

NUTRITIONAL STRATEGIES FOR WATER POLO PLAYERS

BEFORE THE EVENT

BALANCED MEAL (2-3 hours before the event/ training)

The goal of the pre-exercise meal is to ensure that you start training with adequate energy levels (both ATP and glycogen), without experiencing gastro-intestinal discomfort. There are a few scientifically based guidelines that the pre-event meal should preferably comply to. These are listed below.

GOALS	GUIDELINES
Adequate energy	- Ensure adequate calorie intake - Adequate amounts of slow to intermediate carbohydrates 2-3hours before the events AND both slow/ intermediate and fast releasing carbohydrates 30min before the event.
Stabilized blood glucose level	- Include slow and/ or intermediate carbohydrates - Include moderate amounts of protein - Include small amounts of fat
Optimal hydration status	- 200-600ml water/ fluid
Prevent gastro-intestinal discomfort	- Avoid large quantities of fat and fibre - Avoid foods known to upset your stomach - Avoid food that you are allergic or intolerant to. - Avoid gas-forming food such as e.g. legumes, cabbage, broccoli, cauliflower, Brussel sprouts, cucumber, onions and artificial sweeteners e.g. sorbitol and mannitol.

SAMPLE MEAL PLAN (2-3 hours before):

1-1½ cup **PVM MEALIE MEAL MIX** + 200 ml Fruit juice
OR
 1-1½ cups muesli + 250ml low fat yoghurt + 1-2 tsp sugar/honey/syrup+ 200 ml fruit juice
OR
 4-6 slices rye/wholegrain bread/seed loaf OR 2-4 brown rolls
 + 5 slices lean ham OR 1-2 hamburger patties OR ¾ cup grated cheese (preferably low fat e.g. Mozzarella, Edam, Ricotta)
 + ½ cup salad/veggies (optional)
 + 1 large fruit (e.g. apple) OR 200 ml fruit juice
 + 2 tsp margarine / butter (spread thinly) or oil (e.g. olive oil) for meal preparation
OR
 If not able to eat (e.g. due to nerves or unavailability of food):
 2 portions **FUSION DRINK**
 + 1 **PVM ENERGY BAR**
 + 1 large fruit (e.g. apple/pear/peach) OR 200 ml fruit juice

To drink: Mineral water (plain/ flavoured) or plain water or diluted fruit juice. **Avoid** sugar-containing carbonated drinks or large quantities of fruit juice, in order to prevent severe blood sugar fluctuation causing sluggishness/fatigue/poor concentration during competition.

SUPPLEMENTS (30-45 minutes before):200-500ml **OCTANE XTR** (take a few sips every 10-15 minutes)OR 1 **OCTANE GEL** + 250-300 ml waterOR 1 **PVM ENERGY BAR**

OR a combination of above (Keep in mind, no more than 30-60 g carbohydrates per hour)

DURING THE EVENT/ TRAINING

Sports drinks containing electrolytes and vitamins are significantly better absorbed than water. Water alone provides fluid replacement but not energy, electrolytes, vitamins and other nutrients essential for performance. Guidelines for choosing the optimal supplement are listed below.

GOALS	GUIDELINES
Sustained energy	- Include slow and fast releasing carbohydrates - Take 30-60 g carbohydrates per hour
Stabilized blood glucose level	- Include slow and/ or intermediate carbohydrates - Include 1-2% protein per solution (peptides is easily absorbed, which ensures that this amount of protein could be added to OCTANE XTR)
Replenish fluid and electrolytes lost	- 400-900 ml water/ fluid per hour - Include the electrolytes sodium, potassium, chloride, calcium, phosphorus and magnesium - Include 6-10% carbohydrates
Prevent gastro-intestinal discomfort	- Ensure a hypo- or isotonic solution* - Avoid excessive carbohydrate intake (no more than 30-60 g/h)
Support the immune system	- Take vitamins and minerals - Include anti-oxidants such as vitamins A,C and E - Include glutamine - Proteins also supports the immune system
Creates buffers against lactic acid build-up	- Protein peptides may reduce lactate and ammonia levels.
Increase concentration/ mental alertness	- Ensure optimal blood glucose levels - Include choline
Improve performance	- Include selected ergogenic aids for the specific sport

* Hypo- or isotonic refers to osmolality. Osmolality can be defined as the number of particles dissolved in water. Optimal absorption of fluids within the body happens when the solution are equal in terms of osmolality in what naturally occurs in the body. Hypertonic solutions attract water into the gastrointestinal tract and may cause diarrhoea.

PVM RECOMMENDATION± 350-500 ml **OCTANE XTR** per hour, take a few sips every 15-20 minutes or whenever possible e.g. during break/between periods.OR 1 **PVM ENERGY BAR** with ± 500 ml waterOR 2 **OCTANE GELS** with ± 500 ml water

OR a combination of the above (do not exceed 60 g CHO per hour)

AFTER THE EVENT/ TRAINING

The intake of carbohydrates and protein within the first **30 minutes** after exercise is crucial for the recovery of glycogen stores and the repair of muscle tissue. These first few minutes after exercise is called the window period during which the uptake of nutrients is fast.

GOALS	GUIDELINES
Accelerate glycogen re-synthesis/ replenishment	- Include fast releasing carbohydrates for immediate recovery. The addition of slower releasing carbohydrates will prevent blood glucose fluctuations.
Increase protein synthesis/ building and cell repair	- Include 10-20 g protein

Replenish fluid and electrolytes lost	- Include water/ fluid. One liter of water is required to replace 1 kg of body weight lost during training. - Include the electrolytes sodium, potassium, chloride, calcium, phosphorus and magnesium - Include 6-10% carbohydrates
Reduce lactate and ammonia levels	- Include protein - Include electrolytes
Support the immune system	- Take vitamins and minerals, especially the anti-oxidants (Vitamin A,C and E) - Include 5g glutamine per serving - Proteins e.g. peptides also supports the immune system

PVM RECOMMENDATION
RECOMMENDED: Training/Competing ≥ 90 minutes: 75g REIGNITE in 600ml water. Training/Competing < 90 minutes: 50g REIGNITE in 400ml water. ALTERNATIVELY: 2 portions FUSION DRINK OR 1 portion FUSION DRINK + 1 PVM ENERGY BAR OR Sandwich (2 slices bread) with cheese/ biltong/ tuna/ chicken (30g) + 200ml fruit juice OR 2 Muffins with cheese + 200ml fruit juice Additional water can also be taken with the above recommendations

Balanced meal 2-3 hours after exercise:

This meal is important for optimal replenishment, but even more so if you are going to exercise again the following day or if an event is more than one day. It should contain both carbohydrates and protein. Also remember to replace fluids lost during exercise.

SAMPLE MENU: Post-exercise meal
1 cup cooked rice (preferably parboiled/Basmati) OR 1 cup pasta (preferably durum wheat type) OR 1 large potato, slightly cooled + 200g fish / chicken / lean mince / steak + 1½ cup mixed veggies OR 2 cups salad + 1 cup fresh fruit salad OR 200ml fruit juice Alternatively: If you do not feel like eating: : 1 Portion Fusion OR Fusion Mass High protein Meal replacement with milk + 1 large Fruit

Protein supplements are best consumed before bedtime because the release of growth hormones is highest at night during sleep and in the early morning hours. Growth hormones play a role in lean muscle synthesis along with proteins. Protein provides the fuel, while growth hormones facilitate the process. Protein thus fuels protein synthesis process during sleep. Protein supplements are only recommended when protein needs are not met through the diet or occasionally after strenuous training. In such cases, 1 portion **Protein XTR** may be consumed 30 minutes before bedtime.

Please note that this is only approximate guidelines. For a more individualised diet plan or any other nutritional enquiries, please contact our Registered Dietitian (dietitian@pvm.co.za) for assistance.