

PERFORMANCE TEMPLE



MATTY GRAHAM



EXPONENTIAL
PERFORMANCE COACHING

Introduction

The Performance Temple is the accumulation of what I have learnt over the last 10 years working with over 600 athletes across a wide range of different sports, six years of university education, self guided study and my own experimentation in training and competition in endurance sports. I am someone who values learning and I always ensure I learn from my experiences good and bad.

Over the years I have worked with different performance models, periodisation theory's and training principles. I am yet to find the 'perfect' complete model that suits every individual. In an attempt to provide you with a frame work that you can use to build your performance from the ground up I have compiled the Performance Temple from everything I have observed, heard, experienced and learnt over this time. The Performance Temple model can be used by all athletes no matter their sport or level to improve their performance.

It does not matter if you are a complete beginner, weekend warrior or have goals of world domination the Performance Temple is where you will find the way to develop your potential to achieve that elusive peak performance.

In the age of 30 second abs, drive thru's and smart phones everyone is looking for the easy way, a shortcut or a silver bullet. The truth of the matter is, if you want to be at the top of your sport no matter what it is there are no short cuts. If something sounds too good to be true it probably is. While it may give some short term gains, in the long term it will likely impede your performance and cause harm.

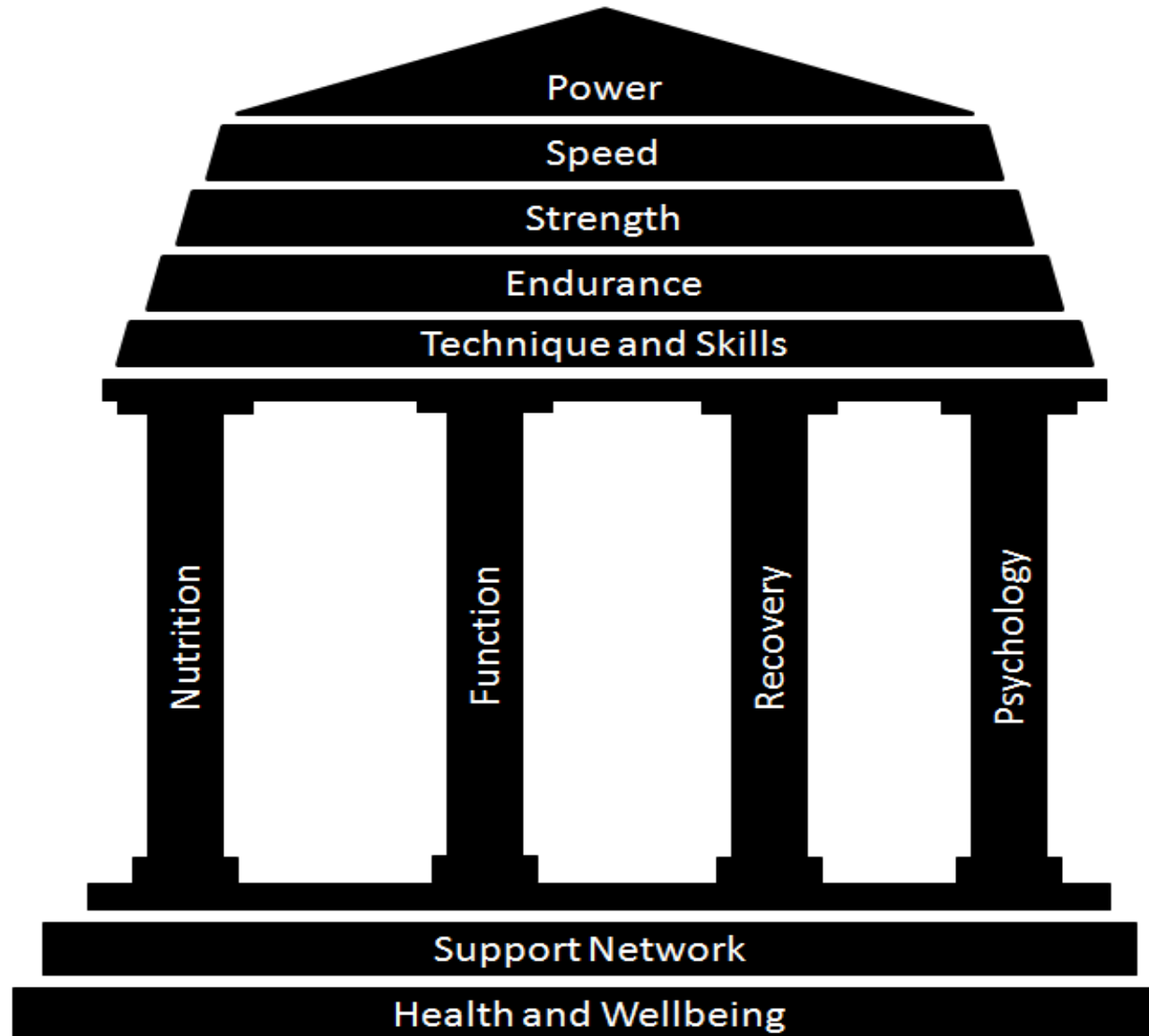
While there are no short cuts there are defiantly 'smarter' ways of training that can help you get to your goal. The aim of the Performance Temple is to give you the required information to take your performance from wherever it is now to a place where you can achieve all of your performance goals.

Most people only think of training in the physical sense. If you want to truly improve your performance and have a long racing career, then you need to treat your training in much more than just the physical sense. For six years I studied the body's physical response to exercise to find the best way to train it, fuel it and squeeze every last bit of performance out of it. What I discovered as I studied and worked with more and more athletes is that this physical training is only a small part of the equation. You can have the best training plan in the world but if it is not supported by a strong foundation then you will only be able to improve so much. In the performance Temple your physical training can be thought of as the roof. The roof is supported by 4 Pillars, the stronger and more well built these pillars are the bigger expanse the roof can cover. These pillars need to be built on a solid foundation otherwise their 'weight' would sink into the soft ground.

If you only focus on building one aspect of your Performance Temple, it will become 'unstable' and will not be able to stand the stress of training and competing. Over time cracks will start to appear leading to injury, poor performances and in the worse circumstances complete collapse or 'over training'.

No aspect of the performance temple is more important than other. Just like every single component of a watch is required for it to tell the time, every aspect of the performance temple is required for an athlete to perform at their peak.

The Performance Temple



The foundation of Success

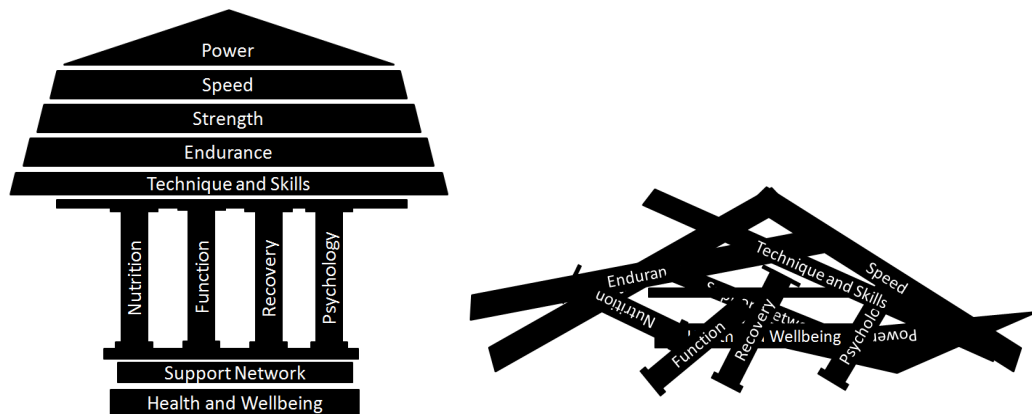
Before any individual can start thinking about training to improve their performance it is critical that they develop a solid foundation which their physical training can be built on. Without this solid foundation of good health, well being and a sound support network an individual will only ever be able to improve a certain amount before crumbling or reaching a plateau.

Health and Wellbeing

Your health and wellbeing forms the foundation of your Performance Temple. It is on top of this that everything else is built. Maintaining good health and well being is one of the most important aspects of athletic training. While many athletic endeavours are not actually 'healthy' if an athlete's health is compromised then the extent to which they can adapt to their training load is limited.

Everyday athletes walk a fine line between maintaining good health and maximising their performance. Classic examples of this are achieving low fat mass for competition, fuelling with high GI refined foods, completing extreme acts of endurance and pushing through injury. While these unhealthy acts often lead to good short term performance with minimal effect on health, if they are maintained long term then health can be compromised. Good baseline health is fundamental for optimal training and adaptation. Just think of the last time you were sick or had a cold, how good was your training or race performance in this state?

No doubt you know an athlete, or maybe it's you, that is constantly getting run down, sick and cannot string more than a couple of weeks of training together. As with any building if the foundation is not laid correctly then you are only going to be able to build so high before cracks start to appear. Once these cracks start to appear it is very hard to go back and fix them while you are still building. You can apply temporary patches to these cracks but they will reappear if they are not addressed in full.



Time and time again athletes come into my office after not seeing improvements in their performance (sometimes for many years) or are broken and riddled with injury after being self coached or even more scary paying for coaching! While many athletes find it hard to do, we tear down their precariously built house (body) that is held together with pain killers, ice packs, antibiotics, reflux medication and training aches and pains. Then brick by brick we start building them back up starting with their foundation. This takes time and commitment to do. But once an athlete has rebuilt themselves from the bottom up they are able to truly realise their potential. Of all the athletes I have been through this process with, those who have fully completed the process to the end have gone on to smash their previous personal bests. Those who could not be bothered, were too busy and dropped out part way, fall back into the same cycle of mediocre training and erratic results.

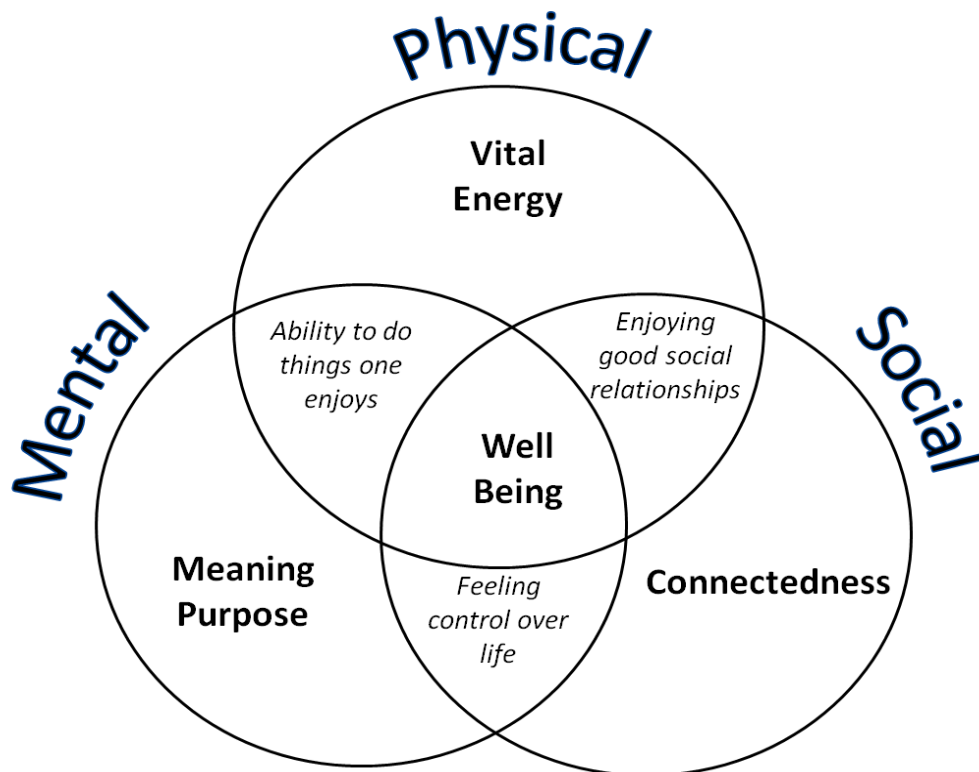
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Good health is not just 'not being sick'. As with your performance you should aim to do all that you can to maximise your health so your body is able to train, adapt and perform at its peak. If I had to recommend one resource that can help anyone looking to improve their foundational health it would be Paul Chek's book *How to Eat, Move and Be Healthy*. It does not matter if you are an elite athlete or training for your first race; this book has something in it for everyone wanting to improve their health.

Check it out here

<http://tinyurl.com/eatmovebehealthy>

Along with an athlete's health, their wellbeing is critical for them to train and perform at their peak. As with your health if there is an aspect of your wellbeing that is compromised, the effect may not be evident immediately but eventually this aspect will have a major impact on your performance and life as a whole.



If an athlete does not have stable relationships, feel connected to others or secure in their environment their ability to train and compete is compromised. Wellbeing is a very complex topic that is very individual to every athlete depending on their situation. Often sport and competition ticks many of an athlete's wellbeing 'boxes'. This can present issues once an athlete cannot compete due to career ending injury, illness or other factors. For the overall wellbeing of an athlete it is important for them to develop meaning, connectedness and enjoyment outside of their sport which is an aspect should not be ignored.

Support Network

When an athlete lines up at the start line of a race it is likely that they have not got there completely on their own. All high performance programmes are built on quality support networks and if you are serious about improving your performance then developing a network of people around you to help facilitate your progression is critical. You will likely already have a bit of a support network without even knowing it. The next step is to work on formalising it so you can maximise it.

While an athlete's support network will differ between individuals depending on their needs, having experts such as a coach, physiotherapist, nutritionist, strength coach, sport science advisor, mechanic, technical advisor, doctor and mental skill trainer are all people who will be able to help fast track your performance and give you support when it is required.

When establishing your support network it is vital that you assess your needs (getting some outside help with this can be very useful to provide some perspective) and then seek out individuals that are able to meet your needs in those specific areas.

- **Immediate family:** No matter what your goal is it is vital that you have the support of your immediate family. To achieve your goal you are going to have to put in some hard work, make some sacrifices and if this becomes almost impossible without the support of those closest to you. Spouses, parents, children and friends need to be onboard and informed so you can train at your best.
- **Physiotherapist or massage therapist:** Just like a Formula 1 racing car has a team of mechanics keeping it running in good condition, a good physio or massage therapist is vital to keep an athlete's body in one piece. Most athletes base their body maintenance on the 'ambulance at the bottom of the cliff' approach and only climb onto the massage table when something is sore. Taking a more proactive approach with weekly or fortnight body work is important for keeping everything running well so you do not get any big issues from ongoing problems.
- **Nutritionist:** Getting good advice on your nutrition and having someone to provide feedback and be accountable to is one aspect that many athletes can get large benefits from. Nutrition is critical to support so many aspects of your training. This is covered more in depth below in the nutrition pillar.
- **Doctor:** Hopefully you are not spending too much in the doctor's office but if you are in there you need to have full confidence in your doctor. In my experience many general practitioners lack the specific skills, knowledge and experience to effectively treat athletes. Finding a sport specific doctor or at least a doctor that has experience working with athletes will make treating any issues that crop up much faster and easier to get a quality answer.
- **Mental skills trainer:** Many athletes think that working with a sport psychologist or mental skills trainer is only for those who have 'issues'. Others think that you either have it or you don't when it comes to mental skills. Both of these common beliefs lead to many athletes neglecting this aspect of their performance and never reaching their full potential. Having an expert who can guide you through this type of training can be very valuable no matter what level you are at.
- **Strength coach or personal trainer:** Having an expert to help you with your functional strength training and refining your technique is invaluable. A specific strength and conditioning coach should be your first bet but you may have to settle for a personal trainer. While personal trainers are a dime a dozen these days, good ones are very hard to come by. Look for one who has experience working with athletes and sport specific conditioning.
- **Sport science support:** There are big gains to be made through good application of sport science principles. Having an expert that can help you improve aspects of your performance

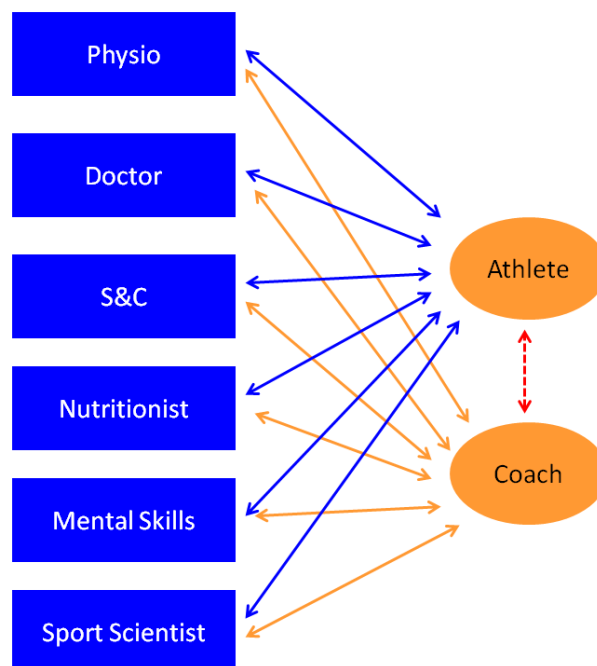
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based on research can help short cut a lot of trial and error and take a lot of the guess work out of your training

- **Coach:** Depending on the experience and expertise of your coach they may fill none or many of these roles. It is also important that your coach is also in contact with the others in your support network so they can keep their finger on the pulse so to speak.

The flow of information and cooperation between these people is important so all of their individual work and support is aligned in the same direction. As an athlete it often comes down to you to coordinate this network. All of these people will need your permission to share your information between each other but it is important for your success.

Most importantly your coach needs to be in contact with these other people so that they are able to maximise your training programme. This way even if the contact between the coach and athlete is impeded the important updates get to the coach. For example there is no point a physiotherapist instructing an athlete to rest or train a certain way due to an injury and then the coach planning something completely different that is counterproductive to the athlete. For some reason many athletes do not like to reveal everything to their coach. I have experienced this first hand with athletes 'hiding' injuries and illness. If your support network has direct contact with each other then they can give you the best support. Remember everyone in your support network has your best interests at heart and wants to see you succeed.



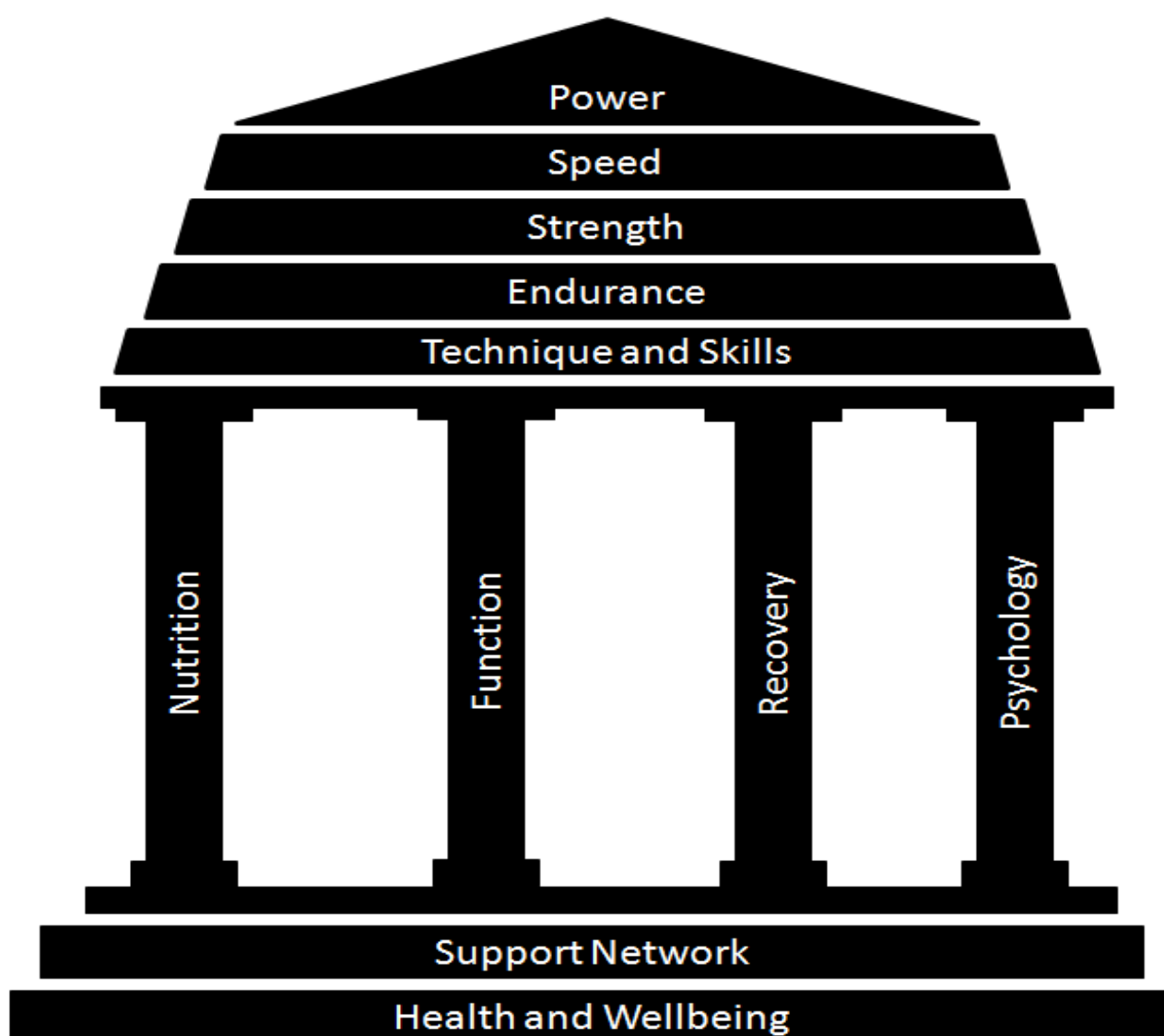


4 PILLARS

OF PERFORMANCE

4 Pillars of Performance

Now that you have developed a solid foundation it is time to start building the pillars that your sport specific training will sit upon. As with your base foundation the extent that you will be able to increase your performance is directly related to how thick, strong and tall you build each of your pillars. Again, if you cut corners here your physical performance will only be able to extend so far before cracks start to show under the weight of your training and eventually everything WILL come crashing down. These pillars are equally important and are not listed in any specific order.



Nutrition

There is a mindset among many endurance athletes of ***'I can eat anything I want, because I will just burn it off in training'***. While this is true (you will likely burn it off), the reason you need to pay attention to your nutrition is not so you do not get fat, it is so you are providing your body with the right 'ingredients' that it needs to:

- 1) Function as a normal healthy human being
- 2) Perform the required training
- 3) Repair and adapt to the training that you are doing
- 4) Maximise your performance on race day

Nutrition is such an important aspect for any athlete looking to maximise their performance gains from training. Large gains can be made through incorporating simple changes into your day to day eating. This guide is aimed at providing some baseline fundamentals that can easily be integrated into your current daily nutritional plan so you can maximise your training and adaptation.

Most people only think about nutrition leading into race day in the form of what sticky gels and sweet sports drinks they are going to use for the race. However, the day to day nutrition for endurance athletes is even more important. To train efficiently you need to take care of your day to day nutrition first. Your body needs the right nutrients at the right time, to perform daily tasks optimally and be primed for exercise. Adequate day to day nutrition provides the best 'environment' for your body to adapt to the stress you place on it through training and allows you to become fitter and stronger.

Macronutrient Basics

Macronutrients are defined as being the classes of chemical compounds that humans consume in the largest quantities and provide bulk energy. There are 4 macronutrients; Carbohydrate, Protein, Fat and Alcohol.

Carbohydrate

Carbohydrates are a popular topic in nutrition at the moment and there seems to be a lot of confusion around their appropriate use in competition and your everyday diet. Carbohydrate containing foods provide your muscles with 'fuel'. They not only fuel your muscles, but also your brain to keep us functioning at our best. They can be broken into two distinct groups; slow burning (also known as low Glycemic Index (GI)) and fast burning (high GI). For smart day to day nutrition, choose slow burning carbohydrate sources that will give you sustained energy in between meals. Examples of low GI carbohydrates are wholegrain breads, wholegrain cereals, brown rice, starchy vegetables (potato and kumara), and fruit. These carbohydrate foods are nutrient dense, providing fibre, vitamins and minerals.

Carbohydrates can come from two places for use as a fuel during exercise; from stores in your body in the muscles and liver and from your diet as a food source. During exercise your body uses carbohydrate, alongside fat, to provide fuel for your exercising muscles. Our body's stores of carbohydrate run out relatively quickly (in 1 ½ hours) which is why there are recommendations to eat carbohydrates throughout training and racing to supplement body stores, if it is for 90 min or longer.

In the current sport nutrition guidelines there is minimal separation in the carbohydrate recommendations between training and racing. Most guidelines suggest consuming carbohydrate for optimal fuelling all of the time. However, when you look at the goals of training and racing they are very different and carbohydrate can aide or hinder these goals.

To find out more about this topic and time when you should not consume carbohydrate during training read this article.

<http://tinyurl.com/trainingwithnofood>

What type, for when?

Sugars are in foods such as; lollies, sports drinks, ripe bananas, jam, honey and white bread and are good for during intense training, competition and immediately after training. This is because they high GI and easy to digest meaning the carbohydrate can be used faster for energy in exercise or stored in the body more quickly than starches. Starches include foods like; pasta, rice, potatoes, wholegrain bread, rice crackers/cakes, baked beans, spaghetti and breakfast cereals which are good as a general base to make up athletes meals every day. Starches provide other nutrients such as fibre, vitamins and minerals therefore are more important for your overall diet.

Everyone is unique

Athletes require more carbohydrates than the general population as they use more energy each day and additional energy is required for training. Therefore, athletes should include starchy carbohydrates with every meal and choose carbohydrate-based snacks. It is important to remember that you are unique in determining what is ideal to eat before, during and after training depending on your sport, food tolerances and how different foods make you feel.



<http://tinyurl.com/carbohdrateoverview>

Protein

Protein containing foods are required in athletes day to day diet to build and repair many tissues and structures contained in their body. They are not only responsible for building muscle tissue, but they are essential for the optimal functioning of all bodily cells. Excess protein cannot be stored in your body, but can be used as an energy source.

Animal foods are considered the best source of protein as they are termed complete protein sources. This means they contain all the essential amino acids (think of these as little building blocks) required to build any of the proteins in the body.

Plant foods also contain protein but no one plant contains all of the amino acids and these are known as incomplete proteins. If an athlete is not consuming animal proteins, it is important they mix different



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plant protein sources together to ensure they get all of the required amino acids to build the required proteins.

Athletes should include a mixture of protein sources in their diet, distributed at each meal and snack over the day.

Complete Protein Sources		Incomplete Protein Sources	
Food	How much protein?	Food	How much protein?
140g Lean Beef or Lamb	38.2g	1 cup All Bran	9g
100g Cooked Lean Mince	22g	20g Sunflower Seeds	4.6g
Chicken Breast	31.2g	10 Raw Almonds	2.5g
100g Canned Tuna	25.3g	20g Pumpkin Seeds	5g
1 cup Low Fat Yoghurt	10.4g	5 Raw Walnuts	6.5g
250ml Trim Milk	8g	2 Slices of Wholemeal Bread	5g
2 Eggs	12.8g	150g Lentils or Kidney Beans	10g
2 Slices Edam Cheese	4.5g	250ml Soy Milk	8g



Athletes have slightly higher protein needs than the average person due to the extra wear and tear on their muscles. Different athletic groups require different amounts of protein per day. As athletes come in various shapes and sizes, it is easier to keep track of these requirements by relating them to the size (body mass) of the athlete.

Athletic Group	Protein Intake (g/kg/day)
Elite male endurance athlete	1.6
Moderate intensity endurance athlete	1.2
Male team sport athlete	1.4-1.7
Resistance training athlete (early training)	1.5-1.7
Resistance training athlete (steady state)	1.0-1.2
Notes: <ul style="list-style-type: none"> - Female athletes require approximately 15% less than male athletes - Athletes on a weight loss diet have a higher requirement of 1.5-2g/kg/day to maintain lean muscle mass and help with satiety. 	

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Fat

We are often told to avoid foods high in fat and choose low fat options. Fat has important structural and functional roles within the body including cell membrane integrity, transportation of molecules and cell signalling. The human body however only requires a very small amount of fat each day.

Fat is very energy dense - It contains 37 kJ per gram

Therefore only a small amount, contributes to a large amount of energy. Excess energy, above your required level will lead to unwanted weight gain.

Not all fat is created equally. The processing of vegetable oils creates trans-fatty acids (TFAs) which are more structurally closer to plastics than fat. Instead of giving you list of things to avoid, focus on choosing

- ✓ Coconut oil, butter or lard for high heat cooking
- ✓ Use olive oil and flax seed oil as dressing after the cooking is done
- ✓ Avocados, oily fish, nuts and seeds as you get the fats + other nutrients in these foods

Alcohol

Most people are surprised when they hear that alcohol is a macronutrient. Alcohol is formed when yeast ferments without oxygen. Different sugars in foods form different forms of alcoholic drinks. For example beer is made from the sugar of malted barley. Many people think the sugar or carbohydrate in beer is the reason why we should not drink too much of it, as it can cause weight gain. In actual fact, beer contains little carbohydrate as the sugar is converted into alcohol. Alcohol contains a high amount of energy per gram. In other words, just like fat, alcohol is very energy dense. Therefore, it is the alcohol in the beer, not the carbohydrate that is responsible for weight gain.

Humans are not designed to drink alcohol and it is the one micronutrient that we can live without. Anyone who says alcoholic beverages of any kind are good for you is seriously misinformed. Any health benefits from drinking an alcoholic beverage would come from the ingredients it is made from and not the alcohol itself. Alcohol has also been found to impede training adaptations which if you are trying to maximise your performance should be of concern.

Find out more in the extended Performance Temple Nutrition handbook

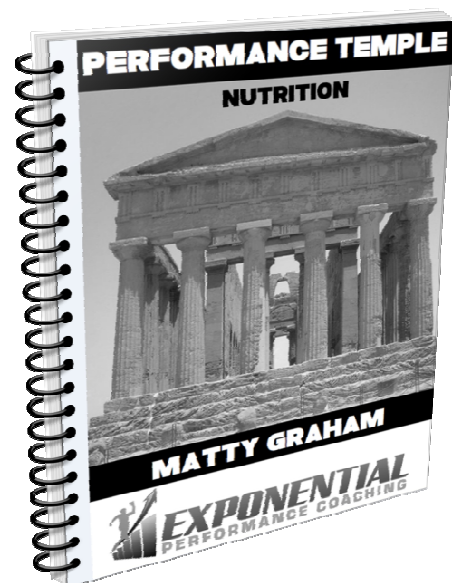
Day to Day nutrition made simple

How to snack smart

Why is energy density Important?

What supplements should you be taking?

Dealing with GI problems



<http://tinyurl.com/performance temple handbook>

Function

An athlete's function relates to their mechanical function, muscle balance, posture and their ability to move and live as a human being. If you have poor posture, muscular imbalances, lower back pain or do not have adequate core strength to stand properly, then as soon as you start training hard in complex movement patterns such as running, kayaking, cycling and swimming you will start overloading certain muscles, tendons and joints through poor movement patterns and become injured.

You can also improve your performance indirectly through functional strength training by developing your core stability. This leads to improvements in postural control, alignment and an increased injury resilience. Numerous studies have been conducted investigating core strength development and performance. Core fatigue has been found to result in altered cycling mechanics that exposes the knee to greater stress that can lead to injury, while core specific strength training over 6 weeks has been found to improve 5 km running performance and allow athletes to train injury free more often.

The core is the critical link that connects the two areas of major force generation (the pelvis and shoulder girdle) in the human body. When you look at the human skeleton, the spine is little more than a precariously stacked 'Jenga tower' that the shoulder and hip girdles are hinged off (see figure 1). The only thing stabilising this stack of vertebrae are the muscles, tendons and ligaments of the core. Like guide wires holding up a ship's mast or spokes in a bike wheel if any of these 'guide wires' or 'spokes' are over-tight or lose then you end up with a mast that is on a lean or a wheel that does not run true. Due to the repetitive nature of endurance sports (and modern life in general), athletes end up with tight and over developed muscle groups while others become weak and 'stretched' out. This imbalance in the 'guide wire' tension causes misalignment of your posture which over time can lead to injuries through excessive loading of structures that are not designed to be loaded in such a way or direction.

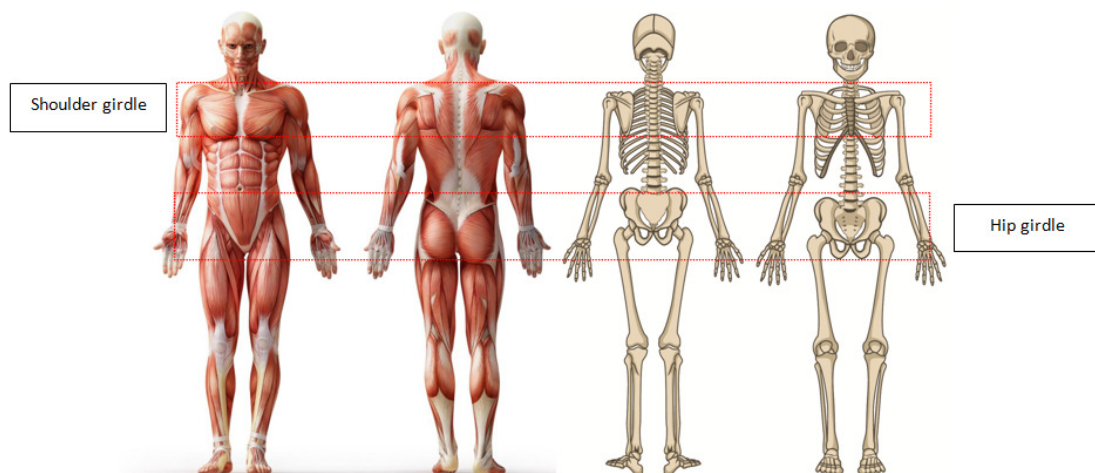
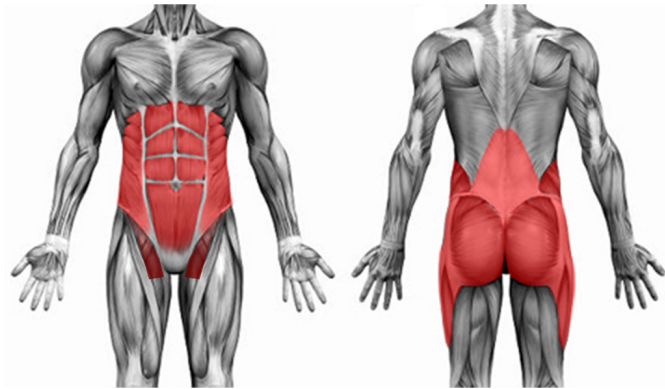


Figure 1: Muscular and skeletal diagram outlining the shoulder and hip girdle.

Being able to generate force using the large muscles of the lower body and then transferring this force into the upper body such as in kayaking or prevent force dissipation from lower body mechanics such as in running and cycling are all the responsibility of the core. Because of the large number of joints and muscles involved in the core mean that the coordination of this stabilisation and force transfer can be hard to master. This is exacerbated with 'traditional' core training as some of large muscle groups of the core become over developed and the small stabiliser muscles become even more inactive. The development of an athlete's core should be the primary focus for athletes of all abilities.

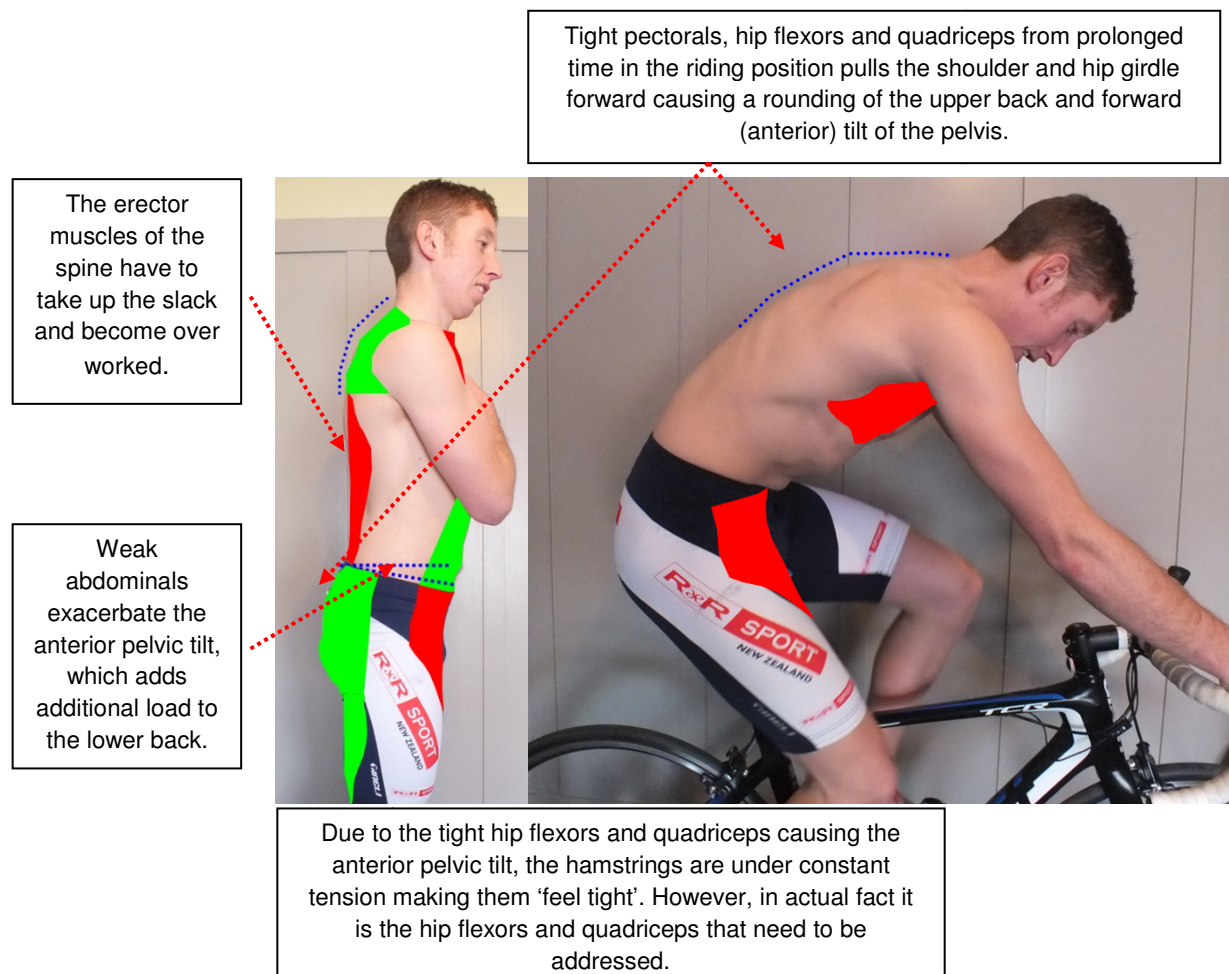
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Figure 2: Muscle groups included in core stabilisation



In figure 3 you can see a classic example of a cyclist's imbalances in the shoulder and hip girdle. Spending large amounts of time riding cause the muscle groups highlighted in red (pectorals, hip flexors and erector muscle of the spine) to become very strong and tight. These then pull on the shoulders, rounding the spine and tilt the pelvis forwards. The weak/ 'stretched' muscles of the upper back, abdominals, glutes and hamstrings are not able to counteract this constant tension and it is often these areas in which injury occurs or 'tightness' is felt. I.e. sore shoulders/ back or 'tight' hamstrings.

Figure 3: Example of strong 'tight' muscle groups in red and weak 'stretched' muscle groups in green.



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These imbalances are exacerbated during day to day living in the modern world through prolonged sitting, computer work and driving. This further rounds the shoulders, tightening the hip flexors and weakens the abdominals. If an athlete is unable to perform the relatively simple task of maintaining correct posture, then they are going to struggle in the long term to perform optimally on the bike, in the pool, running or paddling not to mention their ability to live a long pain free life outside of training.

At the moment 'Mobility' is all the craze. Mobility incorporates the use of stretching, foam rolling and other methods to keep your body in 'alignment' so you can move properly, keep your body in one piece and get that peak performance you are after. One of the best resources in mobility I can recommend is Becoming a Supple Leopard written by Dr Kelly Starrett which will become your movement bible.

Check out a review of this book below

<http://tinyurl.com/suppleleopardreview>

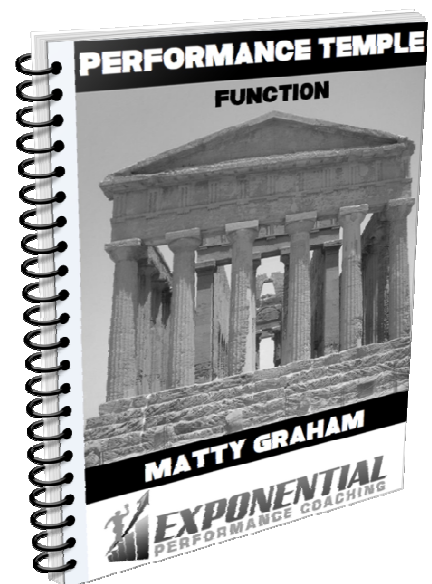
The video below covers the principles around postural stability in some more detail.



<http://tinyurl.com/strengthforendurance>

Get a specific functional strength training plan that covers the key areas that endurance athletes need to work on in the extended Performance Temple Function handbook.

<http://tinyurl.com/performance temple handbook>



Recovery

No doubt you have heard that recovery is just as important as your training. While this is a statement that is made time and time again by coaches, sport sciences and training experts, it is still one of the principles of training that is overlooked and neglected.

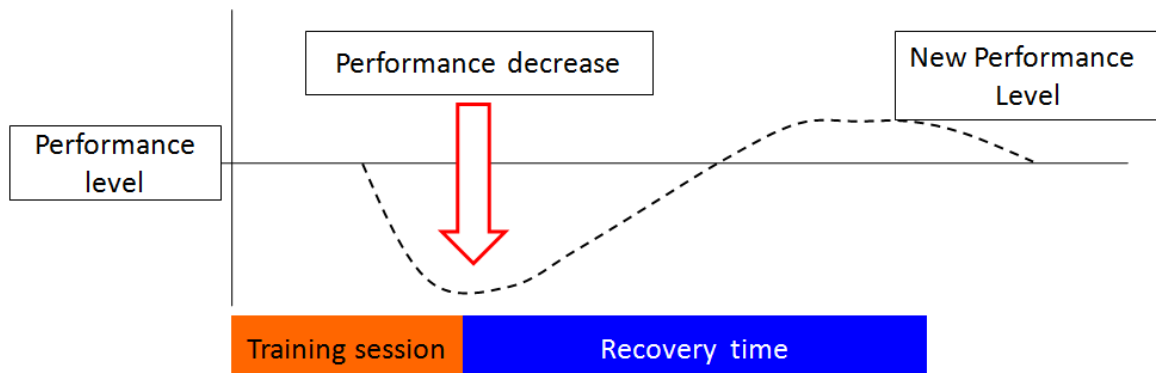
When you train you are actually putting a stress on your body that breaks it down and causes damage. It is then following your training during your recovery that your body is able to re-build, repair and adapt to the training. It is this recovery and adaption process in which your performance improves.



This video covers the performance equation in a bit more depth

<http://tinyurl.com/performanceequation>

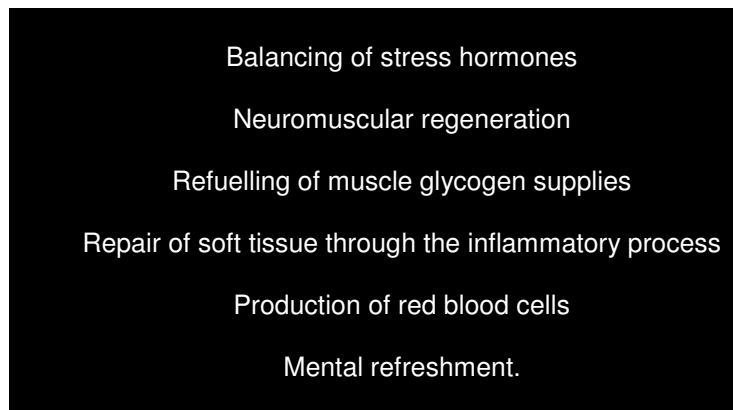
Smart Training + Adequate Recovery = Improved Performance



When the word recovery is mentioned athletes tend to run in fear thinking recovery means that they have to do nothing and that this will negatively impact their performance. First things first, when done properly recovery does not negatively affect your training it improves it and secondly recovery is not JUST doing nothing.

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During times of recovery some of the key things that are occurring in your body are



All of these things require some complete recovery time to happen.

Not all recovery is created equally. Below is a rundown on what you are trying to achieve in your different recovery blocks.

Complete recovery

Complete recovery is the 'laying on the couch doing nothing'. This is the type of recovery that jumps into people's minds when we talk about recovery. Most athletes who are trying to balance work, family life and training do not have the luxury of this and their complete recovery becomes the removal of their training from their already busy day. Many people think full time athletes are so much better because they have lots of time to train. In fact most people working a standard 9-5 would be able to cram in a similar training load around work (i.e. training early morning, at lunch time and in the evenings) but what they really miss is the time for complete recovery that full time athletes get. The body has two nervous systems, the sympathetic (fight or flight) and parasympathetic (rest and digest). The sympathetic nervous system is activated in a general response whenever the body experiences stress. Whether that stress is from a hard training session or from a busy day at work the body will respond in the same way. Complete recovery is critical for the body to balance out these two systems bring the sympathetic side back 'under control'.

Active recovery

No doubt most people have heard of the term active recovery. This refers to performing your specific sport at a low 'zone 1' training intensity (i.e. easy run, ride, swim or kayak). Many athletes feel that this type of training is a waste of time as you do not get breathless and sweaty. The aim of active recovery sessions are to help facilitate recovery through increasing blood flow, lymphatic drainage, maintaining range of movement and mental recovery. It is ideal to incorporate technique drills into these sessions as these are often performed at low intensities and therefore works in well with active recovery sessions. The key things with your active recovery sessions is that you finish these sessions feeling fresh and wanting to do more. Always stop an active recovery session while you are ahead. If like 90% of the athletes out there and you train harder than prescribed during your active recovery sessions, you will end up feeling tired and unable to complete the important higher intensity training sessions as required.

Recovery modalities

Other recovery modalities such as foam rolling, stretching, massage and water therapy all have their place in helping to facilitate recovery. These should be included into an athlete's programme for optimal recovery results. Ideally these should be integrated into your daily training as well as being part of your recovery day activities.

Recovery days

Recovery days should be a combination of complete recovery mixed with some recovery modalities to help facilitate recovery. Typically most athletes would have at least one complete recovery day per week. For athletes who are trying to balance a hectic work and family life with training then these days are often just best taken as complete recovery as the inclusion of these additional recovery activities add additional stress due to already stretched time.

For those who have time on their recovery days I would suggest a 30-45 min focused session incorporating the different recovery modalities. I find athletes are more likely to perform these recovery modalities if they specifically go somewhere for this session. For example rather than trying to complete a foam rolling and stretching session at home where you will be sure to find something else to do instead or cut the session short, you could head down to the gym or could go to the pool and do a stretch in the spa or do a hydro-massage session under the fountains that many pools have.

The key thing to remember is that the aim of recovery days are to allow only partial recovery so do not be concerned if you do not feel 100% fresh following a recovery day. For more complete recovery a recovery week should be used.

Recovery weeks

Recovery 'weeks' are periods in your training plan in which the training load is decreased by having shorter and/ or less intense training sessions to more fully allow the body to physically and mentally recover and adapt to the training you have been doing in your last loading cycle. Recovery 'weeks' may vary from ~4 - 9 days depending on the athlete and the phase of training. Training over this time is made up primarily of active recovery and should be kept at a low intensity with the duration significantly reduced to allow the recovery process to be effective.



Here is a video that goes into more depth about structuring your recovery weeks

<http://tinyurl.com/microcycles>

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This video covers how to structure your recovery days to maximise your sleep cycles.

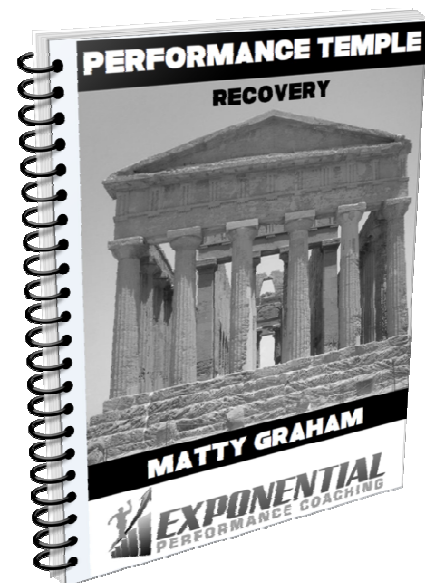
<http://tinyurl.com/recoverydays>

Sleep is a critical component of recovery and one that is often not considered or gets neglected. When we sleep the body releases many key recovery hormones that help balance out the stress hormones that are released during training and the body goes through a 'reboot and reset' process. Without adequate quality sleep your body is fighting an uphill battle to recover from the training you are completing. There are a number of simple things that we can do to try and optimise our sleep.

Find out more in the extended Performance Temple Recovery handbook

Learn how to maximise your recovery through your
nutrition, sleep, how to monitor recovery
and find out if compression garments and ice baths are
beneficial.

<http://tinyurl.com/performance temple handbook>



Psychology

When athletes are asked what percentage of their performance is physical and psychological they give many different answers. Some say 50:50, others say 90:10. It seems the higher the level of the performer the higher they rate the psychological component of their performance.

In actual fact to be at the top of your game (no matter what your level) you need to be 100% physically and 100% psychologically prepared. Any less and you are not maximising your full potential.

The body and the mind are one in the same. They are typically talked about separately for 'ease' of study or explanation. In the Performance Temple psychology is one of the key pillars that supports and in fact creates your physical performance, you cannot have one without the other.

No matter how hard you try you cannot 'think' yourself to the finish line and at the same time a countless number of athletes have sabotaged their own 'physical' performance through negative thoughts and self doubt never allowing their hard earned physical fitness to show through.

Developing your WHY

Having a clearly defined goal is critical for success. While most athletes know that a goal must be SMART (Specific, Measurable, Adjustable, Realistic and Time bound) goals are pointless unless you have established your WHY and have an action plan set up. I know people who have stacks of 'self help' books that cover goal setting and how to achieve personal success. No matter how many times these people read these books or stare at the pile of books they will not improve unless they take action unless they have a significant WHY!

Why is it important for you to complete an Ironman, decrease your body weight by 5%, improve your half marathon by 8 min or rehab your injury so you can ride injury free. Without a why your goal is worthless.

WANT power vs. WILL power

Don't you hate those athletes who seem to have endless motivation. They continually get up early in the morning to train hard come rain, hail or shine, while others (you?) struggle to drag themselves out the door even on the best days. Developing a drive to perform the long, hard, tedious and often boring training sessions required for success is critical for any athlete. However it seems that the perception of how athletes see these sessions is a huge component of motivation.

If you think about your training sessions in the terms used above; long, hard, tedious and boring then it is no surprise that you struggle to get out of the door as you are consistently battling with your WILL power. Successful athletes often think of their training as fun, challenging and an adventure with every session acting as a stepping stone towards their end goal. They WANT to get out the door to train even if it is rain, windy and dark.

Your why has to be so exciting that it makes you WANT to get out the door and push yourself through hard training sessions. No matter who you are WILL power will only get you so far before it runs out, the training becomes too demanding or the weather is too wet and cold. The first thing any athlete must do is to determine their WHY.

Nobody can find your WHY for you, it has to come from within and be something that is so strong that it draws you to push yourself to your limits and beyond.

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In February 1990 Buster Douglas became the first person to knock out Mike Tyson who was the heavy weight champion of the world. This was a task that most thought of as impossible and the 42 - 1 odds supported this. However, what many do not know is the 23 days before the fight Buster Douglas mother had died. Before she died she had told everyone who would listen that her son was going to beat Mike Tyson. Following her death he made a vow, a commitment that he was going to win for his mother. Leading into the fight every waking moment was focused on his mom and how he could win for her. He trained harder than ever and when he climbed into the ring for that fight he was not fighting for just himself, his WHY was bigger than himself.

Despite being knocked down in the 8th round Douglas fought on weakening Tyson in the 9th round before landing the winning blows early in the 10th. Knocking Tyson to the floor where he was counted out Buster Douglas thus became the new undisputed heavyweight champion and the fight became one of the biggest upsets in boxing history. During the post fight interview Douglas broke down in tears saying that he had won for his mom.



Why do you do what you do? While there is no so called 'recipe' for your WHY there are some common factors that show through in research of successful athletes.

- Your drive needs come from within (intrinsic).
- Your goal needs to be out of reach but not out of sight. Your goal should excite you, the hair on the back of your neck should stand up and your skin tingle when you think about it. If these things do not happen then it is either not important enough to you or it is too big and out of sight that sub consciously or even consciously it is not achievable. Without these intrinsic feelings and attachment to your goal it is all too easy to give up when the going gets tough, and it will get tough.
- Ideally you should be drawn to success rather than running from failure. While the 'treat' of failure and the pain associated with this (financial loss, embarrassment and disappointment) can be powerful motivators, in the long term it can lead to negative associations, burn out and self doubt. For example I have to win this race because otherwise I will feel embarrassed in front of my friends and family. When athletes have a goal that is drawing them towards it they are more likely to avoid those negative associations, sustain their career and be less likely to be knocked by unexpected obstacles.
- One way you can amp up your drive to complete your goal is to make it bigger than yourself. In the case of Buster Douglas that one punch that knocked out Mike Tyson was bigger than him alone, it was for his mother. Another example of amazing endurance and drive is that of Eddie Izzard who is a actor, comedian who also happens to be a transvestite. In an attempt to raise money for the UK charity Sport Relief Eddie decided to run 1000 miles around the UK. Not coming from an athletic back

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ground made this an extreme challenge. He was not just running for himself though, it was bigger than him. Check out the BBC series on the run, it is well worth the watch.



<http://tinyurl.com/eddieizzardmarathonman>

Find out more in the extended Performance Temple
Psychology handbook

Learn how to

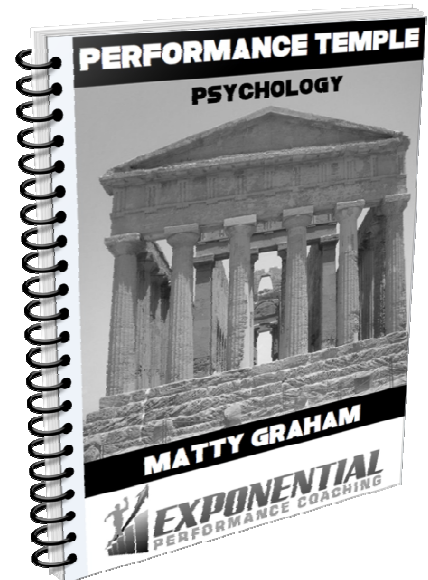
Push through the pain

Control your nervous

Harden the F**K up

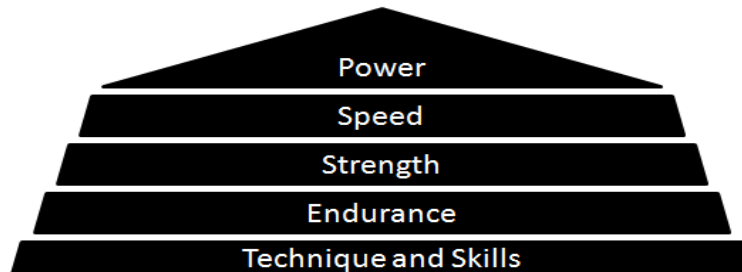
and bring your mind up to the same level as your body so on race
day you can perform at your peak.

<http://tinyurl.com/performance temple handbook>



Periodisation

Most people are familiar with the periodisation pyramid and the concept of building a wide technique and endurance base so you can then build your strength and speed on. The wider and bigger your base is the higher you can build your speed. However, the success of all of this training relies on the strength of your overall foundation and pillars.



Periodisation is simply the process of breaking down your training into smaller more manageable phases that work on different aspects of your performance at different times.

Technique and skill

The first thing that all athletes should do but most tend to neglect is to develop their technique and movement patterns. Get the basics right first! One thing that is clear at the elite level is how well these athletes do the basic things well. Not just once, but over and over again. Elite athletes spend countless hours working on refining and mastering their technique. On the other hand beginners often skip this stage of their development in favour of the hard graft of other training and are then forced to come back to this phase when they become injured or when they start looking for ways to break out of a plateau. Many problems and injuries can easily be avoided by first learning the correct techniques and movement patterns.

The length of this training phase varies between 0 and 6 weeks. It is beneficial even for elite athletes to take time in the early preseason to revisit their technique. For some athletes and some sports in particular that are heavily technique focused this type of training can be continued throughout the season.

The physiologically adaptations that occur over this training phase are primarily neuromuscular in nature. This means that the training is focused on firing the correct nervous pathways to activate the specific muscle groups required to perform the specific task. Often when athletes are trying to break a faulty technique habit that they have ingrained over years of incorrect movement this phase can be both physically and mentally very hard and frustrating as they try and over ride their strongly ingrained incorrect technique and activate muscles that have often been inactive for some time.

Athletes that are new to their sport should focus the majority of their training time in this and the next training phase as developing this solid foundation takes time.

Endurance

Once you are performing the correct movement patterns you need to develop your body's ability to perform these movements repeatedly for a prolonged period of time. Endurance base building is usually synonymous with long steady distance training. While this plays a very important role in improving your performance it is not the only way to improve your base endurance. Read more about high intensity interval training to improve endurance capacity below.

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<http://tinyurl.com/minimaltraining>

The physiological adaptations that occur during this endurance phase are an increased blood volume, increase in heart size, increased capillarization of the muscles, increased production of mitochondria, increased fat metabolism all of which lead to an increased endurance capacity. Also during this phase the athlete develops their confidence in their ability to complete distances or times that maybe daunting to them as they prepare for their goal race. This phase of training also allows the body to develop a structural resistance to the repetitive impacts of training. This needs to be managed carefully so it does not result in overuse injuries.

As you can see many of these training adaptations are structural in nature and require the building of new 'things' in the body (such as blood vessels, red blood cells and heart muscle). As a result of this it takes a long time to develop these training adaptations, but on the flip side they also tend to hang around for a long time if training is stopped. Depending on the length of an athlete's build up, training history and goals this training phase can last for 2-10 weeks.

Strength

Once you can perform the correct technique over and over again now you need to start performing it with some 'grunt'. When most people think of strength they think of gym training. While this is a way to develop your strength there are many other ways as well. For most endurance athletes the large majority of your strength phase is going to be hill work for running and cycling, bungee work and bigger paddles in the kayak, paddles in the pool and big gear work on the bike. The focus is on developing your muscles ability to generate more force, which is a key component in power.

$$\text{Power} = \text{Force} * \text{Velocity}$$

The main physiological adaptations to the training over this phase are increased contractility of muscle fibres, anaerobic threshold development along with progressing the adaptations in the endurance phase. This phase of training is typically 2-8 weeks.

Speed

Once you have developed your force generation capacity it is time to move on to developing how fast your muscles are able to contract and relax (this is velocity in the above equation). The faster this can happen the more power you can potentially produce. For endurance athletes most of the benefit in this phase comes from extending your anaerobic threshold as high as possible along with some sharpening of your VO2max. Many people think of speed as 100 m sprints. This is not the case for endurance athletes and the key focus should be on the development of their speed endurance and being able to sustain the highest possible speed for the longest possible time.

The main adaptations to occur during this phase are improvement in anaerobic enzymes, increased lactate buffering, lactate clearance and increased 'pain tolerance'. Many of these training adaptations are enzymatic and can be stimulated relatively quickly which is why an athlete's speed phase is usually significantly shorter than their 'base' phase. Because these changes are mainly enzymatic they also quickly revert back to 'normal' once training is stopped. This is why many athletes following an injury feel they still have their base fitness but lack their 'top end' speed.

Depending on the length of an athlete's build up, training history and goals this training phase can last for 2-8 weeks. The newer the athlete is to competition the shorter this phases tends to be, while athletes with a longer training history can benefit from a longer speed and power focus.

Power

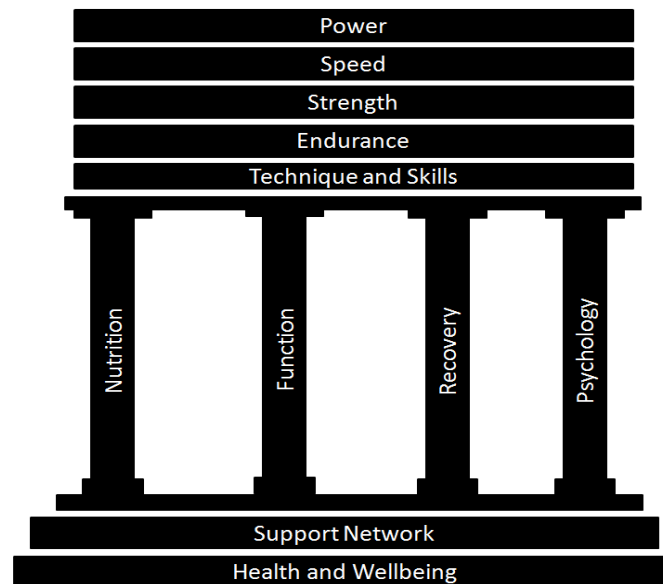
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The development of your explosive power training is like the icing on your cake. While it does not take long to ice the cake relative to how long it took to make, without the icing something is just missing. Explosive power training develops an athlete's ability to attack and sprint. If you are an endurance athlete do not be put off by the word sprint. This type of training has also been found to be a time effective method of developing endurance performance through a number of different pathways.

The main training adaptations that occur during this training phase are neuromuscular along with fine top end tuning of VO2max and Anaerobic Threshold. This training phase typically lasts 2- 6 weeks again depending on the specific race, athlete and their goals.

Multi-tier periodsation

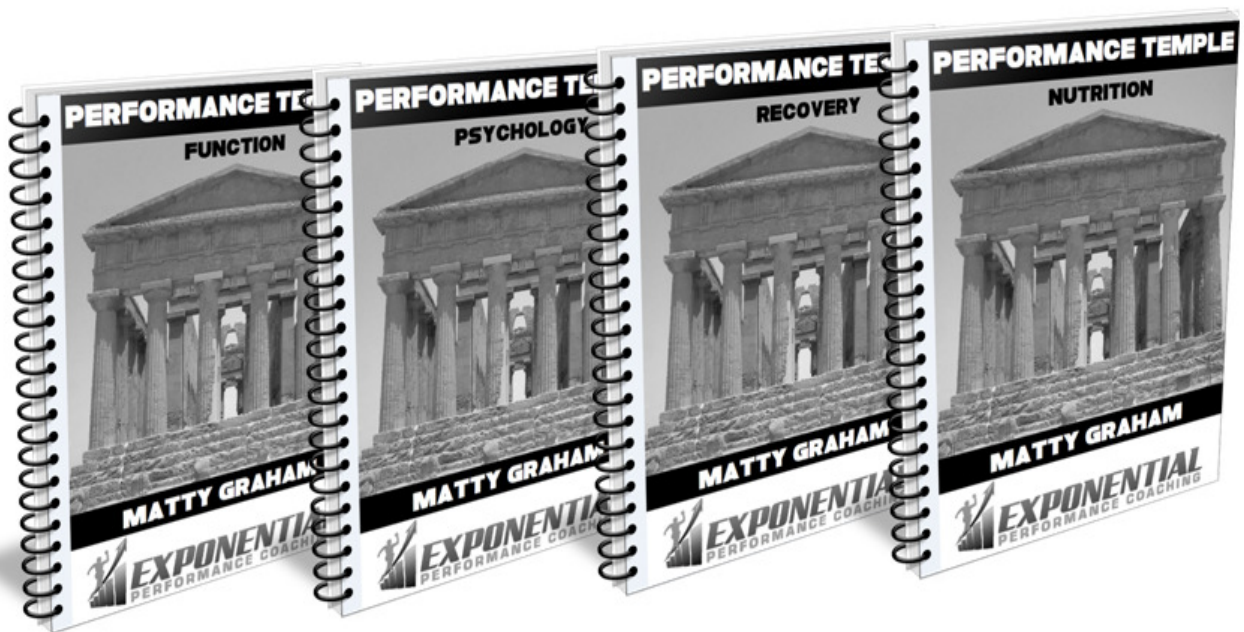
Multi-tier periodsation is another method that can be used instead of the traditional linear or pyramid periodisation frame work. The multi-tier design is to work on all aspects tech, endurance, strength, speed and power all at the same time. This is good for athletes who have a large number of races or competitions in close succession and do not want to 'peak' for a specific one off event. Other times when this can be good is if an athlete has a really short build up time frame before a race and needs to get as 'fit' as possible as fast as possible.



It is also possible to mash these two models together. For example with some cyclists it is good to do an early pre-season Linear focused technique and base training block before moving onto a more multi-tier approach during the season when racing is very frequent but you do not want to lose touch with your endurance while developing their speed.

The thing with the periodsation frame work is that it needs to be adapted to suit your specific situation. It is not often that you get a block of time when an athlete can be progressed seamless through each phase. Other races, time limitations, injuries etc all mean that some stages need to be fast tracked, adapted or skipped all together in some cases. The bottom line is that there is never one size fits all and you/ your coach needs to be flexible and innovative to maximise your end performance.

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About The Author

Matty Graham is a Sport Scientist and Performance Coach based in Dunedin New Zealand. He bases his training and coaching approach on a combination of high level sport science education and practical experience.

Studying for six years at the School of Physical Education at the University of Otago majoring in sport science and then completing a master's degree in Physical Education, specifically focusing on exercise physiology and how blood volume is regulated in responses to endurance and repeat high intensity training.

He found that there was a real lack of evidence based training and coaching available to athletes. With many coaches relying solely on their past experiences in sport, how they were coached and on traditional training approaches. Wanting to share his passion for sport and knowing there was a better way that could benefit athletes he established Exponential Performance Coaching in 2009 with the aim of providing effective cutting edge training support to help athletes of all levels to perform at their peak and achieve their goals.

Along with his education, Matty has nine years of experience working with over 300 different individuals in achieving their sporting goals. This includes working with beginners through to elite athletes, Olympic and World Champ medallists in the sports of multisport, triathlon, adventure racing, road cycling, track cycling, mountain biking, kayaking, running and team sports.

Matty has worked as a sport science consultant for Canoe Racing New Zealand at training camps and for BikeNZs elite track cycling programme. For two years he was the sport science consultant and strength and conditioning coach for Otago Hockey for the male and female under 21 and NHL hockey teams.

Matty is not all talk though. He has over 10 years of experience competing in endurance sports, mainly multisport, adventure racing along with the individual sports that make up these events. Pushing his physical and mental limits is something he is extremely passionate about and his life goal is to share his knowledge and help as many people as possible to achieve their goals.

