

By JOHN NAISH

IT MAY believe that the secret to retaining youthful healthiness lies in turning back time with 'magical' potions and regimens. But scientists now say that we can do something much more practical (and promising) by targeting our internal clocks.

Researchers in the U.S. suggest we can boost our physical and mental health — and even slow down ageing — by adopting everyday habits to help keep our various internal clocks properly synchronised with each other so they work with optimum efficiency. It has been known since the 1960s that the body has an internal molecular clock that runs on a daily cycle to regulate vital functions such as sleep, appetite and metabolism. This is called our circadian rhythm or clock.

But there's more than one clock. In fact, in recent years researchers have discovered that we absolutely team with internal timekeepers. Circadian clocks are now believed to be present in almost every cell and tissue in our bodies, with a 'master clock', called the suprachiasmatic nucleus, in the brain.

The bad news is that as we age, our circadian timekeepers can increasingly fall out of sync with each other, according to research by Northwestern University in the U.S., published in the journal *Chaos* earlier this month. It's rather like living in a house full of vintage wind-up clocks that all chime at different times. This can mean that vital systems regulating our body functions and brain don't work healthily in sync as they did when we were younger.

RESEARCH increasingly links this 'circadian clock decay' with a host of serious problems such as cardiovascular disease, obesity, type 2 diabetes and cancer, warned the Northwestern scientists.

Moreover, the damage isn't only physical. Problems to do with research by biologists at Cleveland State University in the U.S.

In a review published last year in the journal *Nature Reviews Neuroscience*, they set out evidence that our circadian clock regulates crucial functions such as our body's systems for repairing faulty DNA, and also a vital maintenance process called autophagy, which repairs our brain-damaged cells.

The Cleveland researchers warned that circadian rhythms are significantly affected by ageing — and this impairment can contribute to the cognitive decline of the ageing brain.

They said that circadian rhythms are markedly disrupted in patients with Alzheimer's disease, as well as Parkinson's, which suggests that our 'clocks' may be at least partly to blame for these conditions.

But they added that experiments on rodents with dementia-like symptoms to their circadian clock's accuracy — running them all to their proper daily time schedules — improved the animals' 'cognitive performance' and increased their lifespan.

A report published in February in the journal *Nature Reviews Endocrinology* suggested that if we can restore better circadian synchronisation in later life, this can 'effectively delay the ageing process' because our bodies will run themselves more efficiently.

So is actually possible to improve the accuracy of our various body clocks? Research is beginning to suggest intriguing

How to live longer... get a whole host of them

answers. The Northwestern University researchers pointed out that different circadian clocks rely on different external cues to set themselves each day. The brain's clock depends on sunlight, for instance, while the peripheral organs — such as our liver — calibrate themselves by mealtimes, said Dr Yitong Huang, who led the study.

Eating at the wrong times — such as midnight feasting — may be particularly damaging, she warned. 'Giving your internal clocks conflicting signals through night-time eating — eating when your brain is about to rest — can confuse them and cause misalignment between internal clocks.'

By contrast, she said, eating breakfast first thing may effectively tell our metabolism to set our clocks properly at the start of the waking day.

Food intake is a *zeitgeber* (time-giver), says Dr Kristin Eckel Mahan, an associate professor in Texas University's Centre for Metabolic and Degenerative Diseases and lead author of the *Nature Reviews* report.

She points to laboratory studies where timing of food

intake has been shown to boost circadian clock synchronicity. Other research suggests that food may significantly help to keep our internal clocks in sync, but only if we eat nearly a third less than the recommended amount — cutting our intake from a general average of 2,000 calories a day for women and 2,500 for men to 1,400 and 1,750 calories respectively.

Studies in fruit flies have shown that cutting their food intake to 70 per cent of their normal needs could extend their lifespans by up to 40 per cent (the equivalent, in humans, of living to 120).

Dr Eckel Mahan says this effect is due to the fact that calorie restriction improves our internal clock synchronisation. It helps to do this by optimising the activity of body clock that work to reduce harmful inflammation and protect brain cells from damage.

Another reason, she adds, is that dietary restriction boosts the efficiency of body clocks that detect light — and daylight is one of the most important environmental influences when it comes to setting our daily

clock rhythms. This may be particularly important when we get older.

The new Northwestern University study pointed out that a common problem among older people is that their body clocks become less sensitive to being set each day by daylight. Such findings chime with the work of Russell Foster, a professor of circadian neuroscience at Oxford University. Numerous studies show that as we get older, the lenses in our eyes become less clear and the number of light-receptive cells in our retinas dwindle, so we're less responsive to light levels.

PROFESSOR Foster's strongest advice is that we should actively get out and seek daylight to start our days — and set up our internal clocks.

He says: 'Get morning light. That will strengthen your circadian drive.'

He cites research from nursing homes where patients were exposed to bright light every morning for several years. Not only did it reduce both cognitive decline and depressive symptoms, but it also improved their night-time sleep and reduced daytime sleepiness.

Nevertheless, he adds, sleeping less well as we get older — because our ageing internal clocks are more likely to fall out of sync — is a problem that will trouble most of us.

'In mid-life there's no point harking back to the sleep you had in your 20s and 30s as some kind of ideal,' he says. 'We need to accept that things change and adapt our habits.'

Under the microscope



Interior designer Kelly Hoppen, 64, answers our health quiz

CAN YOU RUN UP THE STAIRS?

YES, 100 per cent. 'I'm very fit. I train every day at 7am in my gym at home. I do everything from lifting weights to Pilates and using resistance bands.'

EVER DIETED?

I'VE HUNGED 8st 7lb for as long as I can remember and I stand at 5ft 5in. I've worked out since I was 17.

GET YOUR FIVE A DAY?

YES, I eat lots of broccoli, spinach, greens — I don't eat meat.

ANY VICES?

I FIND it hard to resist a packet of crisps. I don't have a sweet tooth but I like anything salty.

ANY FAMILY AILMENTS?

TWENTY years ago my mother had breast cancer, but she's still alive and kicking at 87.

WORST INJURY?

I INJURED my back giving birth to my daughter, Natasha, 40 years ago. From that day on, I've done 15 minutes of stretching every day to keep the nipping pain away. I think I'm brilliant at handling pain although my partner, John (Gardiner, a businessman), would probably disagree.

POP ANY PILLS?

I'LL TAKE Nurofen if my back is bad or paracetamol if I have a headache but I'm not a pill person. I like to think I'm pretty in tune with my body.

EVER BEEN DEPRESSED?

NOT EVER, no; it's not in my nature. Like everyone, I got a bit fed up during the pandemic because it felt like I might never leave. But, because I was with someone I love, I got my head around it. Also, I continued working remotely with my team of 50-odd people which kept me motivated.

HANGOVER CURE?

I KNOW this will sound odd but I hate the taste of alcohol, which is why I'll only ever have the occasional cocktail where the taste is masked. As I don't drink often, when I do, I get very drunk, very quickly. As for a hangover cure, here's the secret: take a Dioralyte powder in a glass of water before you go to bed plus a couple of aspirin and you should wake up feeling perky.

WHAT KEEPS YOU AWAKE? ANYTHING to do with family, or if I'm worrying about a business deadline. To get back to sleep, I lie on my back with one hand on my chest, the other on my stomach, and I concentrate on breathing rhythmically. If that doesn't work, I just get up.

ANY PHOBIAS?

RATS, flying — although I've learnt to deal with that — and heights. Hence why I've never done a high wire. I'm a Celebrity... Get Me Out Of Here!

LIKE TO LIVE FOR EVER?

YES, but only if I didn't have to get any older and assuming that the people I love were around me. I certainly don't have any plans to retire, which I'm sure will contribute to my living longer.

THE new K by Kelly Hoppen collection is available at gqvcuk.com

Interview by **RICHARD BARBER**

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