Taking banned drugs to boost performance is dangerous, unethical and frankly inexcusable. But what about the countless supplements marketed to sportspeople? Are they safe, and do they really work? *David Bradford* investigates

Athletic progress is earned, not bought, and not ingested. Achievement in sport, and the satisfaction it brings, is necessarily the result of prolonged periods of slog. Pure, thigh-torturing slog. That warm glow on crossing the finish line in a better position or time than ever before is derived from knowing it was your dedication to training that made it possible: all those hours in the saddle, all that commitment, all those sacrifices. But it was worth it — you got out what you put in.

The same core principle forms the foundation of UK Anti-Doping's '100% me' campaign; namely, "It's about being able to say my performance is 100 per cent me. There is no secret to my success — just hard work, determination and talent." If you agree with that statement, why would you want to improve your cycling by means of chemical enhancement?

The irony is, any supplement that did strongly enhance performance would probably get banned. Despite the fact it's a huge market with countless products competing for your cash — the sports supplements industry in the USA is worth an estimated £13bn per year — very few of them actually make you faster. It is a highly lucrative trade built on half-truths, wafer-thin science, marketing hype and outright lies. Yes, there are one or two exceptions — supplements that work *and* are legal and safe — and they deserve the separate attention paid them here. The majority of legal 'performance enhancers' will neither augment your output nor burn off your belly; they'll only diminish your dough.

MEET THE EXPERTS

Nick Tiller is a BASES-accredited sports physiologist and researcher at Brunel University. His palmarès includes completion of the 2011 Marathon des Sables, and he blogs at www.endoskeptic.com. Here, he delivers his verdict on each of the most widely used sports supplements.

Julia Mainstone (www.brightonsportsnutrition.co.uk) is a former pharmacist who is now a specialist in performance nutrition. She has worked with sportspeople in a range of different disciplines. Here, she suggests healthy, inexpensive natural alternatives to sports supplements.

MUSCLE BURN BUFFERS

Which products? Creatine, beta-alanine, sodium bicarbonate/citrate.

The claim: Act as a buffer to decrease the power-limiting impact of harmful metabolic acids on muscle contractions, meaning you can sustain a very high effort for longer.

The reality: There's good evidence that these supplements do live up to the claims — but only in short, repeated high-intensity efforts of 2-8min. There is very little evidence supporting benefits in longer events.

In other words, sprinters and those performing intense interval training are the only ones who might want to investigate further.

Physiologist's verdict: "Sodium bicarbonate has pretty good efficacy for short-burst, threshold or interval sessions, and may be useful for sprinters engaged in repeated efforts of greater than 200m where metabolic acids are likely to accumulate. I certainly wouldn't recommended it for anyone riding or racing long distances, as the intensity is unlikely to be high enough to warrant such a supplement.

"Creatine has over 20 years of mainly positive research and can aid recovery in 100-200m repeated sprint efforts, in addition to martial arts and weight training.

"Bicarb has been associated with gastric problems while creatine causes fluid retention and muscle stiffness, so make sure you experiment well before race day."

NUTRITIONIST'S NATURAL ALTERNATIVE: "These supplements work by increasing phosphocreatine and carnosine levels in muscle. Natural foods may not boost your levels as much, but your levels can be raised by eating meat, particularly poultry, beef and pork, and fish. Vegetarians tend to have lower levels."

REASONS TO AVOID Can cause bloating and gut discomfort; requires loading phase; can cause fluid retention, making you heavier.

STIMULANTS

Which products? Caffeine, ephedrine, synephrine, yohimbine, taurine, guarana, ginseng.

The claim: Increases alertness, confidence and concentration, delays fatigue and boosts fat metabolism.

The reality: There is decent evidence supporting the usefulness of caffeine for its well-known pick-me-up effect. However, there is much less evidence that it boosts fat metabolism. With the exception of caffeine, most other stimulants are on WADA's banned list, despite being used in some supplements and many cold remedies.

Physiologist's verdict: "Caffeine is certainly worth considering as a stimulant to give you a 'kick' in the latter stages of a long-distance event. However, I'd advise limiting your caffeine intake during training (though be sure to practise before race day), and keeping well within the recommended allowance of 300mg per day.

It will have a greater effect if you're 'non-habituated' and don't take lots of caffeine in your daily routine. The stronger stimulants such as ephedrine are banned, so definitely best avoided. Regarding taurine, guarana and ginseng — found in some energy drinks — I don't see why you'd need these in addition to caffeine, which is almost certainly more effective."

"With the exception of caffeine, most other stimulants are on WADA'S banned list"

NUTRITIONIST'S NATURAL ALTERNATIVE: "Caffeine works well for some people, so there's no need to reach for supplements. A standard cup of filter coffee provides 150mg, while a cup of tea provides roughly half this amount. So a cup or two of strong coffee before your ride is well worth experimenting with. Previous worries about caffeine causing dehydration are now thought to be unfounded."

REASONS TO AVOID May cause flatulence and stomach discomfort; more expensive than the 'normal food' alternatives.

NITRIC OXIDE BOOSTERS

Which products? Beetroot juice/shots, L-arginine.

The claim: The nitrate contained raises levels of nitric oxide (NO) in the body, which increases blood supply and reduces oxygen cost during exercise, enhancing endurance performance.

The reality: The research is very promising. In one study, a group of cyclists who drank 0.5l of beetroot juice improved their time trial performance by 2.7 per cent (45sec). In an hour-long event, that level of improvement could equate to smashing your PB by more than 90sec. Frankly, it seems almost too good to be true — but it's certainly worth a try. It's unclear why, but evidence of performance benefits from NO supplements and the NO-booster L-arginine is much harder to find.

Physiologist's verdict: "There is some strong research showing good efficacy of beetroot products, but mostly with regard to health rather than performance. I'd suggest trying it for yourself to see if it works for you. More research from third parties with no interest in endorsing the product, and with systematic reviews, is needed before we can really judge whether these products live up to the performance claims."

NUTRITIONIST'S NATURAL ALTERNATIVE: "About 80 per cent of our bodies' nitrate stores are derived from vegetables. The drawbacks with beetroot juice are that it's expensive and has a rather unpleasant taste! Many other vegetables are also rich in nitrates: carrots, spinach, bok choi, celery, rocket and lettuce, and of course the humble beetroot itself."

REASONS TO AVOID Not many, except that beetroot juice doesn't taste very nice and makes your pee turn pink.

WEIGHT LOSS

Which products? All the myriad pills, powders and potions labelled 'weight loss' or 'fat burner', often containing carnitine or stimulants such as ephedrine.

The claim: Reduce body weight, usually by increasing the rate of metabolism, specifically fat metabolism.

The reality: There is very scant evidence supporting the effectiveness of weight-loss supplements that contain carnitine or stimulants such as ephedrine (which, you recall, is a WADA-banned substance). Much of the marketing of these products is irresponsibly misleading, claiming huge fat-burning effects with no scientific underpinning. Weight-loss drugs prescribed on the NHS, which are effective, work by inhibiting fat absorption in the gut — often with messy consequences, so hardly conducive to comfortable cycling!

Physiologist's verdict: "I wouldn't recommend fat burners, whether they're thermogens — which work by raising core temperature — or appetite suppressors. More often than not, the commercial hype surrounding such products in no way reflects the science underpinning their efficacy.

If you're desperate to reduce body fat, then a carefully planned diet with a moderate calorie intake is a far more effective, healthier and cheaper way to achieve your targets."

"Much of the marketing of these products is irresponsibly misleading"

NUTRITIONIST'S NATURAL ALTERNATIVE: "The best way to lose body fat is to eat fewer calories and opt for unprocessed foods as part of a balanced diet. Choose your fat sources wisely: nuts, oily fish, avocados and coconut oil are among the best, but don't cut fat out of your diet excessively, as doing so may reduce your ability to use fat as a fuel and disrupt vitamin absorption."

REASONS TO AVOID They either don't work, contain banned substances and/or have undesirable side-effects.

ELECTROLYTES

Which products?
Sodium tablets/drinks.

The claim: It is important to replace electrolytes lost through perspiration because these trace elements are vital in fluid re-absorption (to maintain blood plasma volume) and nerve conduction; prevents cramp.

The reality: Frustratingly, there is a polemical divide in the scientific debate. The key process is osmosis. Put simply, as cells lose water (dehydration) their sodium concentration increases (hypertonic) and they draw in fluids that have a lower concentration of sodium (hypotonic) until the respective sodium levels are balanced (isotonic).

The argument in favour of electrolyte products:
Plain water (hypotonic) is rapidly absorbed by cells, decreasing their sodium concentration and reducing thirst, while excess fluid is excreted as urine. The end result is sub-optimal rehydration. Drinking fluid containing sodium, on the other hand, causes a slower rate of fluid absorption and a superior level of rehydration.

The argument against:
When we perspire, the sodium concentration in our body only ever *rises* (because sweat is hypotonic), so consuming sodium is pointless — it can only make us thirstier. Plain water is perfect for rehydration. The body's supply of sodium is never depleted, and there is no proof that consuming electrolyte products prevents cramp.

Physiologist's verdict:
"My personal opinion is that if you're exercising for more than one hour in the heat, or doing rides of longer than three hours in normal conditions, electrolytes are essential for fluid re-absorption and nerve conduction.

There is inconsistent evidence that electrolytes can help reduce cramps. As an ultra-marathon runner, I've seen several instances where diluted body sodium caused by insufficient electrolyte and fluid intake has caused serious medical complications, but these were limited to extreme distances in harsh conditions."

NUTRITIONIST'S NATURAL ALTERNATIVE: "Most of us greatly exceed our daily requirement of salt by eating processed foods. Eating a balanced diet will easily meet, without exceeding, our sodium requirements. It's important to replace sodium after prolonged exercise, but you can easily make your own inexpensive sports drinks using fruit juices and table salt."

REASONS TO AVOID May increase thirst and lead to excessive drinking; why mess with the body's precise hydration/thirst mechanism?

'PAIN IS YOUR FRIEND, SO DON'T MUTE IT'

Painkillers

This feature was motivated in part by comments made by US time trial ace Taylor Phinney, who in October last year strongly criticised the use of caffeine and painkillers among fellow pro riders.

"[Using painkillers and caffeine pills in races] is actually really, really common," Phinney told *Velonation*. "In my first year, I tried painkillers a couple of times in races, stuff like Tylenol, but I didn't really get it."

Explaining his own anti-pills stance, he went on: "The reason we get into sport in the first place is to test our bodies, to test our limits... I consider myself 100 per cent bread and water... If we can do something even more on the pills side of things [towards prohibiting their use], I would be totally for that and comfortable with that."

The physiological effects of caffeine are dealt with in detail on page 45, but what about painkillers? Some pro cyclists use them in the latter stages of multi-day races, to help deal with inevitable aches while maintaining a high level of performance. As such, these pills could be regarded as having an indirect performance-enhancing effect: not exactly cheating but not 'bread and water pure' tenacity either. There is another important reason why painkillers are best avoided: they deaden the useful function of pain — to prevent you from inflicting damage on yourself.

"Unless the circumstance is exceptional," advises Dr Ross Tucker, "you probably don't want to ignore pain — it's trying to protect the body against worse damage."

And that's not the biggest risk.

"There is also a worrying possibility of serious adverse effects," warns Tucker. "A couple of acute renal failures during long-distance exercise have been linked to the use of NSAIDs [non-steroidal anti-inflammatory drugs, such as aspirin and ibuprofen] and so my advice would be to avoid them as much as possible. There is likely a serious problem with the abuse of these drugs among recreational athletes, with potentially catastrophic results."

ENERGY DRINKS, BARS AND GELS

Which products?
Carbohydrate drinks, gels and bars.

The claim: Consuming short-chain carbohydrates in the form of energy drink or gels as the body's finite glycogen stores run low covers the shortfall and thereby helps maintain performance.

The reality: Yes, these do work! Many studies back up the claim that consuming carbohydrate while cycling spares muscle glycogen and allows you to cycle harder for longer. Most sports drinks have a carbohydrate concentration of five to 10 per cent, and it's thought that the maximum uptake is about 60g per hour — corresponding to the uptake capacity of the gut. Recent research has suggested that this limit may be extended to 80-90g per hour by consuming a mix of fructose and glucose. Naturally, the total amount and rate of consumption needed depends on the duration and intensity of your cycling, and may require some trial-and-error experimentation during training. As a basic guide, you'll benefit from supplementary carbohydrate only if riding for longer than an hour; during rides of less than two hours, you should not need more than 30g per hour; if cycling for three hours or longer, opt for 60g per hour, ideally using easily digested solid foods and a glucose-fructose drink. During long, high-intensity efforts (such as racing), blood is drawn away from the gut and absorption of carbohydrate is further limited, so a lower-concentration carbohydrate drink may be preferable.

Physiologist's verdict:
"Glucose supplementation is effective for exercise lasting longer than 60-90mins, but the harder you work, the slower the rate of gastric emptying, so harder races may require lower concentrations or volumes to avoid stomach ache. Glucose-fructose formulas seem to increase oxidation rates compared to glucose alone. Use drinks with tri-sodium citrate, as this will aid glucose absorption through the intestine. Limit, where possible, your use of carbs during training in order to promote fat metabolism and your body's energy efficiency, or at least wait an hour or two before reaching for the glucose. Practise sufficiently before race day to ensure you have a winning strategy."

NUTRITIONIST'S NATURAL ALTERNATIVE: "You can't argue with the power of carbohydrates before and during endurance exercise. But you don't need to rely on supplements, as there are many natural, healthy and inexpensive sources of carbohydrate out there. Sports drinks made at home with juices containing four to eight per cent carbohydrate make a great substitute. These diluted juices, dried fruit and snacks such as healthy homemade flapjacks will keep you full of energy until you reach the finish line."

REASONS TO AVOID There are no reasons to avoid completely, but good reasons to avoid misuse. Overconsumption of carbohydrate may cause digestive discomfort and, over time, an increase in bodyweight (or limiting of weight loss in those trying to shed pounds).

For more supplement info see page 11

'SCIENTIFICALLY PROVEN' — OH, REALLY? LET'S HAVE A LOOK...

Evidence, what evidence?

Most sports supplement brands claim that their products provide physiological benefits *as proven* in scientific studies. However, precious few of these studies are rigorously undertaken in controlled conditions by proper scientists — so don't be too easily swayed by boasts of 'proof' and 'evidence'.

Last summer, the *BMJ* and BBC's *Panorama* programme joined forces to investigate the quality and reliability of research cited as proof of efficacy by sports products brands. Their findings were jaw-dropping. The investigation tested the evidence behind 431 performance-enhancing claims in adverts for 104 different sports products (many of which were supplements). Just three (2.7 per cent) of the studies tested were judged to be high-quality and at low risk of bias, i.e. failure to use a placebo or ensure controlled conditions, etc. More than half (52.8 per cent) of the websites making performance claims did not provide any references, and of those that did, only half the referenced studies were deemed to be of a standard "appropriate for critical appraisal". In other words, most of the so-called evidence either didn't exist or wasn't worthy of the term 'evidence'.

DEFICIENCY COMPENSATORS

Which products?
Multi-vitamins, antioxidants, mineral tablets.

The claim: Taking trace elements and vitamins in the form of tablets compensates for shortfalls in the diet, making up the recommended daily allowance of each, thereby bolstering the immune system, metabolic function and possibly preventing cancer.

The reality: There is no concrete proof that taking vitamin tablets provides health benefits. In fact, recent systematic reviews have returned a striking dearth of evidence. Of course, athletes place higher demands on their bodies, and dietary deficiencies may affect performance. Even so, rather than relying on vitamin/mineral supplements — which may or may not help — it is better to try to consume a varied, balanced diet and, if you are still worried about possible deficiencies, to consult your GP.

Physiologist's verdict: "I see no harm in a timed-release multi-vitamin or added vitamin C to complement a good, balanced diet. You'd need to consume these in great excess to pose any risk to health. The evidence isn't conclusive. If you consume a dairy-free diet, you might want to consider vitamin D and calcium supplements. Female athletes with low body weight who partake in endurance training, particularly running, which is associated with high red blood cell turnover, may want to take iron, as they are at an increased risk of anaemia. Try to satisfy your specific nutrient requirements through intelligent food choices."

NUTRITIONIST'S NATURAL ALTERNATIVE: "The best way to make sure you're getting all your vitamins and minerals is to eat a healthy, unprocessed diet containing all the different food groups — with plenty of fresh fruit and vegetables. If you think you need a multi-mineral and vitamin tablet, it should be a warning sign you need to clean up your diet. There is also emerging evidence that over-supplementation of vitamins and minerals may reduce beneficial adaptations to exercise."

REASONS TO AVOID Very few — these supplements are unlikely to have negative effects — except on your wallet.

RECOVERY PROMOTERS

Which products? Protein-and-carbohydrate shakes/bars.

The claim: Consuming protein supplements after exercise helps repair muscle damage, while the carbohydrate helps replenish glycogen stores.

The reality: We know that dietary protein is involved in the synthesis of new muscle fibres, and that consuming carbohydrate soon after exercise is the most effective way to replenish muscle glycogen. However, there is scant evidence that specially formulated recovery shakes and bars produce better results than regular food — apart from arguably being easier to prepare and consume.

Physiologist's verdict: "A recovery drink is worth consuming, but only after hard or long sessions and only if you're not going to eat immediately after training; there's little point doing both. The body is much more responsive to carb replenishment during the first 90 minutes to two hours after exercise, so this is the time to replete. You should try to meet the protein requirements for an exercising individual (1.5g/kg/day) through your natural diet, and only look to supplements if this proves impossible."

"Drink milk! Milk is a perfect post-exercise drink"

NUTRITIONIST'S NATURAL ALTERNATIVE: "Drink milk! Milk is a perfect post-exercise drink; it's rapidly absorbed, provides slow- and fast-release proteins, branched chain amino acids, simple sugars and an abundance of vitamins and minerals. Dairy-free alternatives provide many of the same benefits but milk is king. Good plant-based sources of protein are soy products, lentils and beans."

REASONS TO AVOID May cause flatulence and stomach discomfort; more expensive than the 'normal food' alternatives.

Buyer beware

For more on supplements and healthy alternatives, see pages 44-49

Who regulates the supplement industry?

In January, the inquest into the death of runner Claire Squires, who collapsed and died at the 2012 London Marathon, found that the sports supplement Jack3D probably played a part in triggering the cardiac arrest that killed her. The product, which Squires added to her water bottle for the event, contains the stimulant 1,3-dimethylamylamine (DMAA). Jack3D and all other products containing DMAA are now banned in the UK, but this case highlights the real danger posed by certain substances used in products marketed as sports supplements. So, which are the riskiest products to watch out for and always avoid?

"The supplement industry is so unregulated that the conservative approach to this question is to say 'all of them'," exclaims sports physiologist Dr Ross Tucker of www.sportsscientists.com. "Of course, that's not true, as some companies are more credible than others but the consumer faces a daunting challenge in figuring out which is which."

Tucker's advice is to be particularly cautious about any product making brazen claims about performance enhancement.

"Anything with a 'revolutionary' ingredient 'guaranteed' to produce results, be they weight loss or muscle gain, are likely to carry some risk. How small or large, we don't know. I always remember what scientist Ron Maughan said: 'If it works, it's probably banned or dangerous, and if it's not dangerous, it probably doesn't work.'"

Paradoxically, steering clear of dubious products is trickier for amateur sportspeople than for professionals, since the pros have coaches and physiologists who tell them what to take and what to avoid. Our safety is in our own hands — and those of the authorities responsible for regulating supplements.

So, who are the regulators and what assurances do they provide? Seemingly, the most relevant authority is the Medicines and Healthcare Products Regulatory Agency (MHRA), but it concerns itself only with products classed as medicines (rather than foods, which are regulated by the Food Standards Agency).

Bafflingly, almost all sports supplements are classified as foods, not medicines, even though many seem to fall within the MHRA's remit by dint of the claims they make — "claims to treat or prevent disease, or to interfere with the normal operation of a physiological function of the human body are regarded as medicinal".

'IF IT WORKS, IT'S PROBABLY BANNED OR DANGEROUS, AND IF IT'S NOT DANGEROUS, IT PROBABLY DOESN'T WORK'

Although many sports supplements blatantly claim to alter physiological processes, the Agency has never granted a licence to a single one.

In fairness, the MHRA does now have a Borderline Medicines Section — acknowledging that many non-medicinal products do make medicine-type claims — and last year invited supplement makers to submit their products for review. Its investigation found 127 illegal products "such as energy and muscle gain products" containing "dangerous ingredients such as steroids, stimulants and hormones".

"The MHRA has taken action and issued warnings instructing retailers to remove these products from sale," confirms the MHRA's Matthew Niizeki.

The MHRA does not produce a list of approved sports supplements. If you are going to use supplements, the only sure-fire way to steer clear of banned and potentially dangerous substances is to buy only those brands approved by Informed-Sport, which is a quality assurance programme that tests and certifies supplements as legal and safe — and is approved by UK Anti-Doping.

For more information, visit: www.ukad.org.uk/supplements.

CNP PRO HYDRATE

Hypotonic drinking

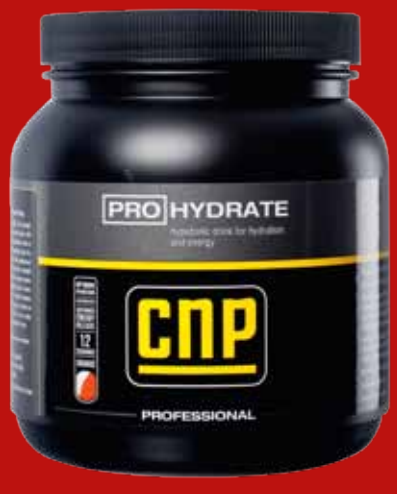
When we ride a bike, we sweat. And once we sweat, it's important to replace what's been lost. Now, for bike rides lasting no more than an hour or so, water works just fine. However, for anything longer, and in warmer conditions, the body will start to lose electrolytes, so it's worth investing in some sort of hydration drink.

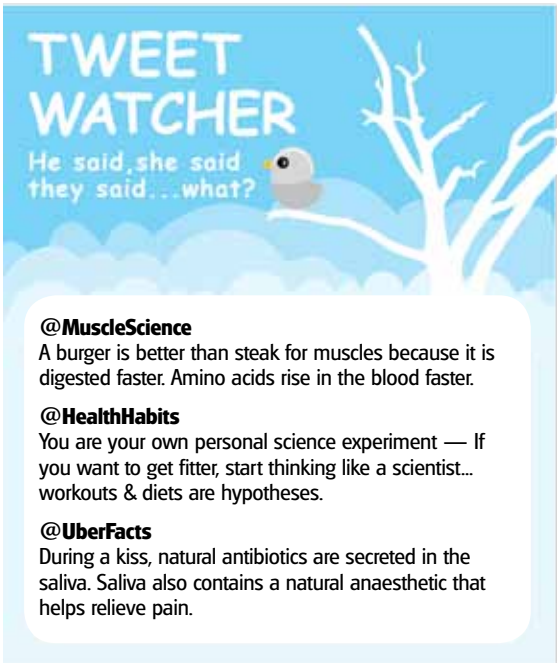
CNP products are independently tested by the World Anti-Doping Agency at HFL Sport Science, a world-class anti-doping laboratory.

CNP Pro Hydrate is a hypotonic drink which actively pushes fluids and carbohydrates into your blood and cells to ensure optimum hydration. According to CNP's webpage, hypotonic drinks are far more suitable than water or isotonic drinks as they don't flow into the blood until dehydration occurs.

Two scoops of either orange or berry-flavoured powder with your 500ml bottle will contain electrolytes to combat dehydration as well as complex carbohydrates to help sustain energy on your ride. It's also great to kill off your hangover.

www.cnpprofessional.co.uk £15.99





@MuscleScience
A burger is better than steak for muscles because it is digested faster. Amino acids rise in the blood faster.

@HealthHabits
You are your own personal science experiment — If you want to get fitter, start thinking like a scientist... workouts & diets are hypotheses.

@UberFacts
During a kiss, natural antibiotics are secreted in the saliva. Saliva also contains a natural anaesthetic that helps relieve pain.

How low will they go?

Endurobol danger drug

Over the past two months, a number of professional cyclists have tested positive for a dangerous drug called GW501516, also known by its supplement name, Endurobol.

The substance, which has been shown to increase muscle mass, which improves glucose tolerance and reduces fat mass accumulation, was banned by WADA in 2009, three years after the original manufacturer, GlaxoSmithKline, abandoned its development following pre-clinical trials, which showed the drug caused tumours in a number of organs.

Despite the dangers, it seems cyclists are still willing to put their health at risk in order to give themselves the best possible chance of winning. The dangers are so extreme that WADA was forced to make a rare statement to remind athletes of the risks they are taking.

"WADA has taken the step to ensure that there is complete awareness of the possible health risks to athletes who succumb to the temptation of using GW501516 for performance enhancement," it states. "The developmental drug was withdrawn from research by the pharmaceutical company and terminated when serious toxicities were discovered in pre-clinical studies. Clinical approval has not, and will not be given for this substance."

How low will athletes go in order to get that edge over a rival? Winning is one thing, but surely putting one's health at risk is too big a gamble to take?

ARE YOUR PARENTS HOLDING YOU BACK?

'Fit muscle' genes

A recent study, conducted on mice, may have found evidence that genetics could possibly play a role in muscle fitness as well as in exercise response. Daniel Kelly MD, study author, explains how they wanted to determine what occurs, at a molecular level, in 'fit' muscles during and after exercise.

A fit muscle has the ability to burn both sugars and fat as well as switch between fast twitch and slow twitch muscle fibres. Both of these components need to be functioning well to be a 'fit muscle' and therefore increase muscular endurance.

Kelly's team compared molecular differences between two disparate mouse models — the 'marathon mice' and 'couch potato mice' — which had been engineered to produce distinct but related proteins that turn muscle-specific genes on and off. It was discovered that marathon mice produce certain microRNAs that activate the muscle fibres' ability to switch between fast twitch and slow twitch fibres, making them genetically predisposed to have 'fit muscles', but this was suppressed in the couch potato mice.

Kelly's team then looked to see if these findings related to humans, by obtaining and comparing muscle tissue from sedentary and active people. Sure enough, the microRNAs elevated in the marathon mice were also higher in active individuals, but not sedentary ones. More research needs to be conducted to understand the exact link between these microRNAs and why some of us have more of them than others. If you're interested in how else genetics may be helping or hindering your performance improvements, read 'Mean Genes' on page 19.

BECAUSE IT'S WORTH IT!

Pricy products worth every penny

Festina Tour de France Chrono Bike collection £285

As official timekeepers of this year's Tour de France, Festina will produce a watch to celebrate the 100th edition of the race. The Chrono Bike collection, which will cost £285 apiece, will come in two sets of eight, a metal set and a rubber strap set coming in a range of colours including the iconic yellow of the leader's jersey.

With its face designed to represent a sprocket, and with chain links running along the edge of the straps, this watch would be an ideal gift for any bike enthusiast.

Keep a watchful eye out later in the year, when Festina are to make a Tour of Britain range too.

Contact: www.uniquejewelry.co.uk

RIEMANN P20 ONCE A DAY PROTECTION

Protect yourself from sun damage and keep cycling through the summer — when it arrives!

Occasionally the sun shines here in the UK. And you need to be prepared for when it does. Sunburn can be very harmful, not to mention extremely uncomfortable. The last thing you want is to have to spend a few days indoors away from the sun until you feel better.

The problem we face is that tubs of sun tan lotion take up a heck of a lot of space in our jersey pockets, which can be better filled with other things, such as mobile phone, a track pump or precious food.

However, Riemann P20 has now developed a range of lotions that offer up to 10 hours' protection from just one application, which means you can leave the bottle at home.

The lotion is also water resistant, so it won't run down into your eyes when you start to sweat, and it's fragrance free, so you needn't worry about bees who think you are something sweet to feast upon.

www.P20.co.uk £19.99