g per day for a 70kg swimmer, this is the same for males & females
AROUND TRAINING	**~0.3g/kg** i.e. a meal or snack containing ~21g protein (for a 70kg swimmer) is optimal to maximise muscle repair after training

Nutrition

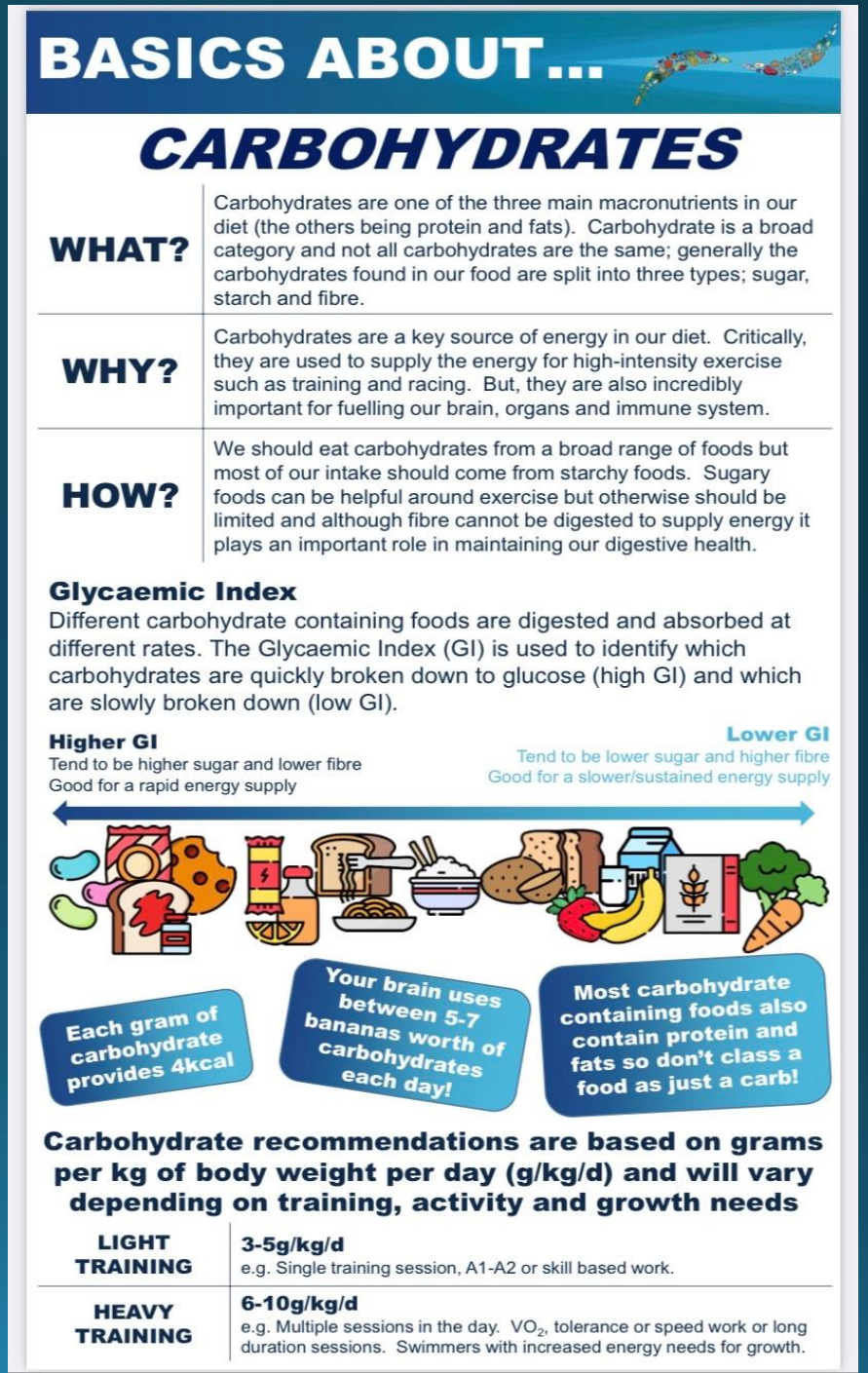
High Energy Foods

Carbs:

Bananas, Dried fruits, Grains, Sweet potatoes, Bagels, Breads, Flapjack, Smoothie

Protein & Fat:

Eggs, Nuts & nut butter, Oils .Oily fish, Meats, Cheese ,Smoothie, Greek yoghurt. Avocado



BASICS ABOUT...

CARBOHYDRATES

WHAT?	Carbohydrates are one of the three main macronutrients in our diet (the others being protein and fats). Carbohydrate is a broad category and not all carbohydrates are the same; generally the carbohydrates found in our food are split into three types; sugar, starch and fibre.
WHY?	Carbohydrates are a key source of energy in our diet. Critically, they are used to supply the energy for high-intensity exercise such as training and racing. But, they are also incredibly important for fuelling our brain, organs and immune system.
HOW?	We should eat carbohydrates from a broad range of foods but most of our intake should come from starchy foods. Sugary foods can be helpful around exercise but otherwise should be limited and although fibre cannot be digested to supply energy it plays an important role in maintaining our digestive health.

Glycaemic Index

Different carbohydrate containing foods are digested and absorbed at different rates. The Glycaemic Index (GI) is used to identify which carbohydrates are quickly broken down to glucose (high GI) and which are slowly broken down (low GI).

Higher GI
Tend to be higher sugar and lower fibre
Good for a rapid energy supply

Lower GI
Tend to be lower sugar and higher fibre
Good for a slower/sustained energy supply

Each gram of carbohydrate provides 4kcal

Your brain uses between 5-7 bananas worth of carbohydrates each day!

Most carbohydrate containing foods also contain protein and fats so don't class a food as just a carb!

Carbohydrate recommendations are based on grams per kg of body weight per day (g/kg/d) and will vary depending on training, activity and growth needs

LIGHT TRAINING	**3-5g/kg/d** e.g. Single training session, A1-A2 or skill based work.
HEAVY TRAINING	**6-10g/kg/d** e.g. Multiple sessions in the day. VO_2, tolerance or speed work or long duration sessions. Swimmers with increased energy needs for growth.

BREAKFAST IDEAS

Eating before an early morning session can be challenging. Often our **appetite** is low and **digestion** rate slowed so eating a meal is uncomfortable and can distract from training.

However, if performance is the focus then an early morning breakfast **might be critical**. When we wake following the overnight fast the carbohydrate reserves (**glycogen**) in our muscles may be at a moderate level and sufficient for training but our **liver glycogen** content is low. This is important because the liver provides glucose to our **brain** and to maintain a stable blood glucose level which if compromised will lead to a **drop in performance**.

So, the optimal early morning breakfast needs to be **convenient**, easy to **digest** and **high carbohydrate**. Whilst toast, fruit and cereals are fine, here are some of our favourite alternative ideas…

Higher Carb

Aim for 0.5-1.0g/kg of carbs

Lower Carb

Overnight Oats – *Store as single-serve portions in Tupperware*

Banana & Oat Pancakes – *Make a batch or keep batter in the fridge for a quick fry in the morning*

Fruit & Nut Mix – *Convenient but high fibre so just one big handful*

Smoothies – *Prep the ingredients the night before then blend and go*

Breakfast Muffins – *A great grab and go snack*

Fruit Pouches – *Quick and easy to digest*

Fresh Fruit Juice – *Simple but effective*

FRUIT & VEG FOR FAST SWIMMING!

We've all heard the message about eating your 5-a-day *(and for elite swimmers we recommend >7 per day!)* but have you ever stopped to think about how fruits and veg may actually help your performance?

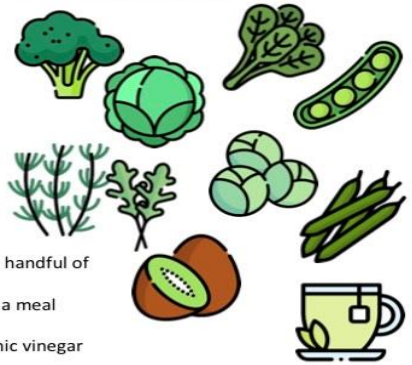
Here we explore some of reasons why this simple message can have a big impact…

Only 8% of 11-18 year olds meet the 5-a-day recommendation

FRUIT & VEG FOR FAST SWIMMING

GREENS

- Green leafy veg is rich in **Vitamin C** – gram for gram there is more than double the Vitamin C in kale than an orange!
- Green veg is also great for **Vitamin K** which is essential for developing strong bones – this is incredibly important for younger swimmers during periods of growth!
- Green tea is rich in polyphenols called catechins which have **anti-inflammatory** and **antioxidant** effects which may improve recovery!



- Increase your green leafy veg intake by throwing a handful of **spinach** into your **smoothie**
- Microwave **frozen peas** for a 3-minute addition to a meal
- Add chopped **broccoli** to a stir-fry
- Make a **side salad** of **rocket**, parmesan and balsamic vinegar

FRUIT & VEG FOR FAST SWIMMING

REDS

- **Lycopene** is the pigment that gives many fruits their pink/red colour and may have cardiovascular benefits
- **Pomegranates** contain a potent **antioxidant** called punicalagins which may enhance endurance and strength performance and post-exercise **recovery**!
- Concentrated **cherry** juice contains antioxidants which may **reduce muscle damage** and improve **sleep**
- A single red **pepper** will give you **double** your daily requirement for **Vitamin C**!

- Top a tortilla wrap with **tomato puree, red peppers, chillies** and cheese then cook in the oven for 10min for a quick and tasty **pizza**!
- If your fresh **strawberries** and **raspberries** are starting to go off then put them in the **freezer** to add to smoothies, this will help reduce any further degradation of the nutrients

FRUIT & VEG FOR FAST SWIMMING

ORANGE

- **Bromelain** from pineapples can help with **digestion** and might also help reduce **nasal congestion**!
- A single carrot will give you more than **double** your daily requirement for **Vitamin A** which plays a key role in **immune function**
- **Turmeric** contains a powerful **antioxidant** which can reduce **inflammation** and may decrease joint pain
- **Sweet potatoes** are a great source of **carbohydrates** to help fuel training but they also pack a big hit of **Potassium and Vitamins A, E & C**

- Carrot and sweet potato **soup** is not only delicious but a **nutrition powerhouse!!**
- Make a **salsa** from mango, sweetcorn, pepper, onion and lime juice – this goes great with chicken or fish!
- Orange juice is a great option to replenish energy stores after training

FRUIT & VEG FOR FAST SWIMMING

WHITE

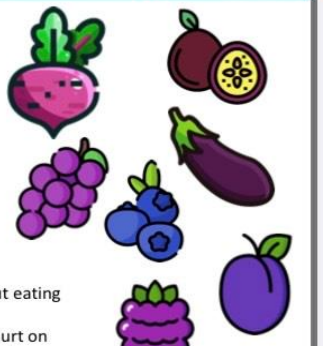
- **Garlic** contains a powerful molecule called **allicin**, which gives its characteristic smell and taste, but also helps **relax blood vessels** and support **immune** function
- **Quercetin** is a flavonoid found in **apples** and **onions** with strong anti-inflammatory effects which may decrease the frequency of upper respiratory infections (coughs, colds, sore throat…)
- A large **banana** will give you the same amount of **carbohydrate** as a typical energy gel!

- Frying **onion** and **garlic** then adding tomatoes is the start to many of our favourite **Italian** dishes
- **Ripe bananas** are perfect for **baking** – try making banana bread, banana muffins, banana cookies, banana pancakes, banana bars…
- Take the opportunity when your oven is on to also **roast** some **root vegetables** – they are great to have clod for leftover lunches

FRUIT & VEG FOR FAST SWIMMING

PURPLE

- **Beetroots** are rich in **nitrates** which promote dilation of blood vessels and enhance the delivery of **oxygen** to our muscles during exercise
- **Plums** have a great **fibre** content for their size and support good gut health
- **Blackcurrant extract** may improve exercise performance and recovery through its high content of anthocyanins which have **antioxidant** effects
- **Blueberries** have a positive effect on brain health so they may be of greater benefit to older swimmers at risk of cognitive decline



- **Frozen grapes** make a great sweet snack
- Storing **blueberries** in the fridge will help them last **longer** but eating them at room temperature enhances their **flavour**
- Make **yoghurt bark** by spreading some natural or Greek yoghurt on

Hydration

Fluids: What?

Water, no added sugar squash, tea, coffee, fruit juice, milk…

When? Sip-Sip all day

For a sports person, dehydration can then cause these effects:

- > lack of performance
- > loss of strength and stamina
- > lack of concentration
- > tiredness
- > muscle cramps
- > muscle damage

Hydration Urine Colour Chart

1		
2		If your urine matches the colours 1,2 or 3, you are properly hydrated.
3		Continue to consume fluids at the recommended amounts.
4		If your urine colour is below the RED line, you are DEHYDRATED.
5		You are now at risk for cramping and/or heat illness
6		YOU NEED TO DRINK MORE WATER
7		
8		

BASICS ABOUT...

HYDRATION

WHAT?	Water is the most abundant compound in the human body and by weight the average adult is 50-65% water (higher in males and lower in females). Water is essential for life and amongst its many important roles is its role in regulating body temperature.
WHY?	We lose a lot of water through sweat, especially when training hard and/or in the heat. Most of the water we need must be provided by our food and drink. If we don't consume enough water we become dehydrated which results in impaired performance and cognitive function.
HOW?	We consume around 20% of our water from food and the rest from drinks. A wide range of drinks contribute to our fluid intake; water, squash, tea, coffee, smoothies, fruit juice, milk… The recommended intake for an adult is around 1.5-2L per day but swimmers will need more to counter the additional fluid lost from sweat.

Dehydration & Performance

During exercise, heat is produced by our working muscles and this heat needs to be dispersed to ensure our core temperature does not exceed a safe level. This heat is lost via our sweat evaporating from our skin. Our body can tolerate a large amount of sweat loss but generally a loss greater than 2% of body weight compromises exercise performance. These performance decrements have been shown in endurance and strength activities.

Monitoring Hydration Status via Urine Colour and Volume

Urine colour and volume is a good indicator of hydration status. A pale straw colour (like the top of the chart) and high urine volume indicates well hydrated. Whereas a dark gold or brown colour (like the bottom of the chart) with a low volume (may also be strong smelling) indicates dehydration.

Water is more than good enough to hydrate in most circumstances

BEFORE TRAINING	Always try to start the session well-hydrated. Aim to consume ~500ml 30-60min before the session.
DURING TRAINING	Drink to thirst during the session. Consuming too much can be uncomfortable so let thirst be your guide unless it's particularly hot or intense.
AFTER TRAINING	Aim to rehydrate with 125% of your fluid losses. The difference in your weight before and after the session will represent your fluid loss. Multiply this difference (in kg) by 1.25 to tell you how many litres of fluid to consume to effectively rehydrate. e.g. 70kg before, 69kg after = 1kg lost in sweat. 1 x 1.25 = 1.25L to rehydrate

Sleep & Tiredness

Sleep deprivation has also been seen to decrease production of glycogen and carbohydrates that are stored for energy use during physical activity. Therefore, less **sleep** increases the possibility of fatigue, low energy, and poor focus at competition time. It may also slow recovery post-training or after a **swim** meet

The harder you train the more sleep you need!

More sleep makes you mentally tougher

30min naps in the day can help

Time management – studies, food, time to go to bed

Tired Habits

When you are tired you are more likely to:

- Increase carbohydrate intake
- Crave sugary foods - vending machines.
- Go for easy unhealthy options
- Eat quick unhealthy/prepared meals due to a lack of motivation to prepare nutritious meals.
- “Feel good foods” are common go to options
- Snack on high fat/convenience food.
- Increase caffeine intake - Rely on caffeine to stay awake or wake up for sessions

CHECKLIST FOR ATHLETES TO CONSIDER TO ENHANCE SLEEP

1 Quiet environment

2 Maintain room temperature (~18°C)

3 Ensure that bedding/clothing does not cause an environment that is too hot

4 Sleep routine: consistent time each night for falling asleep to begin and waking up

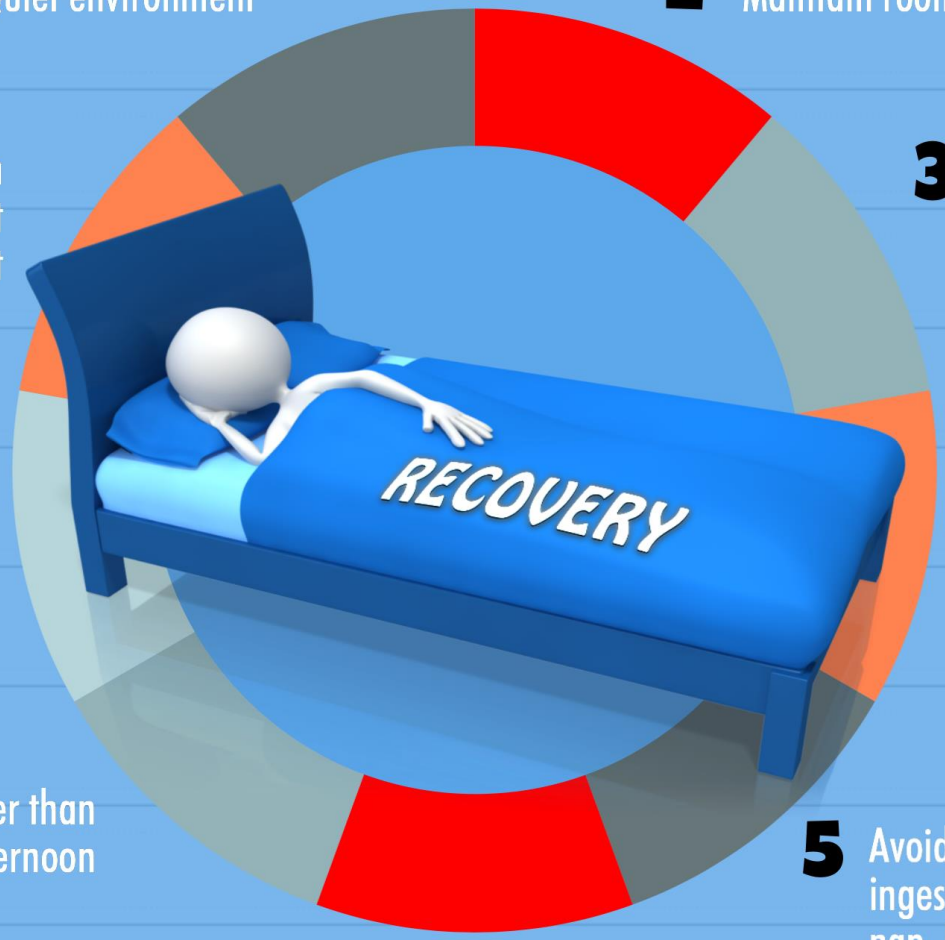
5 Avoid caffeine and food/fluid ingestion leading up to sleep (no nap, however)

6 Avoid the use of computer, tablet, TV before sleeping

7 Napping not later than midafternoon

8 At least 7 h sleep a night

9 Ensure dark room with no light source present



NSCA® NATIONAL STRENGTH AND CONDITIONING ASSOCIATION

Reference: by Marshall & Turner, Strength Cond J, 2016

Designed by @YLMSportScience

Foods that promote sleep

- Milk
- Meat
- Fish
- Poultry
- Eggs
- Beans
- Peanuts
- Cheese
- Leafy green vegetables
- Bananas
- Tomatoes
- Oatmeal
- Sweet corn
- Ginger

Screen Time

•No TV, telephone or computer in bed! The blue light from the screens has been shown to have a negative effect on our natural sleep patterns. Go to bed with a clear and focused mind.

Recovery

- Adequate **recovery** is an **integral part** of a swimmers training regime. Recovery includes a variety of processes:
- - **Refuelling:** Carbohydrate stores
- - **Rebuild & repair:** Building new muscle & cells to aid adaption to training
- - **Rehydrating:** Replacing fluid & electrolytes lost in sweat
- Optimal recovery strategies aid adaptation helping the body to become fitter, stronger and faster. It also helps the immune system to manage the stress of training.
- Timing is key to optimal recovery and nutritional recovery strategies should begin within the first hour after training!

3Rs OF NUTRITION RECOVERY

Want to optimise recovery between sessions, day-to-day or week-on-week?
Here we highlight the key areas of nutrition to focus on – the 3Rs of **Refuel**, **Repair** and **Rehydrate**.

3Rs OF NUTRITION RECOVERY

REFUEL
Replacing the carbohydrate energy reserves which were depleted from training

REPAIR
Begin the process of repairing the muscle tissue that was damaged during training

REHYDRATE
Replace fluids that were lost from sweat in training

WHAT IS RECOVERY??

2 simple questions can help direct your recovery needs...

WHAT ARE YOU RECOVERING FROM?

Consider the demands of the training session – the type, intensity and duration.

WHAT ARE YOU RECOVERING FOR?

How much recovery time do you have? What are the restrictions over this time? What session do you need to be ready for?

REFUEL...

Glycogen Storage
Muscle: ~300g
Liver: ~100g

60-90min Mod-High Intensity Exercise

AIM *Refuel glycogen reserves so they aren't limiting in the subsequent training session*

The **rate** of glycogen replenishment is **faster** in the hours **post-exercise**.

Therefore it is **advisable** to consume **carbohydrate** in the **post-training** meal/snack.

MAXIMISING REFUELLING RATE

Up to **1.2g/kg** Carbohydrate **per hour** for **4 hours** post-exercise

BODY WEIGHT	CHO/h	Total CHO
50kg	60g	240g
60kg	72g	288g
70kg	84g	336g
80kg	96g	384g

REPAIR...

Exercise-induced Muscle Damage (**EIMD**) is a trigger for Muscle Protein Synthesis (**MPS**)

MPS is **elevated** for **12-48h** post-exercise

Consuming protein is also a trigger for **MPS**

AIM *Combine the MPS-stimulating effects of exercise and protein intake to maximise muscle repair and growth*

~1.6 g/kg/day of protein to optimise muscle repair and growth

~0.3g/kg of protein to maximally stimulate MPS in a meal

Address **total daily** protein intake **first** and in doing so incorporate protein in the post-training recovery meal/snack

REHYDRATE...

Sweat loss during training can result in **dehydration** if the rate of fluid **loss** is not matched by the rate of fluid **intake**

Small amounts of dehydration may be tolerable but will **compromise recovery** and **performance** if **ignored**

Start every training session in a **euhydrated** state in order to minimise the chances of dehydration impacting performance

AIM *Replace lost fluids from sweat to avoid post-training dehydration and enter the next session in a euhydrated state*

MONITOR HYDRATION STATE THROUGH BODY WEIGHT

Ingest **150%** of the fluids lost in the 5h post-exercise

Body weight before (kg) – Body weight after (kg) x 1.5 = Fluid requirement (L)

Pre: **70kg**
Post: **69kg**

Net Loss = **1kg**
1kg x 1.5 = **1.5kg**

1.5kg = 1.5L fluid to be consumed

Hydration

Even without any physical activity, your body loses water.

It's important to replenish the water lost by drinking frequently.

Recovery

Sleep

- Sleeping is a way for your brain to recharge throughout the night, as it is actively forming new pathways to help learn and retain information for the next day. This can include perfecting stroke technique and efficiency in the water.

Problems of sleep deficiency

1 – You get sick and injured more easily

2 – Makes you moody and slow

3- You have a slower reaction time

Solutions:

- Set a schedule
- Keep a sleep journal
- Have a sleep/bed time routine

Skin

- Dehydration makes skin more likely to be damaged by chlorine. It breaks down the skin's natural defences, so ensure you drink plenty of water during a training session and ensure your urine is never darker than light yellow.
- Showers to ensure your skin has been thoroughly washed with fresh water and no chlorine is bound to your skin's surface.
- Wash costumes thoroughly as soon as possible after the swim. Not only will they last longer but skin rashes are often worse under the costume.
- Pay particular care to those areas of your skin where there is chaffing or rubbing. These places are particularly susceptible so protect them with Vaseline.
- It is worth using an emollient that will hydrate the skin, keep it soft and in good condition. The cheapest is Aqueous Cream but more effective is E45 cream. Your pharmacist can supply these. In all cases, apply the creams liberally as soon as possible after the swim, repeated as often as necessary and rubbed in thoroughly.
- If you have some very dry eczematous patches, 0.5% hydrocortisone can be bought from your local chemist. Applied twice daily, this will soon clear up the patch with no risk of skip atrophy. Any worse than this and you will need to see your own GP.

Personal Management

- Maintain a well-balanced diet adequate energy, carbohydrate, protein, fat , vitamins & minerals
- Carbohydrate solution pre-, during and post training may help in reducing immune suppression
- Allow sufficient time between training sessions for recovery
- Get regular and adequate sleep every night and additional recovery at weekends
- Maintain good hydration
- Reduce life/social/psychological stress; good time management is one of the most important skills an elite swimmer can learn

Growth

Top 100 Times for all events	% of Top 100 swimmers who become Top 100 at age 17-18	
Age Group	Girls	Boys
10 & Under	10.3%	13.2%
11 -12	20.3%	12.6%
13 -14	36.9%	31.1%
15 - 16	49.7%	53.5%

Illnesses

BASICS ABOUT...

DIET & IMMUNE SYSTEM

WHAT?	Our immune system is responsible for the coordinated and multi-layered defence against attack from pathogens such as viruses and bacteria. Our diet is important to ensure all aspects of this system have a sufficient supply of nutrients to function optimally.
WHY?	Swimmers are at an increased risk of illness leading to time out of the water and compromised training or racing. A swimmer's diet can either stimulate or inhibit immune function. Immune cells need energy (from carbohydrates, proteins and fats) and multiple nutrients to divide and produce protective chemicals.
HOW?	A well-planned diet focused on **avoiding under-nutrition** can reduce the frequency and severity of illness.

The BIG 6...

The following 6 areas are critical to immune function. These are the areas which should be addressed first when considering how a swimmer's diet can impact illness risk.

1. Energy Availability

Our immune system demands a lot of energy so the first focus should be on eating enough. Prolonged periods of negative energy balance will compromise immunity.

2. Carbohydrate Availability

Carbohydrates are the preferred fuel source for much of your immune system and therefore a diet low in carbohydrates will compromise immunity.

3. Meet Protein Requirements

Protein intakes within 'normal' swimmer ranges of 1-3g/kg/d are likely to be sufficient but protein intake should be split fairly evenly throughout the day.

4. Include Omega-3 Fats

Aim to include omega-3 fats at least three times per week from sources such as oily fish (salmon, mackerel, trout), nuts and seeds (walnuts, flaxseed, pumpkin seeds) and omega-3 enriched eggs.

5. Minimise Dehydration

Stay well hydrated throughout the day but most importantly around exercise. Dehydration can decrease our ability to block infections – particularly in our airways.

6. Eat a Wide-ranging Diet

Our immune system needs a wide variety of nutrients to function and the best way to achieve this is to consume a wide-ranging diet. Aim for lots of plant-based foods and 8+ servings of fruit and veg each day.

A carbohydrate-rich meal or snack before high-intensity or prolonged training

Carbohydrates should be consumed during high-intensity or prolonged sessions

Eating shortly after training is a good way to support immune function

Swimmers Ear

The most common swimmer's ear symptoms, which may manifest themselves in varying degrees or not at all, are:

- Itching
- Pain
- Clogged ear canals
- Sensitive outer ear
- Muffled hearing
- Mild cases may grow worse if untreated, and worse cases may cause patients to experience swelling, or even a fever.

Ear drops as preventative and relief

Mental Health

And it's not always easy to balance training and competing alongside study and life! Approximately one in four people will experience a **mental health** problem in any given year – that could be two or three in every race at your next **competition**.

In the moment, swimming is relaxing and releases endorphins. It'll boost your mood and help self esteem.

Your mental health is ever changing. Many different factors and life events affect it in positive and negative ways.