Dying for a seat – part 3

Chris Langham continues his six-part series

WE have become prisoners of our chairs. Over the last 150 years we have become sedentary to the point that it is ruining our health, a fact evidenced by spiralling NHS costs and what pundits have coined as an "obesity epidemic". For the last 1.5 million years the human body has been on the move and it is just over the last 150 years that it has increasingly suffered from being slumped in a chair.

There is a growing body of evidence about this; for the fine detail I quote Marc Hamilton, a microbiologist at the University of Missouri. He says: "Sitting too much is not the same as exercising too little."

He continues: "When you sit, the muscles are relaxed and enzyme activity, which breaks down fats, drops by 90 to 95 per cent, leaving fat to camp out in the bloodstream. Within a couple of hours' sitting, healthy cholesterol plummets by 20 per cent."

Conventional seating damages more than just your posture.

There is also the stress that a conventional chair throws onto the musculoskeletal frame of our bodies, as I have discussed before. When we stand, our spinal column has a natural "S" shape, but a conventional chair forces it into an unnatural "C" shape, or as Professor Galen Cranz from the University of California at Berkeley puts it: "Short of sitting on a spike, you can't do much worse than a standard office chair."

Put bluntly, even if you exercise for 30 to 60 minutes per day but sit down for most of the rest of it, you are at increased risk of metabolic syndrome, which includes conditions such as diabetes and can lead to an early death.

Sitting

Researchers at the Department of Biomedical Sciences at the University of Missouri-Columbia have published a paper on the role of low energy expenditure and sitting in obesity, metabolic syndrome, type-two diabetes, mortality and cardiovascular disease.

They say that recent observational epidemiological studies strongly suggest that daily sitting time and/or low non-exercise activity levels may have a significant, direct relationship with each of these medical concerns.

On average a Westernised human is spending more than 9.3 hours of their waking day seated. The researchers call this "inactivity physiology" and they have called for more work to be done to differentiate between the potentially unique molecular, physiologic and clinical effects of too much sitting, as opposed to the effects of structured exercise, or "exercise physiology".

Their work has led them to theorise that inactivity physiology thermogenesis, the body's production of heat, is a much greater component of overall energy expenditure than in someone exercising, or to put it another way, in a conventional chair the majority of the work the body is doing is just keeping itself warm.

They posit that frequent periods of brief "muscular contraction" may be necessary to short-circuit "unhealthy molecular signals causing metabolic disease".

Without high levels of daily, low-intensity activity there are said to be unique, negative effects at a cellular level, specifically in the cellular regulation of skeletal muscle lipoprotein lipase (LPL).

This protein is important for controlling plasma triglyceride catabolism, or destructive metabolism, as opposed to anabolism – the constructive chemical up-building of complex substances in living matter.

LPL also controls HDL cholesterol and other metabolic risk factors, so without ensuring this protein's proper regulation there is a danger that the body will begin to destroy itself; and long periods in a traditional seat interfere with that regulation.

The researchers fear that if the population continues to sit too much, it will become even more metabolically unfit, raising new concerns with "potentially major clinical and public health significance".

They concluded with a warning: "If the inactivity physiology paradigm is proven to be true, the dire concern for the future may rest with growing numbers of people unaware of the potential insidious dangers of sitting too much."

However, let's get practical here – a dentist can hardly get up and dance about every 20 minutes as is recommended by one authority, and you can't take a patient for a walk while you discuss their treatment plan, as another suggests. Technicians are unlikely to want to use standing desks as some office workers have taken to doing, and what a patient would make of a receptionist taking a slow stroll at a treadmill desk doesn't bear thinking about.

The fact is that, for some of us, our work day ties us to our seat, and we have to be productive so we can't afford to be on the move at regular intervals, especially during complex procedures such as implantology or endodontology where a dentist can't stop until the procedure is completed. The same can be said of a technician working to a deadline.

What we need to find is a way to keep our organs in an optimum condition, keep our LPL properly regulated and our spines in an S-shape, while still getting on with our work.

Perching

Some researchers suggest what they call "perching" which involves half sitting, half standing on a sort of barstool at a height that keeps the weight on the legs and leaves the S-shaped curve of the spine intact; that is a thought I would like to come back to in a later issue. There are problems with this idea but it contains the germ of a solution.

Another particular no-no is the concept of "hot desking" where different workers use the same desk but at different times. There is no time to adjust the office chair to the correct working height and this scenario usually calls on the worker to use their laptop, increasing the potential to slouch over the keyboard, placing pressure on the neck and lower back.

Expecting a six-foot-three man to be comfortable at a desk suitable for a five-foot-six woman is impractical and will give rise to all sorts of aches and pains quite rapidly.

There are other medical concerns with sitting in a conventional chair that I will start to address in the next issue, including a look at mortality figures among the excessively seated.

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