Should our children be sitting comfortably in school?

PERSONAL VIEW Ash C Routen

Aware of the irony of writing about sedentary behaviour while sitting for prolonged periods most days, I type this viewpoint while pedalling on a micro-exercise bike that fits underneath my desk.

In early February of this year the Canadian Society for Exercise Physiology (CSEP) released guidelines on sedentary behaviour among children and young people aged 5 to 17. These are the first evidence based guidelines published on this topic, and they mark an important shift in the appreciation of sedentary behaviour as an independent health risk. Over the past decade researchers have begun to redefine our understanding of what constitutes sedentary behaviour, shifting the focus from simply the absence of sufficient health enhancing physical activity. Some research groups now posit that sedentarism is the engagement in a separate class of behaviours characterised by minimal movement and low energy expenditure—for example, sitting or watching television.

Research is now showing that prolonged sedentary behaviour is independently and positively associated with all cause mortality, risk of cardiovascular disease, and metabolic disturbances (Circulation 2010;121:384-91, Medicine & Science in Sports & Exercise 2009;41:998-1005, Diabetes Care 2007;30:516-22). Interestingly, sedentary behaviours and physical activity can co-exist—that is, a child can meet current physical activity recommendations but still spend prolonged periods being sedentary. In light of this the CSEP suggests that children and adolescents should minimise daily sedentary behaviour by limiting recreational screen time to less than two hours per day, and limiting sedentary (motorised) transport, extended sitting time, and time spent indoors.

Quite obviously the success of these guidelines lies with both children and their parents taking heed of this message. I believe that as time spent in school is approximated to account for 40% of a child’s waking hours (of which 60-70% is spent being sedentary), intervention within the school environment may provide a fruitful avenue for decreasing children’s total sedentary time. As targeting in-school behaviour directly has met with varying success, adjustment of the class environment and provision of activity equipment may be necessary.

Currently there is little research addressing the modification of the class environment. Some research groups have created standing classrooms that incorporate workstations to allow standing, or active sitting on a Swiss ball. Other strategies have included the creation of more novel interactive school environments that include vertical workstations, mobile whiteboards, portable video displays, and facilities such as climbing frames, mazes, and miniature golf equipment. Results from these trials show modest increases in activity, but lack sedentary behaviour outcome measures.

More realistically classroom modifications could include children completing some, but not all, lessons at an adapted workstation, to allow kneeling, standing, or active sitting. While typically a teacher will move around the classroom, children stay seated; lessons could be designed to include rotating group work, and interactive whiteboard activities (which many classrooms now have) to interrupt prolonged periods of sitting. Further, lessons might be started or finished with a short active group game, or “cheer/dance,” with teachers given a suite of activities to choose from each day.

These ideas may seem tenuous, but if a single lesson per day was completed standing this would equate to approximately 150-200 minutes less sitting per week. Further, as the frequency of breaks in sedentary time (independent of total sedentary time) may improve a child’s risk profile, it appears wise to interrupt lessons with a two or three minute period of standing, or a short activity every 30 minutes. Even this would reduce sitting time by as much as 50-60 minutes per week. The challenge of course would be for teachers to schedule such interruptions without negatively impacting upon the delivery of lessons.

Despite the existence of discretionary time such as break time and lunchtime, many children are insufficiently active during these periods. To promote physical activity during break times the provision of sports/activity equipment, playground markings, organised activities, and even active video game facilities, should be considered. Activity equipment may include such items as pedometers (combined with weekly step diaries), which are an effective and simple motivational tool for encouraging children to move more during discretionary periods.

These suggestions are of course tempered with the appreciation that cost, teacher enthusiasm, social acceptance of activity, and other psychosocial factors may be barriers to any such initiatives. Further, as a result of modifying the classroom environment, the impact upon quality of learning and subsequent academic achievement is unknown. Despite potential barriers, reducing sedentary time may not only elicit acute health benefits, but also reduce the likelihood of sedentary behaviours tracking into adulthood. On this basis I believe there is a need for pedagogical, behavioural, and exercise scientists to collaborate with schools, teachers, and classroom designers to ensure that children do not sit comfortably for too long in our schools.

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Most doctors have a tale of an unusual foreign body retrieved from a patient. Few, however, can rival the record of the American laryngologist Chevalier Jackson. Between 1886 and 1930 Jackson removed more than 2000 objects from the upper airways, lungs, and gastrointestinal tracts of his patients. All of the foreign bodies were retained, carefully catalogued, and later donated to the Mütter medical museum in Philadelphia. He redesigned rigid bronchoscopes and gastroscopes and invented many of the tools he used to snare the foreign bodies. Yet he declined opportunities to patent his inventions, preferring to share his skills and tools with his students.

Many of his patients were children and most underwent endoscopy with no anaesthetic other than a cocaine throat spray. Jackson used a darkened operating room and his own calm and steady voice to reassure his frightened patients. The survival rate for his procedures was over 95%, including patients who had been turned away by other doctors. He was rarely paid for this service as most of the patients were so-called charity cases. Instead he insisted on keeping the retrieved foreign bodies for his collection, even if the patient asked for them back. This occasionally provoked vigorous disagreements, especially if the item was a coin.

Jackson campaigned to spread awareness of the hazards of ingesting foreign bodies and corrosive liquids. At the time, lye, or caustic soda, was found in many kitchens, and sometimes ingested by children as the crystals resembled sugar. Jackson treated many children for the resulting oesophageal strictures and taught them to swallow dilators using techniques he learnt from sword swallowers.

Jackson’s life and the collection of foreign bodies is examined by Mary Cappello, a professor of English who stumbled over the collection on a visit to the Mütter Museum. She finds art in Jackson’s work and takes a poetic approach in her analysis, searching for meaning in the act of swallowing or inhaling these objects. How could a baby swallow four open safety pins? What leads some patients to repeatedly ingest a variety of bizarre items? Cappello muses on the act of swallowing and leads us to reconsider the apparently simple acts of eating or breathing and the anatomical and physiological tricks we use to separate food and fluid from air.

The result is a fascinating medical history. We follow many of Jackson’s cases and wonder over the bizarre objects lodged within them, and at the surgeon’s skill in removing them using tiny scopes and tools. Often he would practise on animals or dummies before going on to successfully remove an open safety pin or a collar stud from a child’s body.

Cappello takes us back to Jackson’s own difficult childhood and wonders if events from his past triggered his interest in choking and his perfectionist approach to his chosen art.

It is common parlance to say that we are “choked up” when feeling strong emotions, and at times I could feel a lump developing in my throat as I read about patients who were unable to swallow. In one of the described cases Jackson removed a thick mucous plug from the oesophageal stricture of a child who had been unable to drink for days. After the procedure she took a drink of water and then reached for Jackson’s hand and kissed it.

As an operator Chevalier Jackson was second to none in his fastidiousness and preparation. He followed similar principles in his personal life, denying himself many of life’s pleasures in his dedication to his job. It is difficult to read this book without comparing ourselves as doctors to Jackson’s devotion to his patients and his art. I wondered how often I had discussed the hazards of choking with parents of young children, and whether I had missed cases of foreign bodies. It comes as a small relief to learn that Jackson could be a somewhat difficult character to get on with. Perhaps such genius comes at a cost, as Jackson seems to have had little time for his fellow men and women unless they had some unusual item lodged in a tricky recess.

The book is also not entirely perfect. Cappello’s use of poetic language and the jargon of critical theory is rather dense in places. Some patients’ names appear to be in the public domain and are used frequently, which caused me some unease. One of the images reproduced in the book repeats the common lay error of displaying a chest xray the wrong way round. But if television and film cannot get this right why should we expect an English professor (or a publisher’s copy editor) to do so? In fact this charming error only serves to remind us of our profession and our links, however distant, to Jackson and his work.

Cappello’s account of Chevalier Jackson’s life and works takes us on a journey into the dark recesses of the human body to discover the strange objects placed there, often for very unusual reasons. It is full of curiosities, not least those of the doctor himself, who collected the items and arranged them into educational displays.

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Swallow: Foreign Bodies, Their Ingestion, Inspiration, and the Curious Doctor who Extracted Them
Mary Cappello
The New Press, £19.99, 336 pages
ISBN 978-1595583956
Rating: ★★★½
A medical icon

Several doctors have been diplomats but few have been both diplomats and Orthodox monks. This was the trajectory of the Russian Konstantin Leontiev (1831–91); he was also a novelist, dramatist, literary critic, belletrist, philosopher, and theologian. He knew both Turgenev and Tolstoy and wrote critically of the latter.

He was a somewhat reluctant medical student. He described his anatomical studies at Moscow University with clear distaste: “The sprawling bodies on the slabs of strangled old men, drunkards frozen stiff in the streets, murdered wantons, whose corpses the students tore to pieces, laughing and blaspheming in all sorts of ways.”

He regarded his fellow students as a bad lot, coarse, vulgar, narrow, and opportunist. He, by contrast, was a refined aesthete. His only medical student friend, Alexey Goergievsky, subsequently poisoned himself.

Leontiev was an army doctor during the Crimean war but, as unenthusiastic about it as he had been about his medical studies. According to his Reminiscences, he spent more energy during the war on pursuing the woman who was to become his wife than on tending the wounded. He was in any case highly sceptical of the efficacy of medicine as an endeavour, not surprisingly, perhaps, in view of the following:

“I was transferred in the middle of winter to Karas-Bazar, where people were perishing by the hundreds from typhus, fever, and gangrene, where every half hour the church bells tolled for the dead, where only two out of fourteen doctors remained on their feet, while the rest were already lying in their coffins or in their beds.”

Leontiev then became a diplomat, serving in such places as Adrianople and Salonika. It was in the latter, in 1871, that he had something of a mystical experience while suffering from cholera. He thought he was nigh unto death: “I was gazing at the image of the Holy Virgin … and I exclaimed, Mother of God! It is too soon! It is too soon for me to die! Raise me from the corruption of death. I shall go to Mount Athos and I shall even take monastic vows.” This produced a miraculous effect: “Within a couple of hours I had recovered; all the symptoms had vanished before the doctor arrived.”

He wrote this account in a letter to V V Rozanov, a theologian, in the year of his death, 1891, a century before evidence based medicine was thought of. Leontiev, an aristocrat both by birth and conviction, was in any case deeply opposed to Western materialism, which he regarded as shallow and aesthetically destructive, and he also predicted a hideously murderous revolution in Russia. Rozanov was to die of starvation 18 years after receiving Leontiev’s letter and two years after that revolution.

Leontiev grew up in a religious household in the era of serfdom. A serf artist (large households had serf musicians and serf actors as well) painted him as a baby, attaching wings to him and making him look like a cherub. Years later, Leontiev discovered that the household serfs were using this portrait of himself as a holy icon to ask for intercession. Amusing, no doubt; but who among us can live entirely without illusions?

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Leontiev was an army doctor during the Crimean war, but . . . spent more energy during the war on pursuing the woman who was to become his wife than on tending the wounded

MEDICAL CLASSICS

Pain: the Gift Nobody Wants
By Paul Brand and Philip Yancey, Published 1993

The Greek word “stigma” literally means a visible mark on the skin. It is also used to designate the characterisation of a person in a negative way that leads to discrimination. Leprosy carried a stigma from Biblical times well into the 20th century. This stigma had its roots in the external deformities that gave patients a repulsive look. A dysmorphic appearance combined with fear of contagion leading to epidemics made patients outcasts. Literature and cinema (for example, Ben Hur, Papillon) perpetuated the idea of leprosy as a “curse of God.” Eventually the name itself was replaced by the politically inoffensive “Hansen’s disease.”

The traditional view was that the flesh of leprosy patients rotted away and fell off. This belief was challenged in the 1950s by Paul Brand (1914–2003). Born to missionary parents in India, Brand was a rare combination of a brilliant scientist and humble, humane person. After training as a surgeon in London during the Blitz he returned to India where Robert Cochrane, a famous leprologist, drew his interest in the orthopaedic problems of his patients. Brand was surprised by the grip strength of a patient’s clawed hand, which proved that his muscles were anything but useless. He meticulously studied hundreds of patients and realised that all their deformities could be traced to the loss of perception of pain caused by leprosy. This deficiency made even trivial everyday injuries a source of infection, gangrene, and eventual mutilation. When he taught patients to inspect their painless limbs regularly for new injuries and to protect themselves from potential trauma, no further deformities developed.

It took Brand years to convince the medical and social establishment that leprosy itself did not cause “rotten flesh.” Brand did not stop at the discovery of the cause but went on to correct the deformities. He developed surgical procedures for the functional correction of claw hands, thus facilitating the rehabilitation of patients. He designed special padded shoes to prevent foot injuries. He also used plastic surgery techniques for the elimination of the facial stigma of leprosy, thereby making patients once again acceptable to their own families and communities.

His observations on the consequences of “painlessness” led Brand to an appreciation of the protective role of pain. Pain: the Gift Nobody Wants, written in cooperation with author Philip Yancey, is a gripping combination of autobiography, medical history, philosophy, and self help advice. Brand takes us from his childhood in India, through his studies in England, on to his fascinating journey of discovery in Indian leprosy hospitals, and finally to America where he continued his pioneering research on pain. His book should be read by everybody who has ever questioned the need for this unpleasant sensation. Brand is an optimist—“I hurt, therefore I am” is his cheerful message. We cannot prevent pain, but we can stop it from dominating and ruining our lives. This book shows us how to prepare for its inescapable visits.

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Competing interests: My admiration led me to translate “The Gift of Pain” into Greek, and I have received token royalties on its Greek sales. I have no other interests to declare.

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School’s out

It is the start of the summer holidays. Time to buy another roof box, as you forgot to remove the last one and it smashed to smithereens against a multistorey car park ceiling. Time to argue about whether to leave at 2 am and travel through the night, or stop at a Travelodge in Coventry overnight. Time to be seduced into buying motorway service station sandwiches at £6 each. On the ferry to France the children throw up said sandwiches and you realise that you have a 14 hour drive to the campsite once you get to the other side. On arrival you meet your neighbour (whom you hate), who is in the tent is opposite. The campsite shop sells baked beans and Marmite, the local restaurants all have identical menus straight from a 1970s English dinner party. All the pâtés look and taste the same, and you break a tooth on the crusty bread. You resort to drinking wine at lunchtime only to discover that you bought red wine vinegar by mistake; you drink it anyway. There is nothing like a holiday.

In medicine we take professional holidays to collect our annual educational points. It is a system as effective as maintaining clinical quality as health promotion leaflets are at changing behaviour. Consultants do “conferences.” They walk past the academic posters and yawn, and dodge the presentations. Understand that many symptoms are unexplainable and that all classic symptoms are at best crude caricatures, if not completely wrong. Immersion into different medical cultures aids communication, understanding, and knowledge; it is real education.

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Time to get smart about IT

Imagine an organisation that knows what you like, what you don’t like, where you live, where you shop, and how much you spend. Imagine all these data held on a central database, accessible from thousands of locations around the country by unknown operators at their whim.

It sounds scary written down; even ominous. Yet this is exactly the information loyalty cards such as the Tesco Clubcard or Nectar card provides.

Are most people bothered by this? Quite the contrary. Most people seem happy to allow these data to be collected about them in return for some rather meagre targeted rewards like cheaper brussels sprouts at Christmas.

Why does all this matter? Because everyone else seems to be able to manage IT effectively with little fuss, whereas the NHS seems to be wonderful at creating a fuss and achieving little.

It’s frustrating to sit in outpatients and explain to patients who have dizzyingly had their blood tests done at their general practitioner that they need to be repeated because the inconvenience, pain, and cost of venepuncture is outweighed by the inconvenience, pain, and cost of calling a premium rate number, listening to 12 different options from an intelligent switchboard (isn’t that an oxymoron?), and then being told everyone is at lunch and maybe calling back in four hours would be a good idea.

Why are we unable to manage IT? Billions have been spent—many would say wasted—on IT systems up and down the country, but few if any live up to their original promises.

Look at the recent attacks on Sony (twice), the Sun newspaper, and even the Serious Organised Crime Agency. These attacks prove that any system with large amounts of data is vulnerable. Now imagine the health records of the entire nation and the rich pickings they would provide to individuals, tabloid newspapers, or even rival states.

The current system is unworkable. Patients move from clinic to clinic and hospital to hospital and their paper notes are meant to travel independently to wherever they are needed. And it’s getting worse as services are increasingly becoming regional rather than local.

Why not place the onus for the security of health records firmly on the patient? Why not have a patient smart card that could serve both to hold all the required clinic letters, blood tests, and x rays, and to prove entitlement to healthcare?

When travelling around Europe, a European Health Insurance Card is mandatory to obtain healthcare; why should it be any different when at home? And while the resultant electronic records would still not be perfect, they would certainly be better than 30 year old pieces of paper held tenuously together by a piece of fragile plastic.

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