



## Taking the stairs instead: The impact of workplace design standards on health promotion strategies

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### RESEARCH

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### Abstract

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#### Background

Comprehensive health promotion in Western Australia has been conducted from the point of views of policy development, promotion, education and service delivery. Much of this recent work has been focused on supporting workplaces – but there has yet to be any real focus on the design of the actual physical workplace environment from a health promotion perspective.

#### Aims

This paper is aimed at highlighting the gap in health promotion knowledge by addressing how the disciplines of architecture and health promotion can work together to challenge the regulations that dictate design practice and ultimately bridge that gap for long-term change. The overarching aim is to undertake further evidenced-based research that will inform best practice in the planning and design of workplaces to reduce sedentary behaviour and increase opportunities for physical activity.

#### Method

Within this wide objective this paper focuses in particular on the idea of stairs-versus-lift movement strategies within office buildings. By examining building design guidelines

from a health promotion perspective we expose a central dichotomy, where health promotion posters say “Take the stairs instead” whereas the language of building design suggests that the lift is best.

#### Results

From a design point of view, the National Codes of Construction (NCC), formally known as the Building Codes of Australia (BCA), the essential technical regulation for all building design and construction, primarily addresses the concepts of ‘egress’ and ‘travel distance’ for escape in the event of fire, and building access in terms of universal access. Additionally, The Property Council of Australia’s *Guide to Office Building Quality* prioritises lift performance criteria along with the quality and experience of lift use as a major grading factor. There is no provision in either set of standards for staircase quality and experience.

#### Conclusion

The stairs, despite being promoted as better life choice for better health, is not promoted through these building codes nor, consequently, through the building design in actuality. It is proposed that health promotion strategies could be coupled with design-led movement strategies in workplace design so that the promotional language, such as “take the stairs instead”, is balanced by the design language of the building.

#### Key Words

Workplace, design, stairs, health promotion, sedentary behaviour.

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#### What this study adds:

1. To date in WA little is known about the implications of building design, and in particular, workplace design on the promotion of health. This paper seeks to highlight this gap.
2. This paper asks questions of the design of stairs and lifts in new buildings, the standards that dictate grading systems, and performance brief requirements.
3. The implications of this discussion identifies the need for case-study evidenced-based research to test how new



building designs are implicated in health promotion strategies, for sedentary behaviour in particular, and required policy development to help improve practice.

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## Background

*Buildings are primarily social objects—their forms provide answers to questions we ask about ourselves [...]. Everything about a building has a social meaning—its form, function and spatial structure are each capable of analysis.*<sup>1</sup>

In the workplace, full-time employees are more likely to be overweight or obese (63%) than part-time workers (51%).<sup>2</sup> Office-based employees spend half of their waking hours at work in sedentary behaviours.<sup>3</sup> Office environments increase workers' risk of overweight/obesity and chronic disease by limiting the time available for physical activity.<sup>2</sup>

Approximately six out of 10 adults do not meet Australia's recommended physical activity guidelines for health benefits (30 minutes of moderate physical activity on most days of the week).<sup>4</sup> The sedentary nature of work combined with changes in methods of transport has contributed to the decline in levels of physical activity. The nature of working has changed from manual labour to predominantly physically inactive duties.<sup>5-6</sup> As a consequence, it is estimated that 45 per cent of people now work in a sedentary type job where they spend most of their time sitting.<sup>4</sup>

Contemporary health promotion places a strong emphasis on the influence of the physical environment on people's health behaviours, with an acknowledgement of the need to address the environmental determinants of physical activity behaviours.<sup>7</sup> Assessing environmental influences on health behaviour is paramount to good health promotion. Given the limitation of education and behavioural interventions for physical activity it is imperative that more environmentally focused intervention be put in place.

Workplace design has changed considerably over recent years and it is predicted that these changes along with workplace innovation will continue in line with ever-evolving technologies. The work of Francis Duffy, in particular, has led the discussion on future office design.<sup>8-13</sup> Research has established through many studies that workplace design has an effect on productivity, satisfaction and co-worker interaction.<sup>14-18</sup> However little is known about the relationship between workplace design and health promotion strategies as applied to the reduction of sedentary behaviour.

Likewise, from a health promotion perspective, there is a paucity of workplace programs, particularly those that incorporate environmental intervention to address sedentary behaviours.<sup>19</sup> More evidence is required to provide practitioners with practical information for the translation of research into practice.<sup>19</sup>

From a design point of view, the *National Codes of Construction* (NCC),<sup>20</sup> the essential technical regulation for all building design and construction, addresses egress and travel distance for escape in the event of fire and building access in terms of universal access. There is no provision in the codes for health promotion through design-led movement strategies.

This qualitative paper and the ensuing quantitative research will provide a unique opportunity for inter-disciplinary collaborations (health promotion and architecture) to come together to begin to address the literature gap relating to the impact of environmental intervention on the sedentary behaviours of office workers. The new contribution to the research area lies in the close analysis of our workplace buildings and the guides that inform them through the lens of health promotion initiatives and the images that represent them.

## Analysis

By analysing relevant aspects of building codes and standards we can ascertain the parameters that architects, developers and clients must address to build a new office building. This information can be used to hypothesise what impact, positive or negative, these might have on sedentary behaviour in the workplace.

The design and construction of buildings in Australia are dictated by strict building regulations. The *National Construction Codes* (NCC) cover all aspects of design and construction performance. In the case of office buildings (Class 5) there is a strong emphasis in the Codes on performance in the case of fire (compartmentalisation and construction of fire stairs, egress or travel distance to exits) and the principles of universal access, in line with the Disability Discrimination Act 1992,<sup>21</sup> which determine building accessibility performance.

In addition to the NCC, the Property Council of Australia has published its own guidelines *A Guide to Office Building Quality*.<sup>22</sup> These specifications are concerned with a very different aspect of the proposed building design. Primarily they assess building quality from a commercial viewpoint and are used by developers, financial institutions and real estate agencies to determine building valuations, rentable



incomes and investment potential. There are set strict parameters for the design of new office buildings to be categorised as Premium, A Grade or B Grade. However, quality from the perspective of user-satisfaction is not assessed and does not form part of the specifications.

Of particular note to this research on sedentary behaviour is the section in the Property Council guide outlining the requirements for the provision of lifts and staircases. In the overall descriptors a 'Premium' office building is described, among other things, as one with prestige lobby and lift finishes with a high quality lift ride. Similarly, an 'A Grade' office building has good quality lobby and lift finishes with a good quality lift ride. There is no requirement in this guide for stair quality or finishes. Office buildings are ranked for quality grading in the lift and stair section against five main criteria:

1. **Waiting Intervals** (E1) measured as the average time (25-35 seconds) for lift car arrival at the main lobby;
2. **Handling Capacity** (E2) measured as a percentage of the total assumed building population based on the buildings Net Lettable Area (NLA) calculated on 1 person to 12 square metres;
3. **Car Capacity** (E3) of the lifts (16-21 persons);
4. **Goods Lift** (E5) number and capacity of goods lift;
5. **Inter-floor Fire Stairs Access** (K4) (1-2 staircases).

Therefore, for a typical medium-scale, 4-story office building in Perth, Western Australia (of about 5000sqm with an assumed population of 417 people based on the NLA) to be ranked 'A Grade', it requires 3 lifts (including a shared goods lift), accommodating 19 people, (or 80% of the total capacity of 24 people) each with the average waiting time less than 30 seconds. In essence this equates to one lift for each upper floor level.

At today's construction pricing, the additional cost of increasing from two lifts to three in order to achieve this waiting time and, ultimately an A Grade building, is approximately \$500,000. As the aesthetic considerations for the finishes and lighting of the inter-floor fire stairs are not included as part of the grading system, the additional lift cost would likely make it prohibitive to invest in user-friendly finishes to the inter-floor concrete fire stairs.

## Discussion

Based on the scenario above, on entering a brand new medium-scale, A Grade buildings in Perth we are now faced with a wall of lift cars, with shiny automatic doors, ready to transport us within 30 seconds to the first floor. In contrast, in order to reduce our sedentary behaviour, we may choose

to push open the fire door to the concrete-encased, emergency-lit, minimal-dimensioned fire stairs.

The level of ambience and finish invested into the spaces supports this argument. The lift is shiny and inviting, with mirrors, carpeting, music, and designed as an extension of the lobby space; the staircase is unfinished, dull, dim and uninviting. The stairwell has the feeling of a back-of-house space or service space. The lift is clearly a front-of-house space where the quality and style of the A-Grade building is displayed. Further, the lift doors welcomes you by opening automatically with a press of a backlit button. By contrast, the fire-rated door-closer on the stairs requires extreme exertion and often two free hands. The warning signage on the door states that you are entering an emergency zone. User concerns that the exit may be locked or even alarmed are often valid. By contrast, the lift signage suggests that it should be used everyday, but not in the case of an emergency.

Health promotion strategies have been employed throughout the world to encourage stairs use over lift use. In Australia the "Take the stairs instead" poster (Figure 1), part of the 2008-2010 *Find Thirty every day*<sup>®</sup> campaign (23), depicts a wide, bright, inviting and colourful stairs. The design of the stairs invites use through the combination of the generosity of the space, the size of the treads and the quality of finish.

However the actual experience of an office staircase in many workplaces is very different. Firstly, one has to negotiate the warning signage in order to even enter the stairwell. Figure 2 depicts the door to the stairs in a Perth office building and the signage found on it. The "Take the stairs instead" poster has been montaged into the image of the door to highlight the mixed messages of health promotion and building regulations.

Then, after negotiating the warning signage and upon entering the stairwell, the lived experience of a typical office stairs is clearly very different to the model stairs depicted in the campaign poster. Figure 3 represents the reality of the building language montaged into the poster message to further highlight the discipline gap.

Figure 1: Poster: Take the stairs instead



Figure 3: In reality: Taking the stairs instead



Figure 2: In situ: Taking the stairs instead



The design of spaces in buildings is a strong indicator of behavioural norms. Layout, fixtures, finishes and signage determine how a space is to be used. In a contemporary workplace organisation there is a conflict between the corporate expectation of efficient concentrated daily work ethics, and the individual concern of staff members to be active and physically fit for work, avoiding absenteeism. A similar conflict is visible between efficient workplace design and efficient workplace health promotion strategies.

### Conclusion

The health promotion figures suggest that there is a growing problem of sedentary behaviour for office workers. When combined with increasing working hours and labour-saving technologies such as electronic document transfer, we are faced with a serious health crisis for our workforce.

The design of workplace buildings, and particularly the design of vertical movement paths through lifts and stairs, is promoting sedentary behaviour in contradiction to health promotion initiatives. A detrimental combination of distinct factors has resulted in this conflict; building grading systems for a competitive property market which prioritise lift quality and experience over stairs quality and experience; stricter fire regulations requiring stairs



'compartmentalisation' resulting in taxing door-closers to unattractive concrete fire stairs; occupational health and safety measures as evidenced by the alarming emergency signage requirements at stairwell entries; increased universal access requirements; and societal behavioural expectations.

While the *Find Thirty every day*<sup>®</sup> campaign is considered to be highly successful,<sup>24</sup> the reality of the "Take the stairs instead" sub campaign is that it is often hampered by poor conditions within the built environment. The poster image presented in Figure 1 bears little resemblance to many older workplace environments. The montaged images in Figures 2 and 3 challenge the full impact that the everyday experience can have on these types of campaigns in many work sites.

Most concerning is that as our office building stock from the 1960-80s reaches past its use-by date they are being replaced by a new stock of highly efficient graded buildings. The evidenced-based research to demonstrate whether these workplace environments are contributing positively or negatively to our workforce's health has yet to be commissioned. Importantly, the criteria for spatial health-promotion have yet to be included in building codes and specifications. If, as Markus<sup>1</sup> suggests, our buildings provide answers to questions we ask about ourselves, then surely we need to question our priorities of having a stock of A-Grade buildings over an A-Grade healthy workforce for the future.

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N/A