

REDS

REDS, or 'Relative Energy Deficiency in Sport', is a very serious and potentially fatal condition arising from training in a consistent calorie deficiency, which can cause a relative energy deficiency. Historically it was thought to mainly affect women (indeed it used to be known as the 'female athletic triad'), however studies have shown men can suffer from it too albeit with less obvious symptoms.

As suggested by its original name, REDS is a syndrome of three interrelated conditions. If an athlete is suffering from one of these, it is likely they are suffering from all three. These conditions are listed below in the order they generally present in cases:

- *Disordered eating*: Many athletes, while not meeting clinical criteria for diagnosis, exhibit disordered eating habits such as fasting or avoiding certain types of food they may perceive as 'unhealthy'. This can be driven by social or individual pressures to maintain a certain body-type or weight. By restricting their diet, the athlete may no longer have a high enough energy level to sustain normal bodily functions.
- *Amenorrhea*: More specific to female athletes, this is defined as the cessation of the menstrual cycle for a period of 3 months or more due to weight fluctuations and energy deficiency disrupting the release of estrogen releasing hormones. The body preserves energy for basic survival processes rather than the reproductive cycle.
- *Osteoporosis*: Low estrogen levels, combined with a low calcium intake, can lead to osteoporosis. This compromises bone density and structure, leading to stress fractures or worse and can be career ending with permanent consequences. Bone density is thought to peak between the ages of 18-25, so low density around these ages can be hugely problematic later in life. In addition to this, growth of new bone is also stunted, leading to problems with skeletal development in younger athletes.

There have been several high-profile cases of REDS in the last few years, with athletes such as Mary Cain, Tina Muir and Bobby Clay talking about their experiences with the condition. I would highly recommend looking into these case studies to understand better how REDS can arise.

The best thing to do about this condition is to never get it - this means ensuring you are eating enough to counter your energy expenditure from training, and making sure you do not experience any rapid weight losses or fluctuations. A lot of people shy away from eating a lot of unhealthy food as athletes (and rightly so), but if faced with the choice between energy deficiency and unhealthy food you should always prioritise getting the required calories.

If you think you are experiencing any of these symptoms, *stop training immediately and see a healthcare professional!* Increase your caloric intake and stop unnecessary energy expenditure to gain weight and energy.

Stretching & Recovery

Stretching has recently gotten a bad reputation in some circles - a lot of it earned - and is a fairly divisive topic even at the semi-elite level. However in my experience I have found that, if done correctly, it can be one of the most important tools for both warm-ups and the recovery routine. Most people know there are two different types of stretching - dynamic and static - and that there are different scenarios in which both should be used. You should only ever do dynamic stretching before a run, as static stretches pre-workout can not only increase your risk of injury over extending cold muscles, but also reduce your strength and available power for that workout. Static stretches are best saved for post-workout recovery when your muscles are already warm and loose, to reduce stiffness and soreness (DOMS) the next day. Here I'm going to discuss static stretching and its uses in your recovery routine.

A lot of people are aware of some basic static stretches, but many of these don't know that there are actually several different types of static stretching. Two common examples of these are Proprioceptive Neuromuscular Facilitation (PNF) stretching and Active Isolated Stretching (AIS) - hardcore stretching enthusiasts will point out at this point that AIS, PNF and static stretching are technically different things, but for the purposes of this discussion they are similar enough to group all together. The meaning of these terms is explained below:

PNF: After stretching a muscle to its maximum range of motion, contract the muscle for around 5-8 seconds after which the muscle will experience a period of decreased resistance allowing you to move the muscle to a position of increased stretch. This is a popular method for increasing flexibility and range of motion, though holding the stretch for too long has been associated with the decrease in strength and explosive power as mentioned before.

AIS: Opposing muscles move the desired muscle into a stretched position (think contracting your quadriceps to stretch your hamstrings), and then a rope or resistance band is used to increase that stretch for 1-2 seconds before releasing and repeating. It is important to never hold the stretch in AIS as to not trigger your muscle's stretch reflex, an involuntary contraction of the muscle that protects against overstretching injuries.

I have personally used both of these to great effect, although I definitely favour AIS. I would recommend looking up some of these stretches on the internet or in a book if you're interested, as some of the stretches are best done in specific ways.

While stretching is the core of any recovery routine, there are other things you can add to enhance your routine. This could include deep tissue massage via foam rolling or a massage gun, icing and heat treating sore muscles, or compression with special leggings or socks. This will help promote blood flow to your muscles and promote faster recovery. Remember that, although these are certainly useful, they are by no means essential and may or may not be worth spending money on depending on your personal circumstance. One thing you should make sure to always do post run is to rehydrate and replenish your glycogen stores.

S&C

S&C, a.k.a strength and conditioning, is an essential part of an intermediate/advanced runner's training program. The main benefits of an S&C session are injury prevention via improved muscular strength and stability as well as the development of neuromuscular power. There are so many different exercises that can benefit you in an S&C session that I won't even attempt to name them, but I'll try and outline some possible approaches.

Many of the Oxford team already have access to Duncan's S&C program, but for those of you that aren't I'd really recommend looking into the OUCCC notes on their website (<https://www.dropbox.com/sh/3s9qlyyiut35lbo/AAAmDbcEI8xiiqLRIGLFnZSqa?dl=0>). These plans are based around bodyweight exercises and can be done at home with no additional equipment - I personally followed these all of my 2nd year and they were super helpful.

For greater versatility and more personalisation you can build your own plans. If you are thinking of doing this, I'd recommend making sure you have a good mix of exercises targeting different muscles and ensuring you know the correct form for each of your exercises - bad form can easily lead to injury if you are inexperienced. Do your research for best results!

If you are new or inexperienced with S&C/weight training, there are a couple of guidelines you should follow:

- Keep weights light and reps low for the first few weeks
- Never train on consecutive days
- Allow plenty of rest between sets
- Never lift to exhaustion - go lighter/shorter if you need a spotter
- Don't neglect your upper body!

Of course, as with all training, the number one rule for everyone is: *If it hurts, stop!* Too many people don't recognise the signs of injury early enough and end up hurting themselves much worse by continuing through rather than stopping. If you think you have an injury, *cease training immediately and see a healthcare professional.*

Sleep

Possibly the most underappreciated part of training, sleep is the main pillar on which all recovery is built. Especially here at Oxford I know that far too many people feel like sleep gets pushed to the side in favour of work, training or social life (I'm definitely guilty of this too), but it should really be your number one priority. Good quality sleep will help with not just physical, but also mental recovery.

As a rule of thumb I recommend getting at least 7 hours of quality sleep per night, plus an extra hour for every hour of activity you do that day. This can vary between people however, and I would recommend investing time into working out your own sleep requirements as well as analysing your sleep cycles if you have the capacity to do so - I find that the best way to get up and not feel lethargic is to make sure I don't get up in the middle of a deep or normal sleep phase, instead aiming for the light/REM sleep phases. Getting quality sleep also involves having a regular bedtime at a reasonable time (this will also help you get up for sessions in the morning) and having the right sleep environment by controlling your caffeine intake, bedroom temperature, blue light exposure etc. This can also be helped with CBT courses - I have found the Sleepio course to be an excellent help in the past, though I'm unsure if it's still free to access for people in the Oxford area.

Being well rested is a great boost to both physical and mental wellbeing. In addition to sleep being the time of best recovery and muscle growth, it also helps improve your clarity of thinking - essential in the high stress Oxford environment - and overall mood. I am always much more up for training, able to push harder and longer if I'm well rested rather than miserably dragging myself out the door. This will help you avoid burnout as well in the long term.

Naps can also be a good way to supplement sleep if necessary, but you should be careful how you go about implementing them and they should definitely not be a long term solution to sleep deprivation. You should try not to nap beyond early afternoon in order to not disrupt your regular sleep, and also keep the nap to under an hour if possible to avoid falling into a deeper sleep that will be much harder to wake up from and possibly leave you feeling worse after.