

THE TIMES

Sunshine: are we getting too much — or not enough?



A healthy dose of sunshine can boost health Robert Daly/Getty Images

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Can the ‘sunshine vitamin’ improve your fitness?

Boosting your vitamin D intake is not just good for your health, it can also boost your fitness. Scientists have discovered that getting enough of the sunshine vitamin can speed up your recovery from workouts and enhance your overall exercise performance. If you work out regularly — especially in a gym, yoga studio or indoor swimming pool — it could be that you not only need more vitamin D to sustain repeated physical demands on your body, but you are more likely to be deficient in it in the first place.

Dr Graeme Close, a researcher in sports nutrition and exercise metabolism at Liverpool John Moores University, says that many of our workout habits compound the lack of vitamin D available to our bodies. “It’s not just that a lot of people exercise indoors,” he says. “Even those who go outside often run or cycle early in the morning or late in the evening on a commute. Or they wear tight compression-type clothing and a sunscreen that prevents exposure to the sun.”

Combined, these factors mean that “even using conservative guidelines” up to 70 per cent of the recreational and serious athletes tested by Close were found to have worryingly low vitamin D levels. Gwyneth Paltrow, known for her dedication to fitness almost as much as for her acting, is among those to have vitamin D deficiency a few years ago. And among the gym generation it is increasingly widespread.

There is an argument, Close says, that very active people are already prone to a shortfall in certain nutrients because they are gobbled up more quickly to cope with the stress and strain of workouts. **Steve Simbler, a sports pharmacist who has worked with Olympians, says other factors might be at play.**

“Vitamin D is fat soluble and any that we take and don’t need is stored in body fat,” he says. “Gym-goers and athletes tend to have lower percentages of body fat than the average person, so

it stands to reason that their ability to store it is compromised, despite the fact no clinical trials have yet proven this to be the case.”

What is clear is the impact that dwindling vitamin D has on many aspects of fitness. “It is more like a steroid hormone than a vitamin in the way it acts on the body and one side-effect of low values is diminished muscle function,” Close says. “It is needed by stem cells for muscle regeneration and recovery after a hard session and there is evidence it might protect immune functions during periods of intensive training.”

So, can boosting levels reverse these risks and help you to get more out of your workouts in the long term? To test this, Close and his team gave a group of footballers either a vitamin D supplement or a placebo and found that, after eight weeks of training, the nutrient group showed significant improvements in two out of six fitness assessments — 10m sprint times and vertical jumps — compared to no change among their placebo counterparts.

Perhaps the strongest evidence for workout devotees, though, comes in the form of the vitamin’s links with injury prevention and recovery. This year a team of exercise scientists from the University of Kentucky found that giving a vitamin D supplement to a group of swimmers, who trained predominantly indoors seemed to offer protection against muscle injuries compared with training partners who took a daily placebo.

More than three quarters of the injuries recorded between September and March happened after a substantial drop in blood levels of vitamin D, leaving the authors to conclude that “supplementation could prove to be an easy and affordable method to preserve bone and decrease risk of injury”.

Simpler says that this is particularly relevant to people who cram much of their exercise into a weekend or who train for tough endurance events such as triathlons and marathons. “If you are doing that amount of work, then the stress on your muscles and joints is very high,” he explains. “Increasing vitamin D intake can help to lessen that damage so that you recover more quickly.”

We’re told to stay out of the sun but a new study shows that a lack of vitamin D may leave us prone to other diseases

It used to be a given that when the sun came out we would slap on the sunscreen and soak up the rays. Now a sunny day presents a conundrum. Should we limit our time outdoors to avoid damage from the sun’s harmful rays or should we ditch the SPF and allow our bodies to absorb the most potent supply of vitamin D available? This week a study added to the confusion by concluding that women who avoid sunbathing in the belief that they are lowering the risk of skin cancer might be more likely to get the disease than those who lie in the sun every day. The study is part of a continuing “women’s lifestyle and health study” at the Karolinska Institute in Stockholm, looking at numerous different factors and diseases.

According to the Swedish researchers, guidelines telling people to stay out of the sun to reduce exposure to the ultraviolet radiation that is strongly linked to skin melanoma may backfire. After following 30,000 women over 20 years, their findings, published in the *Journal of Internal Medicine*, suggest that avoiding the sun leads to an increased risk not only of melanoma but also of premature death from any cause, including other forms of cancer.

After two decades they recorded 2,545 deaths with 1.5 women in 100 who had the highest exposure to UV reported to have died compared with 3 in 100 for women who had avoided sunbathing. Indeed, Dr Pelle Lindqvist, the author, says the results “clearly showed that mortality was about double in women who avoided sun exposure compared to the highest exposure group”.

It is almost certain, say the researchers, that a lack of vitamin D from too little sunlight is to blame

for the adverse health effects seen in their trial.

It's not the first time levels of vitamin D have been held up as a barometer of wellbeing. Indeed, if there is a vitamin of the moment, it is this one. Last month two studies, both published in the *BMJ*, showed that people with low levels of vitamin D are more likely to die from cancer and heart disease and to suffer from other illnesses. Others have suggested that good intakes appear to reduce the levels of bad cholesterol, and that too little elevates the risk of high blood pressure, osteoarthritis, and autoimmune disorders such as multiple sclerosis and arthritis.

For all its importance, however, how much we need and how we should obtain vitamin D remains shrouded in confusion. As a result, many of us fall woefully short of getting anywhere near enough to boost our health. It's thought that around half the white population, up to 90 per cent of the multi-ethnic population and as many as a quarter of British children display deficiencies in the vitamin.

"How to get enough vitamin D is simply not that straightforward," says Professor Dorothy Bennett, a leading vitamin D researcher and head of the molecular cell sciences research centre at St George's University of London. "We can get it from food up to a point, but it is hard to get enough from the diet. So we need other sources and that is where it becomes controversial."

Dr Emma Williams, a nutrition scientist at the British Nutrition Foundation, says that, on average, we need around 10 mcg of vitamin D a day, mainly from food (children under the age of four need 7-8.5 mcg) but while fortified breakfast cereals, dairy products, egg yolks and oily fish will provide some of that intake, the vitamin is not as widely available in the diet as other nutrients. In total, Oliver Gillie, author of *Sunlight Robbery* and a leading vitamin D campaigner, says: "We should aim for at least 2,000 IU [50mcg] based on what studies have found, although many experts believe 4,000 IU per day [100mcg] from all sources — sun, diet, supplements — is best for optimum health."

Gillie wears no sunscreen as often as possible and takes up to 4,000 IU as a supplement. With no clear symptoms of deficiency, the only way to tell if you are getting enough is through a blood test. But steps to increase your intake will undoubtedly help. Toxicity is rare, but possible, so ideally it should be taken under medical supervision or as prescribed by a nutritionist and Dr Graeme Close at Liverpool John Moores University says that "taking self-prescribed mega high doses" is certainly not recommended.

Nicknamed the sunshine vitamin, the most efficient source is the sun as it is synthesised when chemicals in the skin react to ultraviolet rays. But a lack of direct sunlight, fuelled by growing concerns for its adverse effects and overuse of high-factor sunscreen combined with our increasingly indoor lifestyles, is largely to blame for diminishing levels. Computer games and TV mean that many children are getting so little sunlight that their vitamin D levels have plummeted to the point that they develop bone deformities, an extreme side-effect of deficiency.

At Southampton General Hospital, experts have evidence to suggest a resurgence of rickets, a problem previously linked to Victorian poverty. Latest NHS statistics show that there were 833 hospital admissions for children suffering from the condition in the year 2012-13, a rise from 190 cases ten years ago. "It is no myth that more of us are deficient," Bennett says. "Equally it is no real surprise, as nobody is arguing with the fact that the sun's rays are the main cause of skin cancer. It's a real dilemma for many people."

So where should we start? Experts remain cautious about advocating sun exposure. Professor Kevin Cashman, head of the vitamin D research group at the University College Cork, says that researchers still need to pinpoint the precise levels of safe sun exposure that causes minimal skin damage but allows for vitamin D production — if, indeed, it exists.

"With the current lack of such data it is clear why sun awareness campaigns are in place," Cashman says. "It may well be that there is no such safe level and so there may be a zero

tolerance public health policy in the future.” As things stand, the time spent in the sun without sunscreen should be minimal but regular. Sun bingeing, Gillie says, could cause more problems than short bouts of regular exposure.

On its website, Cancer Research UK recommends “only a few minutes in the summer sun in the middle of the day without sun protection” between April and September as sufficient to ensure you boost vitamin D. “Photobiologists say 15 minutes of UK sun is about right and that exposure to your face and arms is all that’s needed,” Bennett says. “Children generally need less time due to their smaller body size, so aim for 10-12 minutes without sunscreen for them.”

People with darker skin will need to spend longer in the sun to produce the same amount of vitamin D. Without exception, all experts agree that the skin should never be allowed to redden or burn. “The larger the area of skin that is exposed to sunlight, the more chance there is of making enough vitamin D before this happens,” Gillie says. At all other times, wearing sunscreen is imperative.

For many adults, a safer option seems to be to pop a pill. Up to one person in three now takes the sunshine vitamin in supplement form at some time during the year; its popularity buoyed by some evidence that higher levels offer greater protection against some diseases.

Are they doing the right thing? As a fat-soluble vitamin (ie, one that is stored in the body, such as vitamins A, D and K, as opposed to water-soluble vitamins such as vitamins B and C, which are not stored in the body and so have to be replaced), there is potential for toxicity if too much vitamin D is consumed and several studies have raised concerns about risks of high-dose vitamins, including vitamin D.

Although recent evidence suggests that even doses upwards of 10,000 IU a day of the vitamin aren’t toxic, experts recommend sticking to supplements containing 1,000 to 2,000 IU if you go down the supplement route. Children, unless at noted risk of deficiency, shouldn’t need a pill.

Not all experts think pills are the answer. A review of 462 studies involving more than a million adults carried out last year at the International Prevention Research Institute in Lyon concluded that a lack of vitamin D is not a trigger for many common illnesses and that taking supplements to boost your intake will make little difference to your health. And a team from the University of Auckland reported in the *Lancet* recently that there is little reason to prescribe vitamin D supplements to adults looking to reduce the risk of fractures or disease as they offer no significant protection against either.

As the debate rages on, Bennett prefers to err on the side of caution. Having been told that too much sun is bad for us, we have avoided it to the point that we are missing out on its benefits. So what does she do? “I spend time outdoors, but I avoid the sun as much as I can and I take vitamin D supplements to boost my own levels,” she says. “It’s a simple strategy that I would recommend others take until we know more.”