



Human Factors & Ergonomics Society of Australia Inc.

HFESA Position Statement

Prepared by the Professional Affairs Board on behalf of the HFESA Board.

(Published 20th September 2018)

Response to Fairfax media on 07/05/18 giving the HFESA position on *ergonomics*.

Again, thank you for seeking our input on an ergonomics issue. As previously indicated, the Human Factors and Ergonomics Society of Australia (HFESA) had its Board meeting this weekend and we discussed your question about recent articles criticising office ergonomics.

We agree with many of the opinions you express, though perhaps not for the reasons you might assume. There are unfortunately many individuals who (perhaps because of qualifications in allied fields) may believe they are doing ergonomics, but do not have the qualifications or understanding necessary to perform an appropriate ergonomic assessment or consultation that a certified ergonomist would be able to. Thank you for raising the issue of the negative consequences of supposed ergonomic assessments by people who are not ergonomists, but who are saying that they are doing ergonomic assessments.

Before reviewing the papers you referred to us, we were asking ourselves what were the actual ergonomic interventions, what was the basis of the interventions and did the assessments cover the three domains of ergonomics (physical, cognitive and organisational)?

If someone attempts to deal with back pain for a sedentary worker, and all they do is adjust their seat height and add a bit of lumbar support, not only have they missed the point, but they clearly don't understand the fine points of applied low back biomechanics and they obviously have no idea what practicing effective ergonomics, is all about.

Good ergonomics covers three domains. In addition to addressing physical factors such as posture, appropriateness of the chair, desk height etc., the ergonomist would also be asking things such as how is the person's work designed, how long does the person usually sit, what else do they do in their job, what stress are they under, and how is their wellbeing? *We have to acknowledge here that many employers only want a minimalist intervention and the brief may not include a wider look at work design. So there are certain influencing skills necessary and reference to the right information sources to guide the employers to the right outcome providing wider efficiencies.*

The comments you refer to by Professor O'Sullivan actually support the professional ergonomist's approach when he asks:

Why sit all day?

Are you stressed at work?

Are you run-down and tired?

Yes, these other factors are actually more predictive of continued pain. Assuming that the advice about how best to physically sit has been addressed correctly (and I will come to that later), without dealing with the whole person in context, the results are not likely to be as effective.

A lot of the work you are referring to appears to be taking a very restricted view of ergonomics (not an appropriately comprehensive approach). The 1997 paper referring to a study of 4000 postal workers doesn't even refer to ergonomics. It refers to lifting and sitting, adjustment of shelf heights, adjustment of lumbar supports and is examined through the eyes of non-ergonomists. Adjusting seat height and lumbar support is often referred to as "ergonomics", but it is not what the HFESA would see as ergonomics. The interventions were training only. Training is not known to be the best safety control (see paper <https://academic.oup.com/occmed/article/60/2/101/1421417#87408053>). Training is a low order control according to Australian safety legislation. Work system design, furniture design, environmental design, culture and job design (covering the three domains) are what is required. In fact, to rely solely on training, such as simply showing a worker how to adjust their chair, is going against the legislated approach.

A real ergonomist would not only adjust the chair, and they certainly would not be relying on training in isolation.

I saw an advertisement for a car sump draining pan recently that referred to the product as "ergonomic". All it seemed to have was a handle on the side. That doesn't make it ergonomic, it may be a little more user friendly by design, but not ergonomic. The term *ergonomic* has become a little simplified and in many respects, abused.

The above discussion begs the question:

What is an ergonomist?

Most HFESA ergonomists hold multiple degrees. They often have primary degrees as physiotherapists, occupational therapists, engineers, psychologists, designers or medical practitioners for instance. Then they usually do post graduate studies in an ergonomics course that meets the International Ergonomics Association (IEA) training criteria (notably covering the three domains). There are direct degrees in ergonomics and human factors, but this is not a necessary pathway. The HFESA has many academics and researchers who have progressed to complete a PhD in an aspect of ergonomics. Those members working in the work health and safety field often have additional qualifications in safety and risk management.

IEA is one of the many organisations covered by the World Health Authority charter. The HFESA is an IEA affiliated organisation. HFESA has criteria for membership that include a code of ethics and specific IEA criteria for its Certified Professional Ergonomist (CPEs) members. The HFESA is the peak body in Australia for ergonomists.

Many professions such as psychologists, physiotherapists or optometrists are covered by a national registration board (through AHPRA) with legislation prohibiting non registered persons from referring to themselves as physiotherapists or psychologist, the title "ergonomist" does not have the same protection. Anyone can call themselves an ergonomist. So the only protection the public or businesses can rely upon to filter-out weak practice and charlatans is checking for Membership and Certification by HFESA.

Perhaps an interesting approach to your article may be to see a professional ergonomist undertake a workstation assessment. If I can get an employee who I am assessing in the near future to consent, you could observe me at my workplace. That way I can explain some of the contemporary approaches to managing seated posture, and it looks nothing like the right-angle erect seated posture promoted by some in the furniture industry. Aspects of the latest thinking have emerged from [Professor Allan Hedge](http://ergo.human.cornell.edu/ahpersonal/ahbio.htm) (<http://ergo.human.cornell.edu/ahpersonal/ahbio.htm>) of Cornell University, where a more reclined posture is recommended. The thigh torso angle is more like 100-115 degrees. The desk heights are more elevated, and they recommend you don't just sit all day!

There are plenty of Prof Hedge's reference material in this Cornell article (<http://ergo.human.cornell.edu/studentdownloads/DEA3250pdfs/ErgoChair.pdf>), including his recommendation for a reclined posture. The approach has been around for ages. I recall my lectures in the ergonomics course I did back in the late 80s referring to the researchers Grandjean and Balans who were recommending something more akin to a horse saddle. In fact, you can still buy Balans kneel-in chairs and do an internet search for Bambach saddle seat. Sitting at a right angle doubles the low back intervertebral disc pressure. Sitting like that all day for many years is bad for your low back. So why would anyone be recommending it?? Further, would anyone advertise a non-ergonomic chair? What would that actually mean? In the full context of ergonomics, what actually is an ergonomic chair?? Adjustment alone is not ergonomics. It is just good design.

Ergonomics and human factors is a science-based discipline; though as is true for most disciplines, it may at times cover the same ground as allied fields e.g. back pain or sitting posture. I assume you are also across the HFESA position paper on prolonged unbroken sitting (<https://www.ergonomics.org.au/documents/item/184>). This was a collaborative piece with other professionals. The Society is suggesting varying between sitting and standing and highlights how collaborative workplace design can provide for Activity Based Work (Support for this is evidenced in a paper by Robertson, M et al titled "Improvements in musculoskeletal health and computing behaviours: Effects of a macroergonomic office workplace" in Applied Ergonomics 62 (2017) 182-196). The papers you referred to us for review made no reference to sit-to-stand workstations. In fact, the papers are rather narrow in their focus. The papers were not from highly rated ergonomics journals that are peer reviewed by professional ergonomists.

There are three main issues with the literature provided:

1. While these may be Physiotherapy etc journals or from well-respected aggregators such as Cochran; none were from leading Ergonomics and Human Factors or OHS Journals. (e.g. Ergonomics, Applied Ergonomics, Occupational Biomechanics, Professional Safety)
2. A close reading of the methods shows that in essentially EVERY case, there was no indication that the interventions performed were by a qualified ergonomist, they only listed other qualifications of the practitioners.
3. The Meta-analysis articles are problematic in that they are authored by researchers in other fields who judging from the descriptions included of the methodologies may have a limited model of ergonomics. This means that they may not be the best judge of what is good quality ergonomics research. I do think we should concede that in many cases they did correctly highlight methodological limitations in some of the research conducted in the articles they were reviewing, (i.e. they were critical of some research that we perhaps should be critical of as well.)

Any clinical medical or health science intervention is easier to control as the subject attends a clinic weekly and it is easier (reliable) to see that the intervention is occurring. But workplace interventions can lack such intervention reliability. As previously indicated re the 4000 postal workers, a simple training intervention showing someone how to sit with sparse follow-up weeks or months later has poor reliability and poor habit strength will usually mean that the subjects revert back to old habits. This is very different to conducting a work systems intervention that is not reliant on human behaviour.

There is an interesting message in all this for those who do procurement of furniture. Who are they getting their advice from? Poor advice = poor chair selection and certainly poor work systems design.