



15 KEY SECRETS TO RECOVER FASTER

RECOVERY SCIENCE

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AN INTRODUCTION TO THIS EBOOK AND HOW TO SUCCEED IN YOUR SPORT

This ebook outlines the most beneficial factors that play a role in your sport and exercise program. This ebook has been written for everyday people striving to achieve their goals in weight loss, muscle gain and overall wellbeing. Read it carefully and follow the guidelines to achieve the best results.

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CHAPTER 01

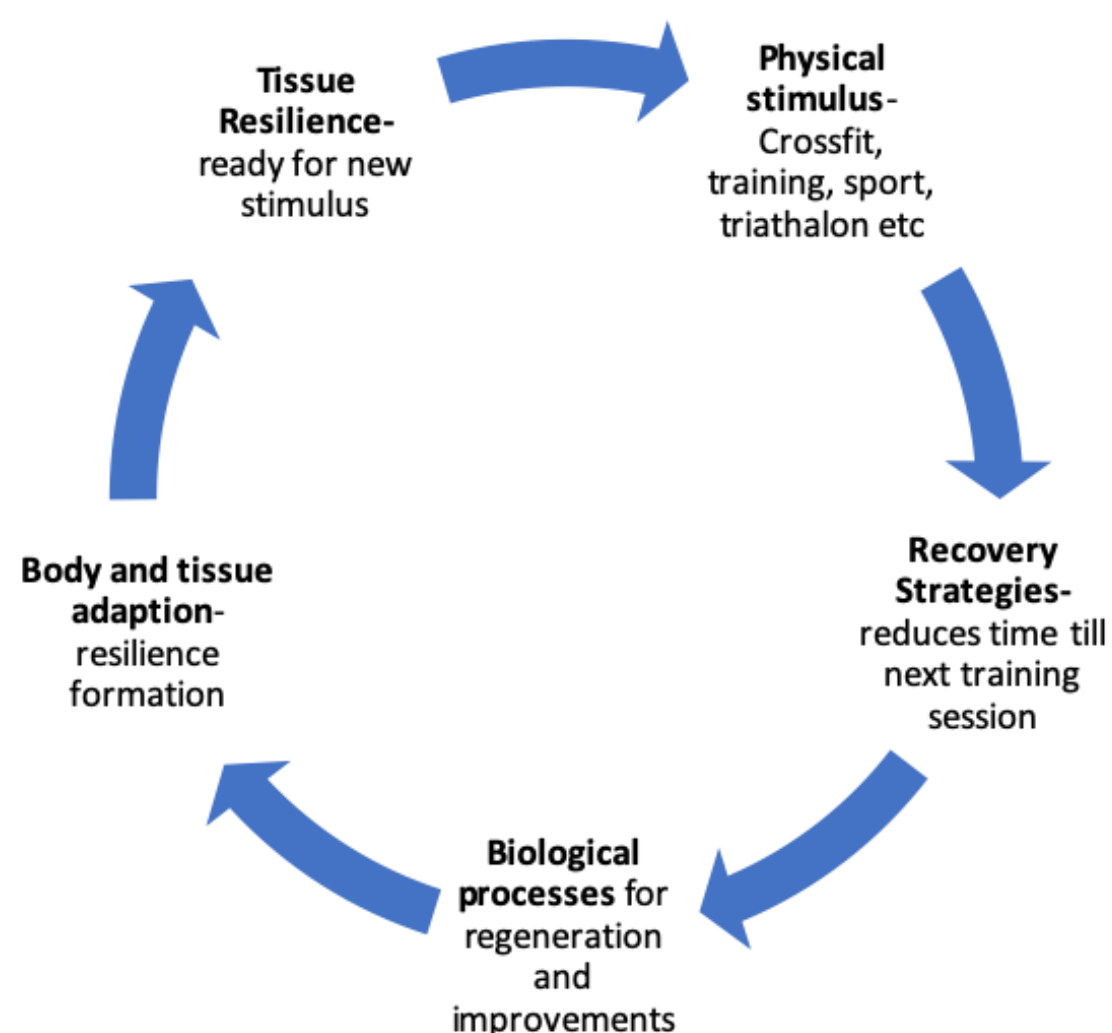
What is Recovery?

This chapter will provide you with the essential information relating to sports recovery. It will explain what happens when you train and will aim to provide a framework that will allow you to prioritize your recovery into your busy schedule.

WHAT IS RECOVERY?

Recovery is merely placing the body in the best physical state to regenerate and repair. Training is the stimulus (or good stress) for physical growth. It makes us more resilient for the next stress we place ourselves under. Every time we lift a barbell, it causes microtrauma in the muscles, it is then the bodies job to repair and recover from this to be stronger for next time. It is the training that causes the stress , it is the other 23 hours in the day that builds the muscle or burns the fat.

It is a great system to adapt to stress but allowing our bodies to get into recovery mode is the vehicle to get more training exposure to improve technical skills and physical resilience. This is the positive feedback loop of life. Each sport has it own individual language:



- Combat sports- ‘time on the mat’
- Cycling- ‘time in the saddle’
- Running- ‘miles in the legs’



WHAT TO DO FOR RECOVERY?

Study what the professionals do! Social media is a great source of information that looks into the back stories of the world’s most elite professionals and what they are using to maximise their performance. Have a look at the Instagram’s of Lebron James, James O’Conner, Tony Robbins and Conor McGregor at what they doing. So why not you?

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"IF YOU FAIL TO PREPARE, YOU’RE PREPARED TO FAIL.” – MARK SPITZ.

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5 ways to maximise your recovery



1. PLAN AND SCHEDULE

Plan your recovery as you would your training. At times, what appears to be the simplest factor can unintentionally be overlooked. For example, adequate warm down or post session down regulation (more on this later), correct and optimal water temperature, sleep routines, nutrition and hydration. Integrate recovery strategies into the training and game environment, as well as the overall weekly training schedule. Build a team of people around you to help you formulate your recovery plan.

2. MAKE IT SOCIAL AND FUN

Create an environment that enables recovery to become habitual and fun, rather than a perceived chore! Easy implementation with social proof is key. Ice baths alone aren't the easiest thing to do so make sure you bring someone else. Post training while laying on the ground make it social by discussing with your training partners todays effort or evaluate your session? How do I rate my execution for today's workout? Where could I have been better? Ask your friends as well.

3. USE SCIENCE TO TEST AND MEASURE STRATEGIES

Get the basics right. Education and knowledge empower athletes. Providing information to enable an athlete to understand why they do something and the consequential relationship to performance is critical. This has been shown to increase compliance and independence. As an athlete, and in the words of Nike co-founder Bill Bowerman "If you have a body, you are an athlete". Please recognise that you expose yourself to different physiological loads and everybody responds differently.

Ensure that adequate opportunities are provided with supervision, support and knowledge. This will allow you to trial various recovery strategies and protocols. The aim is to discover what is the most beneficial and advantageous techniques for you. All recovery will need tailoring to the person and where they may be in a training cycle or season/preseason!

Trial and error, test and measure- see what works!

4. MONITOR PHYSIOLOGICAL RESPONSE TO RECOVERY TO MINIMISE RISK

Are your recovery needs getting met? Are you headed towards an injury due to a build up of fatigue? What risks can we minimise with recovery? Make modifications where required and keep it fluid as training and loads change. If you train more, add in more recovery strategies. One metric to monitor is if you start feel sick, you are in a state of over reaching. This means your immunity has been compromised, dial training back and turn up recovery modalities.

5. TAKE PERSONAL RESPONSIBILITY FOR YOUR TRAINING AND RECOVERY!

Recovery aids performance! If you think recovery is only for athletes you are under selling yourself in a huge way. Recovery is intertwined with whole body wellness. The plight of every human is to experience life to its fullest potential. The better you feel, the more you will do.



CHAPTER 02

Importance of sleep

Arnold Schwarzenegger was interviewed for the reporter to ascertain how he managed to get so much done in his life. Bodybuilding, action movies then Governor of California. He said you have to have a vision and work every minute to that goal. The reporter replied 'but everybody has to sleep?'

Arnold replied 'Just sleep a little faster'.

If you were to take just one thing away from this ebook, get your sleep right!



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**"INSUFFICIENT SLEEP HAS BEEN TIED CAUSALLY TO OBESITY,
CARDIOVASCULAR DISEASE AND ALZHEIMER'S DISEASE,"
PROFESSOR MATTHEW WALKER**

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Sleep

HOW IMPORTANT IS SLEEP

Sleep is one of the fundamental pillars of wellness in athletic recovery. Every animal on the planet uses sleep to repair and regenerate. Here is why. Try to live with no oxygen for more than a few minutes and your system will shut down permanently. Try to go a few days without water and similar will happen. Now see what happens with a few days with no sleep. You will likely hallucinate at work, micro-sleep whilst driving and generally underperform in every area of life! So, it appears sleep to be at least as important as water, in the fundamentals for sustaining life. But for athletes who require high performance more sleep equals better performance in training and competition. Roger Federer,

When you consider the length of time you sleep over your life, you will sleep for a third of your life, much more time than you train and just about anything else for that matter. It makes sense to maximise the quality even more so than quantity of your sleep for improved physical and mental performance. This is echoed in many scientific papers.

In previous wars a form of torture was sleep deprivation. Prolonged periods of lack of sleep attacks the deepest physiological and biological functions in the brain. This quickly affects the core of a person's mental and physical well-being.

Even just the smallest amount of insufficient sleep, we see health consequences. One of the best examples of that small perturbation is one of the largest sleep experiments ever done. It's been performed on 1.6 billion people. It happens twice a year, and it continues to happen. It's called daylight saving time. In the spring when we lose an hour of sleep, we see a subsequent 24 % increase in heart attacks. In the fall when we gain an hour of sleep, there is a 21 % decrease in heart attacks (Prof. Matthew Walker)

Matthew Walker, sleep expert and author of our favourite book 'Why we sleep' says "*the number of people who can exist on five hours' sleep, rounded up to the nearest whole number, is zero*".

"Insufficient sleep has been tied causally to obesity, cardiovascular disease and Alzheimer's disease," Professor Walker explains. And that is just the start of it.

Anyone who can't function or absolutely 'needs' caffeine to stay awake until 12pm, or can comfortably sleep past their morning alarm is technically sleep-deprived. If that's you I would say it's time to seriously address the way you prioritise your sleep health.



MORE SLEEP EQUALS A LONGER LIFE

Sleep is the primary regenerative function of the body. It is intertwined with nature through the day night cycle or circadian rhythm. There are two basic stages of sleep, non REM (rapid eye movement) sleep and REM sleep (dream sleep). Non REM sleep is divided into 4 stages and it is the last two stages (3 and 4) is where the body regeneration takes place.

Much like training. You never regret having a good night's sleep! There is not one physiological system in the body that is not positively improved with sleep. If you sleep less you die sooner!

What are the signs of lack of sleep?

- Unpleasant feelings of fatigue
- Less approachable and less attractive- yes it has been studied!
- Irritability
- Anxiety disorders
- Difficulties concentrating
- Reading and speaking problems
- Poor judgment
- Lower body temperature
- Needing an alarm clock to wake up
- Considerable increase in appetite for bad sugary foods
- Poor athletic performance and increased injury risk

Sleep

CAN YOU HACK YOUR SLEEP?

Throughout the course of history, humans were subject to periods of both feast and famine. In this pre-industrial era, we developed an evolutionary adaptations to the metabolic system. This allows our bodies to stockpile calories and only release that energy in systematic calorie deprivation. So why can't this work with sleep? Can we really 'catch up' on our Z's or is this just a fallacy?

The answer is simple, mother nature never intended it to be that way. Day and night have always been a delineation of the human sleep cycle and at no point in history have we transgressed this natural phenomenon. It is only in modern times that we have begun to fall victim to this misconception of sleep stacking and sleep sacrifice. A dangerous delusion that we as a species have not yet adapted too. Unlike our metabolic system there is no difference between how our sleep cycle evolved and how it exists in the present day. So why do we treat it like there is?

Mother Nature never intended humans to be staring at TV screens watching Netflix or scrolling Instagram on tiny iphone screens, well into the dark hours. That is why our melatonin release is matched to the day night cycle and we are displacing ourselves from this very important sleep regulator. We are altering our brain chemistry by our activities in the dark hours. Altered brain physiology equals poor sleep which in turn affects other physiological feedback loops.

The flow on is :

- Reduced training output, higher cortisol levels
- Reduced productivity in all life areas
- Reduced efficiency thus tasks take longer
- Mood affected. Now you are not so much fun to be around.



BUT YOU CAN IMPROVE THE QUALITY OF YOUR SLEEP?

You hear it time and time again. Get off your phone or using screens at least two hours before bed. Apple has night mode which reduces the blue light content of screens. There is plenty of research actually showing the blue light from all screens is very detrimental to your sleep. One of the earliest studies found that using an iPad for two hours prior to bed, blocked rising levels of melatonin by 23%. Melatonin is the hormone released to tell you to go to sleep. Another more recent study showed more concerning results. Healthy adults lived in a tightly controlled lab for 2 weeks, containing 2 different experiments that everyone passed though.

1. Five nights of reading a book on an iPad (no other iPad use- emails, games etc)
2. Five nights of reading a printed paper book.

Compared to reading a printed book, reading on an iPad suppressed melatonin release by over 50% at night. It delayed melatonin release by at least 3 hours! This delayed the bodies instruction to go to sleep until the early morning hours. Not good for the next day of training or work! Unsurprisingly, individuals took longer to fall asleep after using the iPad relative to print copy reading.

Individuals lost significant amounts of REM sleep following iPad reading. Subjects felt less rested and sleepier throughout the day following iPad use. There was also a lingering affect, with participants suffering a 90 minute lag in their evening melatonin levels for several days after iPad use- a kind of digital hangover affect!

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"THE NUMBER OF PEOPLE WHO CAN EXIST ON LESS THAN FIVE HOURS' SLEEP, ROUNDED UP TO THE NEAREST WHOLE NUMBER, IS ZERO." MATTHEW WALKER
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Sleep

SLEEP HACK # 1- HOT SHOWER AT NIGHT, COLD SHOWER IN THE MORNING!

Take a warm shower or bath before bed. The flush of the skin helps drop core body temperature (central blood flow) and helps you feel sleepy before bed. Optimum temperatures for rooms are quite cold, between 17-22 degrees. Make your bedroom clean, dark and cool.

SLEEP HACK #2 - GET THE DEVICES OUT OF THE BEDROOM AND READ A PRINTED BOOK!

Do not have screen time later in the evenings. Keep screen time for early evenings, then start to dim the lights in your home after sundown to prepare for sleep. Have a sleep wind down process. For example no screens in the bedroom, warm shower prior to bed and read a book before sleep. You may actually even learn something new! Choose something that will not stimulate your analytical brain and keep your mind thinking. Tim Ferris likes fiction reading prior to bed!!

SLEEP HACK # 3- GO TO BED AND WAKE UP THE SAME TIME EVERY DAY!

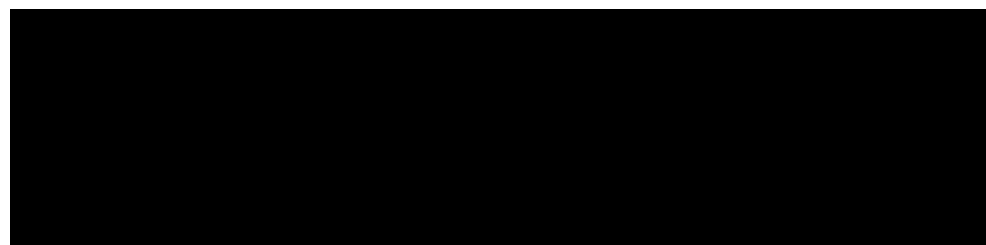
Use your circadian rhythm! Natures biological systems are yet to be surpassed. Stick to a sleep schedule, humans are creatures of habit, people have a hard time adjusting to changes in sleep patterns. Sleeping later on weekends won't make up for lack of sleep during the week and it will make it harder to wake up on Monday morning. Set an alarm for bed time to start the wind down process. Stick to it!



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KEEP IT COLD, NO PHONES IN THE BEDROOM AND STICK TO YOUR SLEEP SCHEDULE
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SLEEP PLANNER

TEMPLATE TO HELP YOU PLAN YOUR SLEEP



WAKE UP

TIME 630AM
DRINK 500ML WATER
COLD SHOWER 2 MINS
WHY: YOU HAVE NOT HAD
ANY FLUIDS FOR AT LEAST
7 HOURS

BEFORE BREAKFAST

TIME 635AM
GO FOR A MORNING WALK 20 MINS ,
NO SUNNIES ON
WHY: LETS YOUR BODY KNOW ITS
DAY TIME

MIDDAY

TIME 1230-1PM
NOW IS THE TIME TO NAP IF
YOU CHOOSE, 20-30 MINS
ONLY

AFTERNOON

GYM SESSION/ WORKOUT
LAST CHANCE FOR EMAILS/WORK
TURN PHONE TO NIGHT MODE 5PM
COOL BEDROOM TEMP TO 17-22 C
WHY: BEGIN WINDING DOWN
ANALYTICAL BRAIN

2 HOURS BEFORE

WRITE A DO TO LIST FOR TOMORROW
CUT OUT ANY ALCOHOL
STOP EATING ANY FOOD
TURN LIGHTS DOWN IN HOME
WHY: ALCOHOL AND FOOD DISRUPT
BLOOD HORMONE LEVELS WHICH
REDUCES REM SLEEP

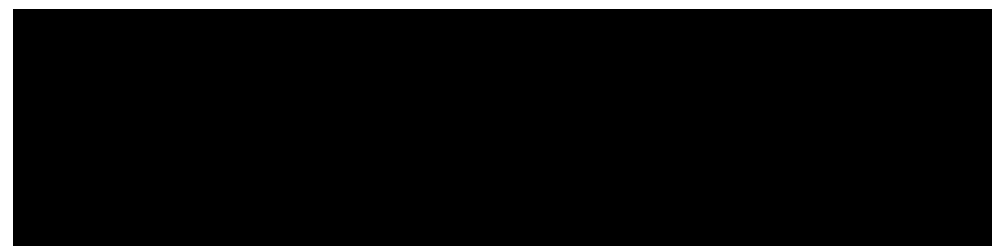
30 MINS BEFORE

WIND DOWN TIME
READ A PAPER BOOK
HOT SHOWER
MEDITATE
BRUSH TEETH
TAPE MOUTH SHUT
WHY: MAINTAIN NASAL BREATHING
DURING SLEEP

SLEEP

SLEEP PLANNER

TEMPLATE TO HELP YOU PLAN YOUR SLEEP



WAKE UP

BEFORE BREAKFAST

MIDDAY

AFTERNOON

2 HOURS BEFORE

30 MINS BEFORE

SLEEP

CHAPTER 03

Nutrition

Current research and practice suggests the rate and quality of recovery in high performance athletes may be as important as the training stimulus itself. Especially since the athlete will utilise more time in between training bouts in order to recover to prepare for the next bout. There are different recovery strategies for different types of training phases or competition. We will give you some of the best and easy to implement scientific strategies available on the market!

In this chapter

PRIMARY FUNCTIONS OF NUTRITION

NUTRITION FOR RECOVERY

PRE, DURING AND POST TRAINING NUTRITION

THE MAGIC OF MILK



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**"THE BODY YOU HAVE IS MERELY A COLLECTION OF THE FOOD
YOU HAVE CONSUMED OVER YOUR LIFE" SADHGURU**

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NUTRITION

WHAT ARE THE AIMS OF NUTRITION RECOVERY STRATEGIES?

In an athletic setting, nutritional recovery refers to the fastest restoration and regeneration of biological processes within the body. ***As the old saying goes you are what you eat!*** If the body does not adequately recover from a previous training session or competition, the processes of adaptation, performance, and general well-being of the athlete will be compromised. This will lengthen the time between high intensity training bouts. The knock on effects are huge!

Nutritional recovery benefits include:

- Enhance energy levels
- Improved training capacity
- Reduce muscle soreness (DOMS)
- Reduced injury risk
- Increase training exposure
- Enhanced ability to perform under states of fatigue at competitions and in games.

PRIMARY NUTRITIONAL FUNCTIONS

1. REFUEL
2. REHYDRATE
3. REBUILD

Nutrition

REFUEL

Refuel- What energy needs to be put back in?

Fluid and food intake in the acute post-exercise period, as well as over the subsequent 12-24 hours should be given absolute priority. Consuming a nutritious carbohydrate rich snack within 30 minutes of finishing a session will help refuel depleted energy reserves in preparation for the next session. This can be especially important on days that have more than one session scheduled. Aim for an intake of approximately 1 g of carbohydrate per kilogram of body mass. For example, a 80 kg athlete should aim for ~80 g carbohydrates. Aim for readily digested foods such as fruits as they contain high amounts of fructose as well as fibre, so you get the carb intake but without the high insulin spike.

REHYDRATE

Science tells us that being dehydrated reduces blood volume, starving your muscles of essential oxygen and compromises performance. A recent study has also shown that being dehydrated can also impact on your performance in the gym, reducing the number of reps you can do. Thus reducing the stimulus for hypertrophy. Post session hydration is important as many chemical processes within cells require water and oxygen to replenish as part of their functions.

For optimal rehydration, in the subsequent 2-4 hours after exercise match any fluid deficit with an amount of fluid equal to 150% of losses. This accounts for continued sweating and urine production e.g. if a player loses 2 kg during training, plan to rehydrate by ingesting at least 3 L of fluid in the hours following to ensure they fully rehydrate. To fast track rehydration when recovery time is short, replacing both lost fluid and electrolytes is critical. While commercial electrolyte supplements may be of value in this situation, many common foods are also excellent sources of sodium or salt plus other nutrients important to recovery like carbohydrate and protein. See in a later section ‘The magic of Milk in recovery’!

Hydration hack # 1

Weigh yourself immediately before and after the session. Apply 150% of the losses with isotonic liquids.

Electrolytes

Below is a list of post-training snacks which have the same amount of electrolytes as popular electrolyte supplements. Consuming 500 ml of water with each of the following snacks provides similar amounts of fluid and electrolytes to popular electrolyte supplements for aggressive rehydration. Other high salt foods for electrolyte and fluid retention post workout include:

Breads, breakfast cereals, cheese, rice crackers, stir fries with sauces, many tinned foods, flavoured rice cakes, pretzels and crackers, pasta sauces, rice dishes , baked beans

Milk is also a good source of electrolytes as well as fluid, carbohydrate and protein so a low fat flavoured milk post-training is a great choice, especially amongst athletes who lose their appetite after training.

Hydration hack #2

Simply drinking more of their daily fluid intake with meals can also ensure greater fluid retention and better hydration each day. If a player has dropped 2% or more of their body weight during a session, encourage the inclusion of at least 2 serves of the above higher salt containing snacks into their recovery snack plan. This will support aggressive rehydration. Scheduling periodic fluid balance sessions with an accredited sports dietitian is a great way of providing specific individual feedback on both fluid needs during training but also in recovery after sessions. Given sweat rates are impacted by environmental conditions, fluid balance sessions should be scheduled periodically as the environmental conditions change over a season.



Hydration Hack #3

Hydration starts during your last session. It is a 24/7 focus for the athlete. Take advantage of all breaks in training to access fluids.

Hydration Hack #4

Monitor urine colour to a mild straw yellow.

Hydration hack #5

Try to keep weight loss to <2% of your body mass . If above 4% seek medical aid immediately. Intravenous fluids may be required. Present to ALL training sessions in a well hydrated state. Which you can monitor with weighting yourself on a regular basis.

Nutrition

REPAIR

Protein, protein and more protein!! But what is the dose? Large quantities of protein are not necessary, just 20-30 g of protein from a recovery snack is more than adequate. Taking more than this is a waste as it does not further enhance muscle building and repair. Rather, it gets used as a fuel source. Taking some protein with a recovery snack also lowers carbohydrate needs in recovery (from about 1 g/kg body mass to 0.8 g/kg body mass i.e. 80 g instead of 100 g for a 100 kg athlete), which could be an important strategy if athlete’s do not have high energy needs or are trying to drop some weight.

Higher protein foods in recovery also help to put a cap on appetite, great for those with ferocious appetites after training. Though sports foods like carb-protein powders and bars are practical, everyday foods provide a larger range of nutrients to assist in meeting other nutrition goals. This may help stretch energy (kilojoule) budget further. If players are on a really tight energy budget or attempting to reduce body fat levels, timing training to be followed up immediately with a meal is a great idea. For athletes aiming to enhance recovery within a training session or game, consideration should be given to the use of sports drinks to maintain fuel availability.

Sports characterised by repeat high intensity efforts, creatine monohydrate supplementation may be of value, enhancing recovery between efforts, especially towards the end of a training session. However, this is an issue best discussed with a sports performance focused dietitian where they can assess the pros and cons of using a product like creatine, as well as offer individual advice on the appropriate protocol for use if deemed suitable in assisting an athlete’s specific goals.

The muscles soreness that often accompanies intense training sessions over the subsequent 1-2 days also impairs exercise capacity. Specific nutrition strategies may be applied to help minimize this. The inclusion of high biological value protein rich foods primarily animal based foods including lean meats, dairy and eggs at meals and snacks. These may be complemented by nutritional supplements with anti-inflammatory properties. For example flaxseed oils, fish oils and curcumin (from turmeric).



WHAT FACTORS AFFECT WHAT NUTRITIONAL STRATEGIES WE NEED TO USE?

In training and competition phases the below variables fluctuate and hence adjust nutritional requirements :

- Increased training volume
- Increased training intensity
- Preseason training durations
- Type of training stimulus. More gym versus cardio.
- Degree of fatigue and muscle damage.
- Endurance athlete vs a jumping athlete
- Level of impact or contact for different sports
- Recovery from previous training stimulus

Training will affect the energy requirements of the body. Below are some considerations to your situation when it comes to nutrition:

- Available macronutrient needs (carbohydrate, fat, protein)- body type
- Sweat rate and compositions – environmental conditions
- Vitamin and mineral needs
- Food availability- if travelling for competition
- Cooking skills- confidence to put meals together
- Nutrition knowledge
- Financial constraints
- Psychological stress. anxiety, confidence
- Health-Prior or current illness,
- Athlete age
- Environment- Temperature, humidity, altitude, culture (travel). Will affect sweat rates and compositions

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"OUR BODIES ARE OUR GARDENS OUR WILLS ARE OUR GARDENERS" WILLIAM SHAKESPEARE

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Nutrition

PRACTICAL RECOMMENDATIONS

To maximise the benefit from nutrition in recovery, athletes should orientate more of their daily energy budget before, during and after exercise. This is particularly important on days when training more than once. The meals/ snacks planned between sessions may be the primary recovery strategy so players will need to be aggressive with their intake. See the sample meal plans below for a practical illustration on how this can be achieved. To facilitate the timely delivery of nutritional support after exercise, athletes will need to bring, or be supplied with; a post-training snack after sessions and this should include both field specific and resistance training sessions.

If an athlete’s appetite backs off after hard sessions, encourage the use of drinks that provide the necessary recovery nutrients as these are often easier to tolerate. Suitable choices in recovery include plain and flavoured milks as well as powdered carb-protein shakes prepared on water or milk. Encouraging players to cook up several meals at once and storing the leftovers for days when they are short on time helps ensure ready access to suitable post-training meals/ snacks. Dishes that provide valuable amounts of carbohydrate and protein that also freeze well for later use include risotto and lasagna, while stir fries with lean meat and vegetables, plus accompanying carbohydrate (rice, noodles, couscous, quinoa) are great as left overs the following day.

TWO SAMPLE DIETS WITH DIFFERENT NUTRITIONAL OUTCOMES

Meal/ Snack	Poor Recovery Plan	Excellent Recovery Plan
Breakfast	8 Weet-Bix + milk + sugar	8 Weet-Bix + milk + sugar
Training	Water	Gatorade (600ml) ± Water as per thirst
Post-training	Water only	Low fat flavoured milk (500ml)
Lunch	2 x 12 inch sub ham, cheese & salad	1 x 12 inch sub ham, cheese & salad Water (600ml)
Afternoon Tea	NIL	Banana sandwich Water (400ml)
Training	Gatorade (500ml)	Gatorade (300ml)
Post-training	Water (600ml)	30g Whey protein on Trim (300ml) ± Water as per thirst
Tea	400g Beef steak 2 cups cooked white rice 2 cups broccoli & carrot	150g Beef steak 1 cup cooked white rice 2 cups broccoli & carrot
Supper	170g Greek yoghurt Banana	170g Greek yoghurt 40g nuts
Energy	13800 kJ	13800 kJ
Carbs	370 g	410 g
Protein	230 g	210 g
Fat	100 g	90 g
Fluid	3 ⁺ L	4 ⁺ L

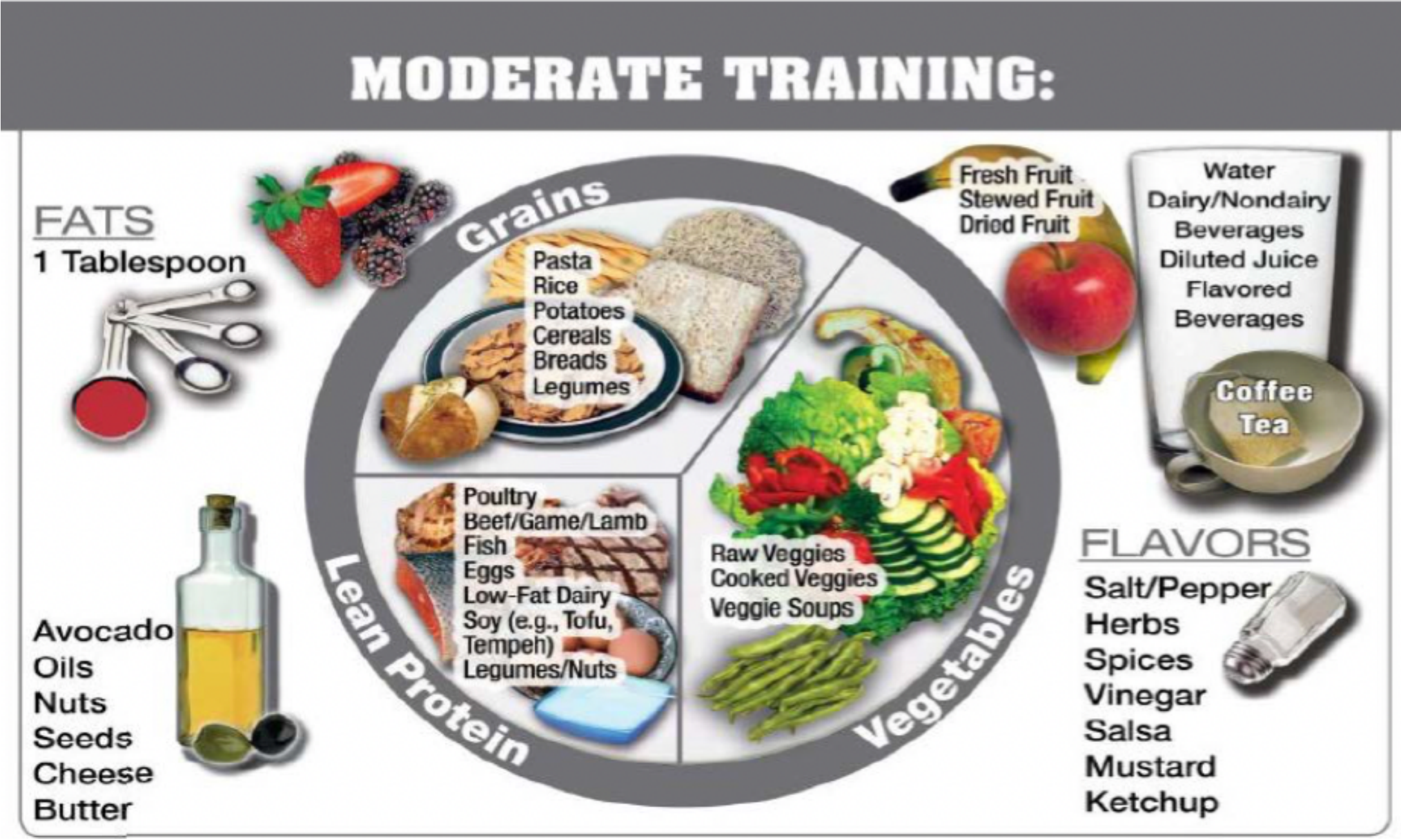
The sample meal plans above are designed for an athlete undertaking two sessions a day, including a morning field session and afternoon gym session. Both plans have the same energy content (kilojoule) and the overall composition of carbohydrate, protein, and fat are very similar.

However the way the meal plans are structured around training varies markedly and will impact on fuelling and recovery between sessions.

- The ‘Poor’ plan has just three (large) serves of protein over the day, while the ‘Excellent’ plan has six serves with 20g or more of protein, therefore enhancing recovery.
- The ‘Poor’ plan has just 65g carbohydrate (17% total) between the morning and afternoon training sessions, while the “Excellent’ plan has 140g (35% total), better promoting recovery from the morning session and fuelling for the afternoon session.
- The ‘Poor’ plan has 3L of fluid but much of this is consumed outside of meals, while the ‘Excellent’ plan has more fluid, most of which is consumed with meals and snacks, promoting better fluid retention and overall hydration
- More carbohydrates are consumed during training in the ‘Excellent’ plan compared to the ‘Poor’ plan, getting fuel to the muscles when they need it most.

Nutrition

PLATE REAL ESTATE GUIDES:



Nutrition

NUTRITION STRATEGY BUILDER

Include pre & post-training snacks

A pre-training snack rich in carbs has repeatedly been shown to increase work capacity during training sessions, especially longer and more intense sessions. The specific snack you choose will vary based on your daily energy needs, available resources, taste preferences and location. Convenient choices include sandwiches and rolls, fruit loaf and other flour based snacks, cereal, fruit in all of its forms, dairy snacks or commercially available sports foods like sport bars.

During training strategies

Short sessions **water**- 30-40 mins

Use breaks to take on fluids

Longer sessions **sports drink** -40-120 minutes

Post training strategies

After exercise, consume 150% of losses over the next 2-3 hrs. For example, if you lost 1 kg during a session, consume 1.5L of fluid in recovery. In recovery after training, your muscles are particularly sensitive to carbs and protein. The carbs help fast track restoration of muscle glycogen levels so your body is ready to back up for the next session while the protein helps to turn on muscle repair while also filling you up. For those on tighter energy budgets, consider bringing forward your next meal, rather than adding in a snack, and then going to your next main meal.

Base your meal plan on three main meals and at least two mid meal snacks

It's often assumed smaller, more frequent meals help keep your metabolism up and thus assist with weight management. Recent research has confirmed this is NOT true but there are several reasons why this style of eating is likely more beneficial for active individuals like athletes. Eating more often provides regular energy top ups and prevents you from getting over hungry... a common mistake that leaves you vulnerable to the 'hunger bear' who eats everything in sight, resulting in over eating. Including pre- and post-training snacks gets fuel to the muscles when they need it most, maximising the bang for your buck.

Include a small serve of protein rich food with each meal & snack

Protein rich foods tend to make meals and snacks more filling. Given this, it makes good sense to include a small serve of protein rich food at each meal and snack throughout the day. You don't need to follow a high protein diet, merely one that has a better distribution of your protein intake. Most rugby players back end their protein intake; consuming half or more of their daily protein intake at dinner. Instead, keep your serve of protein rich food at dinner to no more than a deck of cards (about 150-200g), add some lean ham and low fat cheese to your sandwich at lunch, 3-4 poached eggs at breaky and include a natural Greek yoghurt as a great mid-meal snack. These 20-30g hits of protein at each meal and snack also help maximise muscle building and repair after training e.g. 200-400g Greek yoghurt, 200g raw (150g cooked) meat/poultry/seafood, 60g low fat cheese, 90g tin tuna, 200g egg whites or 3-4 large eggs, 30-40g protein powder. Bigger hits of protein than this don't offer any further benefits, you are better off allocating more of your plate real estate to some energy restoring carbs.

Make use of energy and nutrient rich drinks if your appetite subsides post-training

If you're trying to maximise the satiety of your diet (i.e. how filling it is) it's wise to eat your calories, avoiding drinks that contain empty calories like soft drink, cordial, juice & sports drinks. However, hard training sessions can knock your appetite around, leaving post-training snacks difficult to stomach. Despite their importance in kick starting the recovery process. If this happens to you, feel comfortable reaching for a nutritious drink (like a low fat flavoured milk or meal replacement powder) that simultaneously helps meet carb, protein, electrolyte and fluid recovery needs. Orientate more of your daily carbohydrate intake around training. Rather than fear carbs, you should look at carbs as a friend when used strategically as they help you do more in a training session, stimulating better training adaptations. The key is getting their timing right and adjusting how much you have based on your daily energy needs. This gets petrol to the muscles when they need it most while also allowing you to moderate intake at other times of the day. For longer training session i.e. 90 min plus, taking on board additional carbs during the session via a sports drink, gel or bar may offer a further performance boost.

Doing a 'cook up' 1-2 times a week ensures you have access to great quality options every day.

It takes the same time to cook up enough for four meals as it does just one, so make the most of the time you invest in the kitchen. If you know what you have to eat tomorrow, why not pack up your meals and snacks for the next day so that all you need do is pack them into a cold pack on the way out the door. This can be especially important for those individuals juggling many commitments, including family, work and training. Aim to do one main shop a week but realise you may need to get to the shops once more to pick up additional fresh produce. And fresh is best....not only for nutritional value but also taste and you have to enjoy what you eat.

Caffeine

If you're chasing a performance boost from caffeine, talk to your sports performance dietitian to see if it's right for you. Getting the dose or timing wrong may actually impair your performance, not boost it. As with any other dietary strategy, the use of caffeine and other supplements needs to be trialed in training to develop a protocol that works best for you.

Nutrition

Magic of Milk in Recovery

What you consume after exercise can be one of the most powerful tools in your recovery arsenal, helping to promote rehydration and refuelling, plus muscle repair and adaptations. Nutrients key to achieving these recovery goals include fluid and electrolytes (for rehydration), carbs (for refuelling) and protein (for repair and adaptation). To meet these needs in a recovery snack generally requires a combination of different foods, for example:

- Lean meat and salad sandwich with water or juice
- Lean meat and vegetable stir fry with rice or noodles
- 1-2 Tubs of yoghurt and fruit

Milk is one of the few foods which ticks all of the recovery nutrition goals by itself. Here's the 'milk' story... The nutrient profile and practical characteristics of dairy foods can make a significant contribution towards the nutritional goals of recovery. These goals include: milk and drinks based on milk provide a source of fluid and electrolytes (sodium, potassium), key to promoting rehydration milk is a good source of sodium or salt, higher even than sports drinks. This, combined with the potassium and protein content promotes better fluid retention ensuring the ingested fluid stays in the blood rather than your bladder. Sweetened dairy drinks (flavoured milk, smoothies), dairy desserts (yoghurt, custard, ice cream) are good sources of carbohydrates and have other advantages including:

- Easy to consume, even when your appetite backs off after a hard session
- Variations in fat/sugar content mean individual athlete needs can be met by different products (see milk guide below)
- The additional protein in milk enhances recovery of muscle energy reserves, especially when fuel food intake is less than ideal
- Dairy foods contribute significant amounts of high biological value protein
- Dairy proteins, particularly the whey sub-fraction (that's where whey protein comes from...yes milk), have been shown to be superior to other protein sources in maximising the protein building response to resistance exercise. Blood amino acid profile following consumption of quickly digested proteins appears to promote superior protein building in response to exercise.
- Finally, dairy foods contain an array of other nutrients (including calcium, vitamin D) that support the function of the body and may be consumed to support the acute energy and macronutrient needs associated with a bout of intense training exercise.



Nutrition myths busters:

If you're trying to get big, you've got to take a protein supplement .

While protein plays a key role in helping to build muscle size, few athletes struggle to achieve their protein needs by diet alone. What's more, building muscle takes more than just protein. The key is to boost your energy intake consistently over the week and include small hits of protein at each meal and snack. Consume three meals and two snacks containing protein each day.

Frozen veggies have very little nutritional value

There's no doubt fresh is best when it comes to fruit and veggies but frozen is a very close second and they are super convenient, just in case you can't make it to the shops. Reality is, most nutrients are lost during cooking.

Be wise with alcohol consumption, if you choose to drink

Regular alcohol consumption can really impair your ability to achieve your training goals. Alcohol is energy dense, containing almost the same energy/calories as fat, yet doesn't provide any nutrients i.e. empty calories. What's more, alcohol is a direct intestinal tract irritant; that's just one reason why you feel average after overdoing it. Want more bad news...alcohol suppresses the stimulation of muscle building after training! Remember, alcohol need not be an automatic inclusion in social engagements. Alcohol moves you further away from your goals.

It's best to avoid carbs during the afternoon and evening as they are turned into fat

This has been doing the rounds for years. Recent research actually shows that taking the day's quota of carbs all at night didn't cause fat gain relative to spreading the carbs over the day. The key is to target your carb intake at a time when the body is most receptive to them i.e. before, during and after training. So if you train late in the afternoon, take faith in the fact that having a meal with carbs at night to restore energy levels is all good.

Sports drinks make you fat

Granted, liquid calories don't fill us up as much as eating them, most likely because chewing gives your body's 'I'm full' receptors a chance to switch on. However, sports drinks have half the calories of other sweet drinks and have been designed for use specifically during training to get fuel to the muscles when you need it most. What's more, research shows that you often only need small amounts of sports drink to get a performance boost.

Creatine should only be used when you are trying to bulk up

Creatine is one of the most studied sports supplements on the market. It works by enhancing recovery during exercise characterized by repeat high intensity efforts. In effect, it helps you do more quality work, promoting better training adaptations, whether that be work in the gym or field. It's more than a muscle builder, it's a work capacity builder!

Dehydration is the cause of muscle cramps

Exercise induced muscle cramps may be as a result of several things but the one common element is cramps occur when you are fatigued. To minimize the fatigue and your risk of cramps it's critical you work hard in training to further boost your game fitness. Given diet can help delay fatigue, optimising your intake before and during exercise may help prevent cramps. Start exercise well hydrated, match your fuel needs to training loads and follow up with your sports performance dietitian to see if strategies like an acute increase in salt intake might assist.



ACTIVE RECOVERY

A vast range of recovery strategies exist, this section provides information regarding scientific based recovery strategies. It is important to acknowledge that some recovery interventions, while lacking scientific evidence, may still be popular among elite athletes and have positive effects. As with every intervention test and measure on yourself the best modalities, adjust the order of recovery and time after sessions to give you the best results.

In our experience the effects of recovery are twofold.

1. Reduce the delayed onset muscle soreness (DOMS)
2. Optimise Performance for longer timeframes

In this chapter we explore:

- Scientific and anecdotal evidence of active recovery processes
- Easy to implement performance maximisation techniques
- Formulation of a recovery weekly plan

Key elements for active recovery:

- **Active cool down**
- **Post workout muscle tone down regulation**
- **Active recovery strategies including water hydrostatic immersion**
- **Cold water immersion (CWI)**
- **Contrast water therapy- hot/cold baths**
- **Mobility options and timings**
- **Massage**
- **Compression therapy**

Active Recovery

Recovery (Cool-Down)

Active recovery is a simple yet integral component of physical recovery and is usually performed post-exercise by mode of walking, jogging, cycling or swimming at a low sub- maximal intensity. Anecdotal evidence suggests that active recovery reduces post-exercise muscle soreness and delayed onset muscle soreness (DOMS). Despite the lack of understanding regarding the exact mechanism of active recovery, it makes biological sense that active recovery is superior to passive recovery like laying on the couch where metabolites and bi-products can accumulate in muscles. When you consider normal circumstances of the venous and lymphatic systems, these use gravity and the muscle pump actions to recirculate blood and fluid back to the heart. Any process that will assist in turn, will likely help the recovering athlete. Bringing oxygen and reparative factors to those fatigued muscles with movement makes clinical sense. Use circulation and the muscle pump to flush the legs- 10 to 30 mins.

Examples include:

- Walk and stretch
- Stationary bike
- Swim or pool mobility session

Post workout down regulation

If we consider the opportunities for active recovery they actually begin immediately after the workout. This started with the nutrition window immediately post session to ingest carbs, proteins and replenish fluids.

Active Hack #1

Reset your muscle tone down before you cool down!

Without using too much science as you exercise we are adjusting the balance an efferent and afferent messaging in the body. This is concurrently neural, metabolic and hormonal system up regulate to get training effects. If we consider just the muscle system in isolation. We want to stimulate the muscle so the body will adapt to that stress to be better prepared for the next stimulus. But this is an upregulation. This is why with time you may notice certain body parts constantly get tight after sessions. The lower back, shoulder, forearms or glutes are the most commons areas. Triggering and foam rolling work.



Post-Exercise Stretching

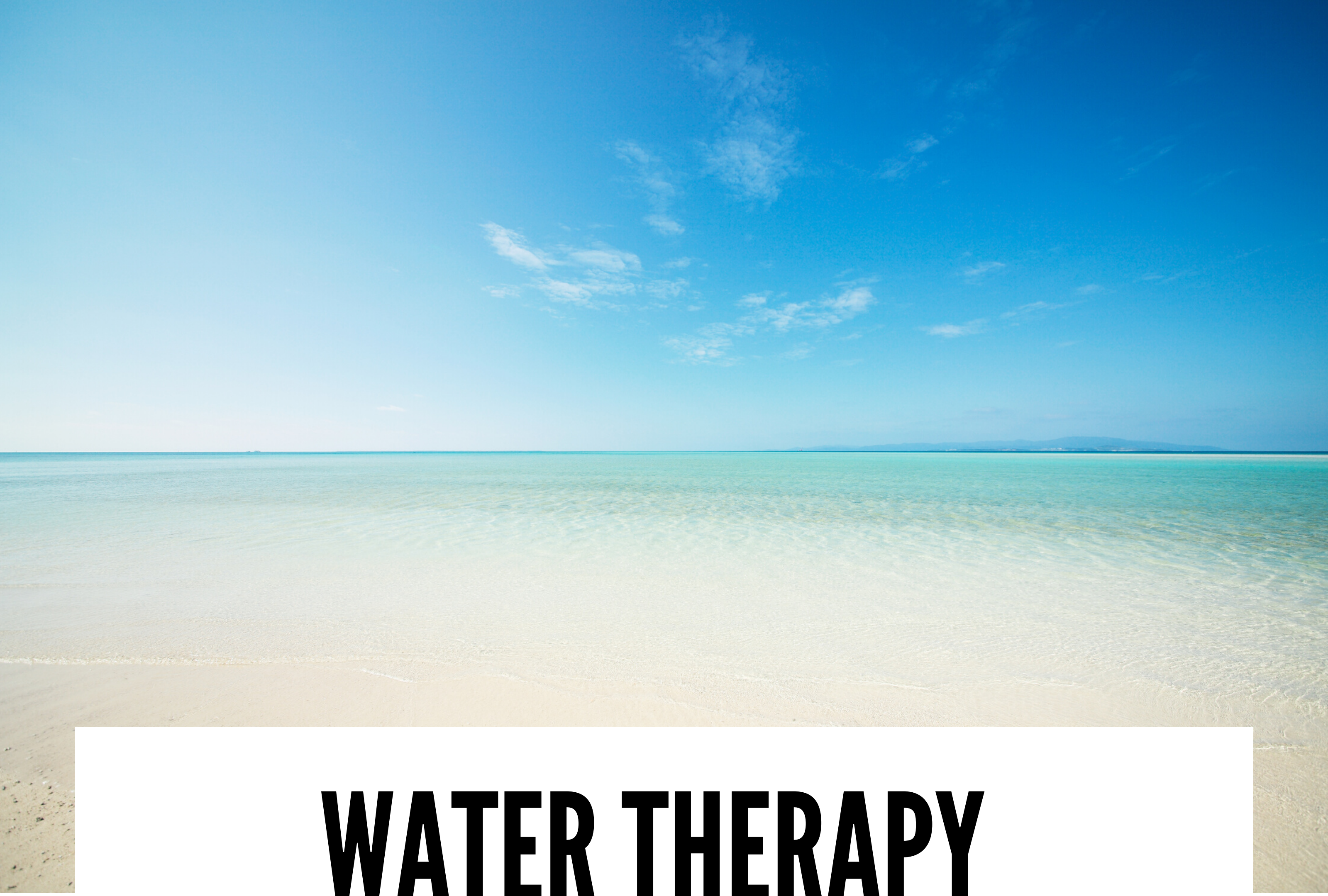
The primary purpose of post-exercise stretching is to increase range of motion. This is most effective with elevated tissue temperatures or immediately after exercise. Stretching is one of the most commonly used recovery strategies. However, there is limited evidence for the use of this strategy in enhancing recovery immediately post- exercise. While stretching may improve mobility it also has an influence on the muscle circulation. While stretching and subsequent release may affect 25% of the local blood flow to that muscle. It is perhaps the pursuant flush of blood which clears lactic acid and metabolites from the worked muscles.

Research shows that, while it is difficult to test in studies not much can reduce the DOMS only techniques to hasten recovery have support in literature. As with most areas in sports medicine more research is required.

But if you apply the Test and Measure approach you will assess if it is effective. If it works its in your recovery tool box as a technique for you moving forward. While there is limited evidence to suggest that post-exercise stretching specifically enhances recovery of muscle function, there is no evidence to suggest a detrimental effect.

Post session protocol

- 1.Perform a low intense form of activity to use circulation and the muscle pump to flush the legs or working muscles- 10 minutes but depends on the length of the session.
- 2..Down regulate with some triggering or foam rolling to remove trigger points. This will clear and reduce leg tone to get ready for the next day. 2 minutes per muscle group
- 3.Five minutes of stretching holding stretch for 30 to 40 seconds, Calves, hamstrings, quads, hip flexors, back, shoulders, neck
- 4.Also allows time for core body temperatures to reduce so when you have a shower you won't sweat in your nice clothes!



WATER THERAPY

Why does the human body respond well to water immersion therapy?

The pressure of the water acting on the body (hydrostatic pressure), improves venous and lymphatic return.

Temperature of the water influence the success of different hydrotherapy recovery interventions.. Immersion of the body in water can result in an inward and upward displacement of fluid from the arms and legs to the core due to hydrostatic pressure differential gradients. The resulting displacement of fluid may bring about an increase in the movement of substrates from the muscles to more proximal and easily centralised areas. Therefore, post-exercise swelling may be reduced. While the effects of hydrostatic pressure exerted on the body during water immersion may be beneficial, the water temperature the body is exposed to also has a direct influence on the success of such recovery strategies.

The natural affinity for humans to want to be surrounded by nature. Ever noticed how different you feel when surrounded by trees when bush walking? The crisp coolness of water at the beach or lake, breathing in the fresh mountain air? Enjoying a sunset or sunrise or just in open natural spaces sitting on grass? Now you are starting to use some of the deepest hard wired areas your brain in recovery as well! Evidence will prove that the mind is your greatest recovery agent.

Pool Based Recovery

Pool based recovery sessions are commonly used by team sport athletes to recover from training and/or competition. Benefits are: active recovery performed in a non-weight bearing environment, often used to reduce eccentric muscle soreness and stiffness. Also effective for contact sports to reduce contusion soreness. Pool based recovery sessions often include walking, hip mobility movements and stretching in the pool as well as some swimming for athletes that are capable of keeping their heads above water.

Active Recovery

Cold Water Immersion (CWI)

Cryotherapy (meaning ‘cold treatment’) is the most commonly used strategy for the treatment of acute soft tissue sports injuries, due to its ability to reduce the inflammatory response and to alleviate spasms and pain.

Cold water immersion (i.e. ice bath, plunge pool) is an effective recovery strategy to:

- Reduce heart rate and cardiac output
- Redirect blood from the periphery to the core
- Enhance blood flow / circulation to more central areas
- Reduce inflammation / swelling
- Decrease perceptions of pain
- Reduce neural sensitivity and allodynia
- Decrease thermal strain and reduce core body temperature
- Enhance recovery from muscle damage, fatigue, heat stress (performance benefit!)

While there are benefits there is some evidence that CWI post a gym session interferes with the metabolic pathways for muscle hypertrophy. We recommend for a lower level every day workout or gym session don’t ice bath immediately after the session. A day or two later will have reduced influence on the physiological system and then help reduce DOMS. After a competition or very high workloads the effects as outlined above outweigh the negatives and we would still opt for the CWI.

Recovery Hack

If in doubt conduct the experiment with yourself to monitor the effects of any recovery intervention on any of your variables. Some variables worth tracking include muscle adaption, DOMS length of time/intensity and the time to return to pre session levels.

Contrast Water Therapy (Hot/Cold)

Use your circulation to flush your body! During contrast water therapy athletes alternate between heat exposure and cold exposure by immersion in warm and cold water respectively. While active recovery (i.e. cool-down) has traditionally been considered a superior recovery strategy to passive recovery, contrast water therapy has been shown to elicit many of the same benefits as an active recovery. This may prove to be more beneficial for some athletes given the reduced energy demands required to perform such an intervention.



Contrast water therapy is an effective recovery strategy to:

- Stimulate blood circulation
- Stimulate the central nervous system
- Increase removal of blood lactate
- Reduce inflammation / swelling
- Relieve stiffness and pain
- Increase range of motion
- Enhance recovery from muscle damage and fatigue

Performance benefit is the end game!

Practical Recommendations

Current knowledge and understanding of hydrotherapy recovery interventions is improving and is very individualised. While it is acknowledged that further scientific research is required to confirm such applications a test and measure approach will allow the individual to self select the modalities that give greatest ‘bang for their buck’.

- Recovery strategies should aim to be practical hence complied with and time efficient. CWI interventions of 10-15 min duration have been proven to be effective.
- Use a combination and adjust the order of interventions and monitor the effects.
- Full body excluding head and neck should be implemented. More often than not, exercise tasks involve the majority of the body; therefore, a full body recovery application is ideal. Partial immersion of the body may limit changes, therefore reducing potential benefits of CWI. In addition, partial body immersion reduces the degree of hydrostatic pressure exerted on the body and may reduce the effectiveness of such an intervention.

- Current information suggests water temperatures of 10-15°C (cold) and 38-42°C (hot) to be highly effective. If athletes are performing a continuous cold water immersion protocol it is recommended to use a slightly warmer temperature (e.g. 12°C), however, this is dependent on various factors. A ‘warmer’ temperature is perceptually more comfortable and will lead to greater compliance. These temps have shown to effectively lower core body temperature and enhance recovery. However, if an athlete is performing contrast water immersion protocol, a cooler temperature (e.g. 10C) may be more effective given the shorter and intermittent exposure time to cold.

Active Recovery

Contrast Water Therapy

An important outcome of hydrotherapy is often to reduce post-exercise core body temperature. Investigations into contrast water therapy have indicated that a 1:1 (hot:cold) ratio may be ideal in stabilising core temperature following exercise. In addition, isolated hot water immersion (e.g. spa 38-42°C) has been shown to increase core temperature. It is currently recommended that protocols should avoid inclusion of more hot water exposure than cold water exposure, particularly in contact sports where high levels of damage are likely. If completing contrast water therapy it is essential to finish cold. Finishing on the colder temperature leaves the body in the best state to stay cool, reduce swelling, produce changes in blood flow, and prolong the benefits of contrast water therapy.

It is important to recognise individual responses to all implemented or new recovery strategies. Not every athlete will respond in the same way. The aim should always be to individualise recovery wherever possible.

Following cold water immersion, do not have a long hot shower after completing cold water immersion. Core body temperature can continue to drop, slowly, with no harmful effects, for approximately 30 minutes following immersion. Therefore, it is important that athletes instead, dry off and put on sufficient clothing.

Massage

Every professional team on the planet uses massage to aid recovery and improve readiness to train. Most teams will supply two massages per week. One as a recovery from the last game, then another as a facilitator to performance.

Benefits of massage include:

- Releases trigger points
- De-tones overactive muscles
- Promotes circulation and metabolite clearance
- Reduces stress

Evidence shows little support for massage as a technique to reduce DOMS. But there is considerable anecdotal evidence to show that once DOMS has set in massage is a great for recovery. Hence why teams use this across the board.

Recovery has physiological benefits but also needs to be fun. In my dealings as a physio in professional Australian sport I came across two professional rugby union players who always tended to bounce into the club on a Monday even after tough matches the Saturday before. Both players as we discovered, on the Sunday after mandatory medicals in the morning, would get in their boats and head out onto the ocean to go free diving for fish for three to six hours. We saw this as a fantastic combination of:

- Active recovery (swimming with flippers)
- Hydrotherapy (hydrostatic pressure from the water especially when diving down)
- Cool water temperature exposure
- Use of breathing and relaxation techniques when under water
- Fun/mental relaxation
- Social bonding/camaraderie
- Biophilia- mental well being

Compression

The use of compression garments has been well documented in the medical literature as a method of treating circulatory and lymphatic disorders. Given the efficacy of compression garments in the medical field, the use of compression garments in the athletic industry has become increasingly popular over the past decade.

Compression garments are thought to improve venous and lymphatic return through the application of graduated compression to the limb/s. Compression garments work by applying external pressure to the limb; the pressure exerted is greatest at the ankle/forearm, gradually decreasing up the leg/arm. This is called graduated compression.

Benefits of compression for recovery

- Increase blood flow and improve circulation (via enhanced venous return)
- Reduce swelling
- Reduce muscle soreness
- Enhance the clearance of blood lactate and markers of muscle damage
- Reduce feelings of fatigue (heavy arms/legs)



**“IF IT DOESN’T CHALLENGE YOU, IT WON’T CHANGE YOU.” –
FRED DEVITO**

Active Recovery

Medical Grade Compression Garments

In some instances, medical grade compression (Class II or Class III) can be superior to commercially available compression clothing (Class I). Medical grade compression typically provides greater compression and often, durability of the fabric, but most importantly the pressure gradient for centralised circulation.

Travel on Flights and even buses (long periods of inactivity) are good places to use these types of garments to prevent peripheral fluid circulation accumulation It is currently recommended that all athletes and staff travel in a medical grade compression sock. Discourage athletes and support staff from travelling in a commercially available compression garment (i.e. 2XU, skins etc) as they are not designed for the travel environment and have the potential to do more harm than good in some individuals. Commercially available compression garments should be utilized, and are highly effective, for post-exercise recovery (not travel).

When travelling, the entire leg does not require compression, the priority being the lower limb as this has the greatest pooling of blood. A medical grade compression sock is comfortable to travel in (compared to a pair of full length tights) and improves blood flow and circulation throughout the duration of travel. Medical grade compression is very effective for preventing and reducing swelling, enhancing an athlete’s physical state on arrival. Often medical grade compression socks are available in an open or closed toe. For travel, some athletes prefer the open toe as they can wear thongs and find them to perceptually feel cooler. Open or closed toe, it makes no difference to how the garments work or the overall effectiveness; it is a personal preference. Additionally, athletes with large feet would benefit from an open toe garment to ensure added length as required.



Recommended protocols

Where possible, compression garments should be worn following training and competition. Longer you are able to wear the garments for the better. It is acceptable to sleep in compression garments overnight if desired. However, if uncomfortable, too hot, or if they keep an athlete awake at night, remove prior to bed. Leave this for them to trial at your own discretion.

Practical Recommendations

- Duration: While there is limited research in this area it can be safely assumed that the longer an athlete is able to wear compression for post-exercise, the better. Wear compression for a minimum of one hour post-exercise.

- Sizing: Compression garments must be fitted correctly to ensure maximum effectiveness. For an athlete, the garments should feel tight but still be comfortable. As a general rule, for a lot of brands one size smaller than the general sizing recommendations seems to be appropriate (case by case basis).

- Garment Choice (e.g. tights vs. shorts etc): For the purposes of recovery, compression garments covering the entire limb are the most effective and provide greatest benefit (i.e. tights, leg/arm sleeves, long sleeve tops). Many athletes wear other compression garments at different times, for example, shorts or singlet’s during training, quad sleeves to keep ice packs in place

post-training etc. There is no problem with utilizing compression garments for multiple purposes; however, it is important to consider the goal and desired outcome of the garment prior to prescription. At present, it is recommended that athlete’s travel in a medical grade compression only (see below for further details).

- Garment care: To maximize the life span of compression garments:
 - Place all garments in a laundry bag to machine wash or hand wash.
 - Do not use a hot water wash or fabric softener.
 - Do not put compression garments in a dryer
- Take care putting the garments on. Gradually work them up the arm or leg rather than just pulling from the top

“YOU HAVE TO EXPECT THINGS OF YOURSELF BEFORE YOU CAN DO THEM.” – MICHAEL JORDAN



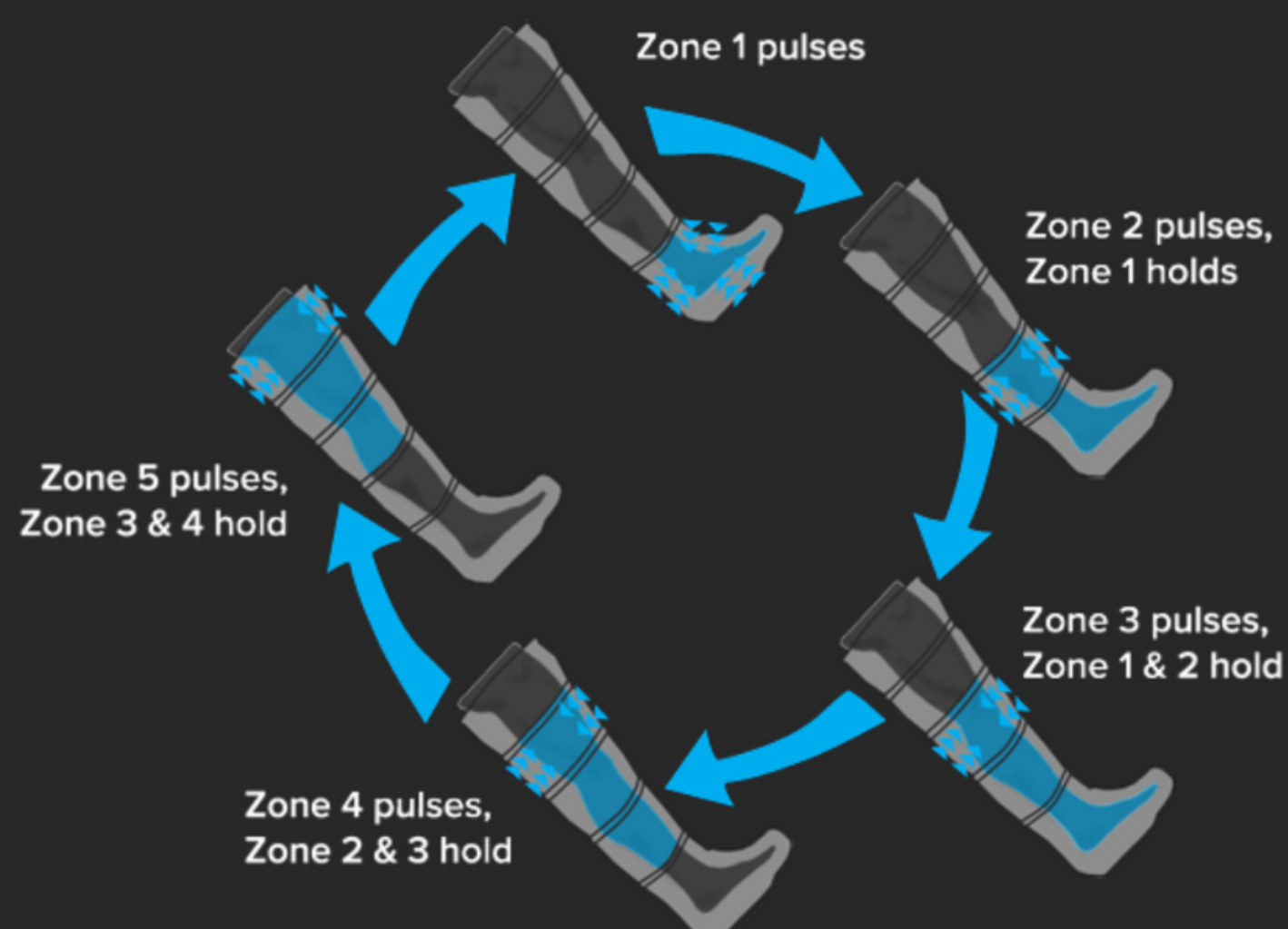
PNEUMATIC COMPRESSION

As technology evolves and the toys get better there are now machines that physically flush your legs for you! At the current time we believe Normatec to be the leaders in this compression field with their patented sequential compression system which starts distally and moves proximally.

NormaTec is the world leader in rapid recovery—the systems give a competitive edge to the world's elite athletes, coaches, and trainers. Normatec uses compressed air to massage your limbs, mobilise fluid, and accelerate recovery with normatec pulse massage pattern.

- Improve circulation
- Lymphatic drainage
- Remove metabolites (waste) and lactic acid build up
- Shorten recovery time
- Reduces DOMS

THE NORMATEC PULSE MESSAGE PATTERN



The NormaTec Pulse Massage Pattern starts in the foot, hand, or lower hip and moves upwards zone-by-zone massaging the limb and mobilizing fluid out of the extremities.

Created by a physician bioengineer (MD, PhD) to enhance blood flow and speed recovery, NormaTec Pulse Massage Pattern employs three key techniques to maximize your recovery:

PULSING: Instead of using static compression (squeezing) to transport fluid out of the limbs, Sequential Pulse Technology uses dynamic compression (pulsing). Our patented pulsing action more effectively mimics the muscle pump of the legs and arms, greatly enhancing the movement of fluid and metabolites out of the limbs after an intense workout.

GRADIENTS: Veins and lymphatic vessels have one-way valves that prevent fluid backflow. Similarly, NormaTec Pulse Technology uses hold pressures to keep fluids from being forced in the wrong direction. Because of this enhancement, instead of tapering pressure off, the PULSE and PULSE PRO can deliver maximum pressure in every zone.

DISTAL RELEASE: Because extended static pressure can be detrimental to the body's normal circulatory flow, Sequential Pulse Technology releases the hold pressures once they are no longer needed to prevent backflow. By releasing the hold pressure in each zone as soon as possible, each portion of the limb gains maximal rest time without a significant pause between compression cycles.



PERCUSSIVE THERAPY

Initially used by astronauts to prevent bone loss, vibration therapy is rapidly becoming a popular treatment for athletes as a method of recovery from physical stress and exercise. The vibrations generated by motors underneath or inside a vibration pad or platform are transmitted to the person using the machine. The intensity, defined by the parameters: frequency, amplitude, magnitude (light vibration vs. heavy vibration) and the direction of these vibrations are essential for their therapeutic effect.

By far the best product we recommend and use daily is the Theragun. As the world leader in percussive therapy, the powerful handheld percussive therapy devices provide a faster, more effective, 100% natural approach to pain relief, athletic performance, recovery, and wellness. Theragun Percussive Therapy overrides the pain signals to the brain, increases heat in the tissue, and releases tension through a combination of 16 mm amplitude and frequency of 40 percussions per second to release knots, spasms, tightness and pain in a full body 15 minute massage

- Natural, pill-free pain relief
- Target each muscle group for 2 minutes to decrease post-workout soreness
- Prevents and breaks up adhesions
- Improves muscle coordination and mobility to prevent injury
- Relieves muscle spasms and replenishes energy through more hydrated muscles
- Better sleep
- Promotes better posture and body awareness
- Relieves body soreness from travel and jetlag
- Assists stretching in your daily routine

You can buy yours here

DAILY PLANNER

BY RECOVERY SCIENCE

BEFORE TRAINING

Pre Carb Meal

- Fruit of any kind
- Sandwiches & rolls
- Fruit loaf
- Cereal
- Sports bars

Hydration

- Drink 400-500ml of water within 1 hour of starting your training session
- Weigh yourself before the session so you can monitor how much sweat you have lost and how much you will need to replace

Sleep

- How was your sleep last night, don't compromise sleep for a training session

Supplementation

- Do you take a pre workout? Creatine or beta alanine?
- Don't take a pre workout loaded with caffeine anytime after lunch, it will drastically impact sleep

Activations and warm up

- Do the little things right, don't skip on a warm up and pre activation

AFTER TRAINING

Cool down 10 to 20 mins

- Walk and stretch
- Stationary bike
- Pool session

Down regulate breathing techniques

Breath in for 4 seconds, hold for 7 seconds, breathe out for 8 seconds. repeat x 5

Compression

Put on a pair of compression tights on the legs or arms
If you know of somewhere that does Normatec compression, get this done as soon as possible after training or game

Ice and hot water therapy

Normally team sports will have ice baths post game, if you can get access to this post game then it is greatly beneficial. If you are in the gym and going for muscle gains, delay ice therapy for at least 4-6 hours.

Roll out and Trigger/Percussive therapy

- Hit any tight spots especially around the hips
- Spend at least 2 minutes per muscle group
- Stretch out the Calves, hamstrings, quads, hip flexors, back, shoulders, neck

Carbohydrate and protein rich meal

- 1g per Kg of bodyweight of carbs eg 80kg person- 80g carbs
- 20grams of protein
- if you can stomach a snack meal then have it as a shake or sports drink with some BCAAs

DURING THE WEEK

During the week make sure to to tick off the below at least 3-4 times

Roll out/trigger/stretching session 20 minutes

- Have an morning and a before bed routine of either stretching or trigger the areas the give you most trouble

Cook up meal prep 1 -2 x per week

- This will save you time and money
- It will ensure you are getting the right nutrients during training and game
- Set Sundays afternoons for meal prep time and make 3-4 different meals for the week

Sauna 3 x per week

- Increases blood flow to muscles
- Removes toxins naturally
- Promotes healthy, youthful skin
- Boosts immune system
- Improves sleep quality

Go for a swim

- If you have access to a pool or beach then try get in as often as possible, the hydrostatic pressure of the water is more beneficial then clothing compression

Compression therapy- Normatec lymphatic drainage

- These are new technology being used by elite athletes all over the world. If you have access to these, get in at least 2 x per week

Make sure to prioritise your sleep

- Your sleep in the most important factor for recovery and wellbeing
- Set yourself a goal of getting at least 8 hours
- Roger Federer has a non negotiable of 12 hours per night!

Look after your hydration daily-

- 3-4L of water per day
- Break it up to having a glass with every meal plus a water bottle or two throughout the day to sip on



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