

2015

Investigating the value of workplace-endorsed social media for improving deskbound employee physical activity program engagement and reducing sedentary behaviour health risks

Darren Leigh Webb
Edith Cowan University

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Investigating the value of workplace-endorsed social media for improving
deskbound employee physical activity program engagement and reducing
sedentary behaviour health risks

by

Darren Leigh Webb
BSc(HumBiol), GradDiplInformatics, MCompSc *ECowan*
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School of Exercise and Health Sciences
Faculty of Health, Engineering and Science

Associate Supervisor: Associate Professor Owen Carter
Research Director - Collaborative Research Network

A thesis submitted in fulfilment of the requirements for the degree of
Doctor of Philosophy
[L21] PhD (Public Health)

School of Exercise and Health Sciences,
Faculty of Health, Engineering and Science,
Edith Cowan University, Western Australia

Date of Submission: 14th January 2015

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This research was conducted in conjunction with HBF Health Ltd

USE OF THESIS

The Use of Thesis statement is not included in this version of the thesis.

Abstract

Sedentary (prolonged sitting) behaviour is now recognised as an independent health risk factor contributing to a number of preventable lifestyle related diseases (Katzmarzyk, Church, Craig, & Bouchard, 2009). The widespread integration of computers into the office environment has seen an increase in employee work time participating in technology facilitated desk-based tasks requiring them to remain physically inactive (Philipson & Posner, 2003). According to recent research, workplace sedentary behavioural practices have objectively been measured as accounting for 81.8% of employee time, with a further 15.3% categorised as light activity within office based populations (Parry & Straker, 2013). With a recorded national employment rate of 11,613,900 employees representing 64.6% of the total population as at November 2014 (Australian Bureau of Statistics, 2014b), this recognisably poses significant need to develop mitigating strategies in reducing sedentary related health and business impacts.

In recognition of the employee health hazards associated with prolonged workplace sedentary behaviours, increasing numbers of organisations have sought to mitigate this risk by introducing a variety of workplace wellness programs, many of which incorporate a physical activity (PA) focus or component. Owing to the huge increase in popularity of social media in recent years, there has been increased research into the effectiveness of utilising internet-enabled social media to foster enhanced participant engagement with workplace PA programs (Williams, Hamm, Shulhan, Vandermeer, & Hartling, 2014).

This research therefore sought to investigate the value of workplace-endorsed social media for improving the engagement of deskbound employees in workplace PA programs and reducing the health risks associated with sedentary behaviour. It also investigated the influence of organisational cultural on employee engagement with workplace physical activity programs including both the perceived and actual experiences of using social media in association with a globalised workplace physical activity program.

In association with iconic West Australian health insurance organisation HBF Health, two studies were conducted using of a number of participant data collection techniques including focus groups, surveys, and interviews which were further complemented by the adoption of an ethnographic participant-observational approach over 24 months. This extensive workplace embedded exposure afforded a well-qualified perspective of workplace cultural

influences, participatory responses and organisational endorsement for workplace wellbeing incorporating social media enabled PA programs. Within both studies, predominantly sedentary employees were questioned on their perceptions of workplace health enhancement through social media as well as following active participation in a globalised workplace PA program utilising various forms of social media.

This research found that desk-based employees participating in a workplace PA program identified value in using peer-supportive social media to address sedentary behaviour and other health risks within their office workplace. It was also acknowledged that in-house organisational social media based communication systems were seen as offering localised benefits that more globally-oriented social media mechanisms could not deliver.

Declaration

I certify that this thesis does not, to the best of my knowledge and belief:

- i. incorporate without acknowledgement any material previously submitted for a degree or diploma in any institution of higher education;
- ii. contain any material previously published or written by another person except where due reference is made in the text of this thesis; or
- iii. contain any defamatory material.

This research has been collaboratively undertaken with HBF Health Ltd as an industry partner organisation. This association enabled the recruitment of office-based employees as research participants and access to company documents, the content inclusion of which was reviewed by HBF management and approved prior to journal submission for publication (See Appendix 31 - Letter of industry partner publishing approval).

As journal articles (published and pre-published) are an integral part of this thesis, authorship is stated within each article. The remainder of the thesis has been written solely by the PhD Candidate (supervisor and consultant editing excluded), and where possible, the most qualified resources were consulted in application to the unique circumstances of this research project. Thesis formatting was also completed by the PhD Candidate.

I also grant permission for the Library at Edith Cowan University to make duplicate copies of my thesis as required.

Darren Leigh Webb
14th January 2015

List of publications, statement of contribution by others and usage permissions

Peer-reviewed publications (under review) included as part of this thesis

- Publication 1
Webb D.L. (2015). "*Transitioning from health insurer to Health Partner.*"
Journal of Organisational Ethnography (JOE)

- Publication 2
Webb D.L. (2015). "*Corporate communications on workplace wellness: office worker perceptions.*"
International Journal of Workplace Health Management (IJWHM)

- Publication 3
Webb, D.L. (2015). "*Glocalised online support for workplace physical activity.*"
International Journal of Workplace Health Management (IJWHM)

- Publication 4
Webb, D.L. (2015). "*Office innovation helps employees "Find 30 in 9 to 5" to counteract sedentary health risks.*"
Journal for Participatory Medicine (JoPM)

Statement of contribution by others

I, Darren Leigh Webb, contributed the majority of work to all journal publications and chapters contained within this thesis. I certify that:

- i. the above statement is a true and accurate representation of the contribution of others in regard to this thesis.

Darren Leigh Webb
(PhD Candidate)
14th January 2015

Jacques Oosthuizen
(Principal Supervisor)
14th January 2015

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Darren Leigh Webb

14th January 2015

Awards and funding acknowledgements

Awards

2010 ECU Vice Chancellor's Student Award for Engagement – Special Commendation

2011 ECU Vice Chancellor's Student Award for Engagement – Award Winner

Funding Acknowledgement

Research Non-Government Industry and Other Funding - HERDC Category 3

Project No. 21846

Amount: AU\$27,675.00

Funding Body: HBF Health Ltd

Research capability product support (Resistance band exercise material)

Amount: AU\$1,320.00

Funding Body: The TheraBand Academy (suppliers of Thera-Band® products)

Invited research presentations

- Monday 17th June 2013
ECU – Child Health Promotion Research Centre (CHPRC)
Co-presented with HBF’s Manager – Health, Safety and Wellbeing, Mr Jon Haines
Presentation Title: “Collaborative research: Reducing health risks associated with sedentary behaviour” (Finding 30 in 9 to 5 research program)
- Wednesday 24th July 2013
Healthier Workplaces WA (HWWA) = (Heart Foundation/Cancer Council)
Presentation Title: “An industry partnered research study: Using Web 2.0 social media strategies to break up sedentary time and promote physical activity for deskbound office workers”
(Finding 30 in 9 to 5 research program)
- Thursday 13th March 2014
ECU – School of Medical Sciences
Systems and Intervention Research Centre for Health (SIRCH)
Presentation Title: “Collaborative research: Reducing health risks associated with sedentary behaviour” (Finding 30 in 9 to 5 research program)

Invited academic meetings

- Wednesday 30th April 2014

Professor David Dunstan

Head, Physical Activity Laboratory, Baker IDI Heart & Diabetes Institute, Melbourne

Presentation/discussion about my research and the development of Webble Move!

- Tuesday 28th October 2014

Professor Barry J Marshall

Nobel Prize Laureate (Physiology or Medicine)

Professor of Clinical Microbiology at the University of Western Australia

Presentation/discussion about my research and the development of Webble Move!



Tue 28/10/2014 4:12 PM

Barry Marshall <

RE: Thanks from Darren

To: Darren WEBB

OK, Good luck. We are behind the program.

Professor Barry Marshall, Nobel Laureate
The University of Western Australia
M502, Room 2.13 L-Block, QEII Medical Centre
Nedlands, Western AUSTRALIA 6009

UWA Secretary (Elina): admin@hpylori.com.au

Email of support for the completion of the research endeavours and ongoing program development from Professor Barry Marshall.

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Supervisors

I would like to thank A/Prof's Jacques Oosthuizen (School of Exercise and Health Sciences) and Owen Carter (Collaborative Research Network), from the Faculty of Health, Engineering and Science at Edith Cowan University who have offered their valuable research guidance in contributing to the supervision of this research.

HBF Health (Industry partner)

I would like to take this opportunity to sincerely thank the management and employees of HBF Health Ltd who as my industry partner have been extremely welcoming and supportive of my research engagement within their organisation. Without the support of both management and my many research participants, this research would not have been possible.

My greatest appreciation is reserved for HBF's Manager for Health, Safety & Wellbeing, Mr Jon Haines who has facilitated my research within the organisation and has been an amazing advocate for academic-industry collaboration. Jon's mentoring of me throughout my time embedded within HBF has enabled me to gain a much richer learning experience than I could have ever imagined had it not been for his tireless efforts. Thanks for pointing out the insidious dangers of phloem bundles too, J.

Edith Cowan University

During my candidature, I had the wonderful opportunity to work as a SOAR Ambassador at ECU's Graduate Research School (GRS) in a peer support role. This employment not only enabled me to assist other students with their research skills training but to further develop my own. I would collectively like to thank the staff and my peer research students within the GRS for their support of me as both a student, employee and friend.

Both prior to and throughout this research journey, many former lecturers and university colleagues have made positive contributions toward inspiring my passion for education and research investigation. Despite being unable to list everyone, I wish to thank you all for shaping my tertiary education and offering the valued support and friendship you have. Special mentions however go to Dr's Marie-Louise McDermott and Nathalie Collins, who having completed the same journey recently, have been amazing individuals to have on my

team. To Dr Greg Levin, my “Johnny-on-the-spot” for the past five years, time and pressure don’t just make diamonds mate, we’ve proven it also makes solid friendships.

Family and friends

As anyone who has ever managed a large long-term project will know, the support of one’s family and friends is critical in keeping an even keel, especially when the end is anywhere but in sight. I would therefore like to dedicate this thesis to my amazing and ever supportive wife Karen, who has repeatedly self-sacrificed to allow me the opportunity to pursue my passion for research and producing positive health impact. To my three children, Shayley, Rebecca and Nathan go my deepest measures of appreciation in helping me stay grounded, and I can only hope to inspire a lifelong passion for learning in whatever disciplines or facets of life you choose.

To my extended family and friends, thank you all so much for your unwavering support of my extended educational journey and for reminding me at times that vision, initiative and persistence are the foundations of success. To my brothers, the Webble Guys, thanks for your friendship, commitment and altruistic contributions to a journey that has only just begun.

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GLOSSARY OF SPECIALISED TERMS USED IN THIS THESIS

Chronic Disease: A chronic disease is characterised by a health disorder of any number of factors which include genetic, lifestyle and environmental origin. Typically long-term in duration, they are non-transferrable among individuals and the most prevalent examples contributing to the burden of disease in Australia include: heart disease, diabetes and asthma (Australian Institute of Health and Welfare, 2012).

Edith Cowan University (ECU) is the principle educational and research organisation associated with this research project. More information: <http://www.ecu.edu.au/>

Ethnography: comprises a research methodology defined by observational research as a means to gain in-depth understanding of group based cultures. This widely utilised qualitative methodology offers researchers the capacity to develop rich contextual data focussing on insight into socio-cultural issues.

Glocal: The term “glocalisation” has been made popular by sociologist Roland Robertson, in trying to capture the simultaneous attributes of a good or service, adapted for locality (or specific cultures), yet still retains its global origin or presence. Online resources are prime examples of this, in that many have world-wide heritages but have been adapted for local user groups. i.e. Facebook “Group” pages.

HBF: (HBF Health Limited). HBF is Western Australia’s largest not-for-profit health insurer and the industry research partnering organisation of Edith Cowan University in the facilitation of this research. More information: <http://www.hbf.com.au/about-us/index.html>

ICT: ICT or Information and Communications Technology refers to the technology infrastructure of an organisation enabling it to retrieve, send and store information. ICT plays a central role in modern business practices.

Inactivity: A term used to describe those who do not meet specified physical activity guidelines.

Industry Partner: For the purposes of this research, HBF Health Ltd is the industry partner with whom ECU has formed a collaborative research association, enabling direct access to an employee participant resource with which to investigate desk-bound sedentary behaviour reduction.

Sedentary Behaviour: A term used to describe any waking behaviour characterised by energy expenditure ≤ 1.5 METs while in a sitting or reclining posture.

People Leaders: An organisationally defined term within HBF Health Ltd, to identify staff in management roles coordinating the tasks of other HBF employees.

Physical Activity: As defined by the World Health Organisation, physical activity is any bodily movement utilising skeletal muscles that requires energy expenditure.

Social Media: This term refers to web applications that allow users capability to interact collaboratively through online virtual communities, rather than simply viewing content. Examples include: online communities like Facebook, Blogs, Wikis and video sharing sites like YouTube.

CHAPTER 1: Introduction

The incursion of technology driven, desk-based tasks into office work environments, is a double edged sword. On one hand, computerised systems for business have streamlined a wide range of common communication and electronically enabled tasks, but simultaneously this has led to a marked reduction in the need for employees to engage physical activity within their workplaces.

Recognition that physical inactivity or sedentary behaviour in the workplace contributes to an employee's health risk exposure for adverse human health conditions has, however, prompted some organisations to implement programs designed to restore health benefiting exercise to the workplace. The ingrained organisational cultural behaviour of such extended sitting for work on such a regular weekly basis, has meant that a variety of socially enabled workplace exercise program strategies have been used to address this issue.

In a world where technology has perhaps to some extent inadvertently imposed workplace physicality restrictions on desk-based employees, the question of utilising a social media enabled mechanism within an organisation to enhance knowledge of employee physical activity program experience is worthy of investigation.

1.1 Significance

The significance of this research lies in its highlighting of potential methods for increasing wellbeing of office workers whose health is put at risk by engaging in sedentary desk-bound tasks defined by desk-based cultures and business employment practices. This research investigates both actual and potential use of social media (or Web 2.0) enabled mechanisms to promote the wellbeing of office workforces. Applying an ethnographic methodology to this investigation of workplace environment yielded rich interpretive data enhancing the capacity to effectively address health issues relating to sedentary office work.

It is planned that this research, proposing the use of social media as a tool for wellbeing, will help to inform governments, not for profit organisations, businesses and employees about the health risks posed by sedentary behaviour, and enable Australians to become more physically active within otherwise sedentary office-based environments.

1.2 Conceptualisation

The following research conceptualisation diagram shows the chain of concepts derived from published literature which informs this research. It flags the nature of the health risk issue as related to office-based sedentary behaviour (red), the known factor that exercise offsets such risk and its existing employer utilisation of PA programs for wellness (blue), and the approach proposed in utilising social media within the workplace to enhance employee PA program participant experience (green).

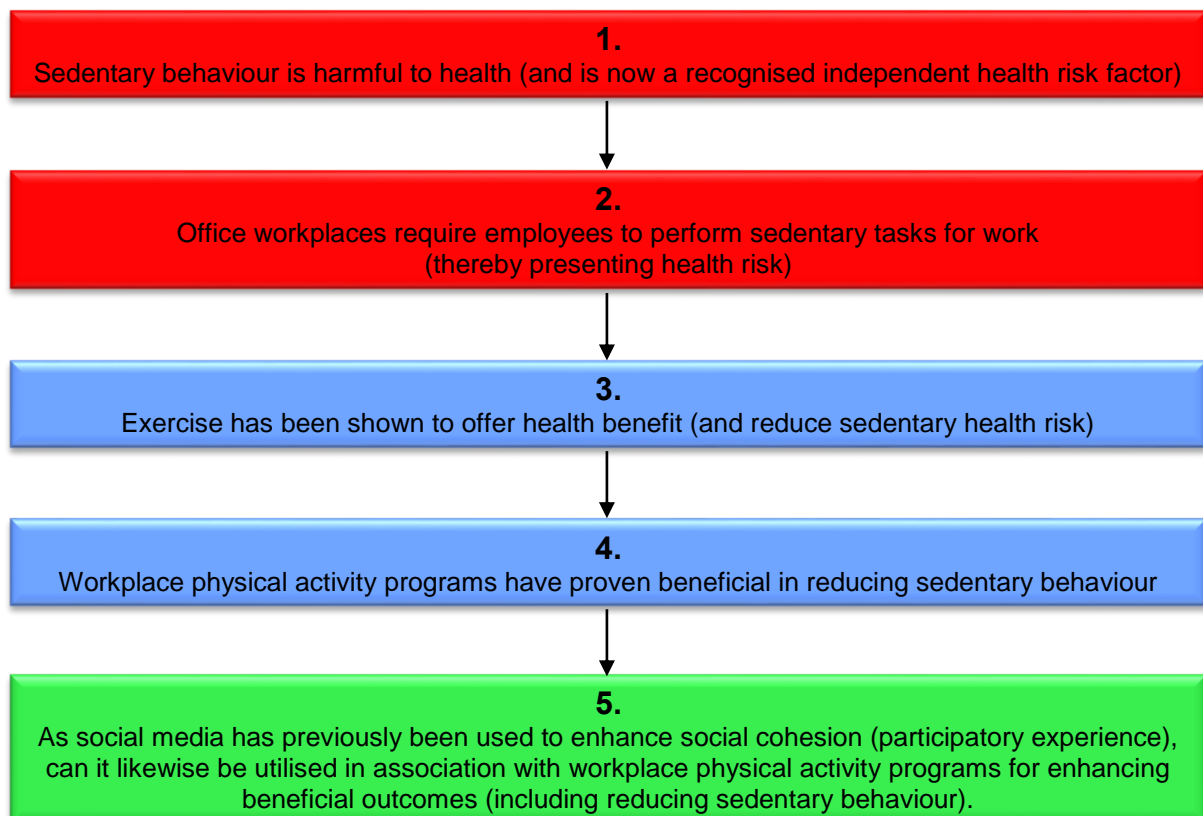


Figure 1: Research conceptualisation diagram

1.3 Purpose

To clarify the purpose in seeking to conduct this research, I have outlined the purpose of this research below under the following subheadings:

- Research objectives
- Research questions
- Research hypothesis
- Research rationale, and
- Expected outcomes.

1.3.1 Research Objectives

The key objective of this research was to:

Gain insight into the perceptions of desk-based (predominantly sedentary) employees about the use of social media for workplace physical activity program engagement.

This primary objective is further refined into the following three sub-objectives:

- To explore employee perspectives of their perceived value of workplace endorsed social media for enhancing participation in a globalised corporate office targeted PA program (The Global Corporate Challenge = GCC).
- To examine the organisational culture of participants engaged in the GCC and identify which aspects contributed positively and negatively to their experiences.
- To increase industry partner management knowledge regarding GCC participant experience and build capacity for enhancing future employee engagement outcomes.

While this research investigated the employee-perceived benefits of using social media for workplace wellbeing and physical activity program enhancement, it did not seek to identify or address policy or practical issues relating to potential excessive or abusive use of social media within the workplace.

1.3.2 Research Questions

The overarching research question for this research is:

- What perceptions do desk-bound HBF employees have of using social media to enhance workplace physical activity program participant engagement?

This leads to two supporting sub-questions:

- What aspects (if any) of HBF's organisational culture influence employee physical activity program engagement?
- How can social media usage contribute positively to an employee participant's

physical activity program experience?

1.3.3 Research Hypothesis

This study investigated the hypothesis that employees perceive benefits in the use of social media to support engagement with workplace-endorsed physical activity programs aimed at reducing health risks associated with sedentary behaviour.

1.3.4 Research Rationale

As highlighted in the following literature review, a growing body of evidence from academic publications, globally recognised experts and health organisations, as well as Australian national and state-based health agencies, have pointed to the urgent need to develop effective approaches for reducing the amount of time employees remain sedentary at work. Extended sitting has been shown to increase the risk of experiencing adverse health conditions, which reductions in sitting time can help prevent. Of further concern are those people who are habitually physically inactive both during and outside their work hours, thereby compounding their likelihood of experiencing adverse health conditions.

This research therefore investigates how employees working within a typically sedentary office environment perceive workplace-endorsed social media and its capacity to enhance the experience of engaging in their workplace's physical activity programs.

1.3.5 Expected Outcomes

Given the objectives of this research project, some of its expected outcomes were as follows:

- More knowledge regarding employee perceptions of the use of social media to enhance engagement with their workplace's physical activity programs.
- Raised awareness among employees of how sedentary work behaviours can increase their risk of developing lifestyle-related diseases.
- Reduction of prolonged sitting practices within this predominantly desk-bound research population.
- Identification of new directions for research in promoting workplace health through sedentary behaviour preventative strategies.

While recognising the potential for this research to produce other outcomes such as employees' pursuit of opportunities to incorporate additional physical activity in their everyday life, such potential outcomes were discussed, but were not in any way expected.

1.4 Research Schedule

The research schedule for the undertaking of the outlined research investigation was set in association with university PhD supervision and industry partner organisation, HBF Health Ltd (HBF). This schedule had the following four distinct and consecutive phases, each with their own set of key research activities:

The four consecutive phases are:

- Phase 1 – Proposal
- Phase 2 – Development
- Phase 3 – Data Collection, and
- Phase 4 – Completion.

Phase 1. Proposal was primarily concerned with meeting university-based requirements necessary for the conduct of the research. This included defining the research topic, developing research questions/objectives based upon current literature and gaining overall approval for the research proposal including ethics approval. It also involved establishing an industry partnership enabling access to research participants who would participate in their workplace's wellness program to promote physical activity.

Phase 2. Development principally involved creating, testing and refining the data collection tools. After the initial focus group testing of the data collection instrument prior to September 2012, a second set of questions for pre-interview surveys and one-on-one interviews was refined, based upon feedback from the focus group findings. The development phase additionally included the collaborative design and development of a prototype software application targeted at sedentary behaviour reduction.

In accordance with this research project's participant-observation based ethnographic methodology, Phase 3 – Data Collection in 2012–14 involved embedding the researcher within the industry partner organisation. This critical phase included observational field note-based data collection, holding focus groups in September 2012, issuing of the pre-interview survey and the conducting of private semi-structured interviews with program participants in September/October 2013 immediately following the GCC.

Phase 4 – Completion Phase included analysis of the findings and writing up of the researcher's thesis, several chapters of which were developed for journal publication. The

thesis was subjected to multiple reviews and the industry partner's approval was sought and gained to address any issues relating to publication of sensitive organisational content in the public domain.

Figure 2 below illustrates the research project schedule, showing the four phases, the times at which main documents were produced and where industry partner research engagement occurred most significantly.

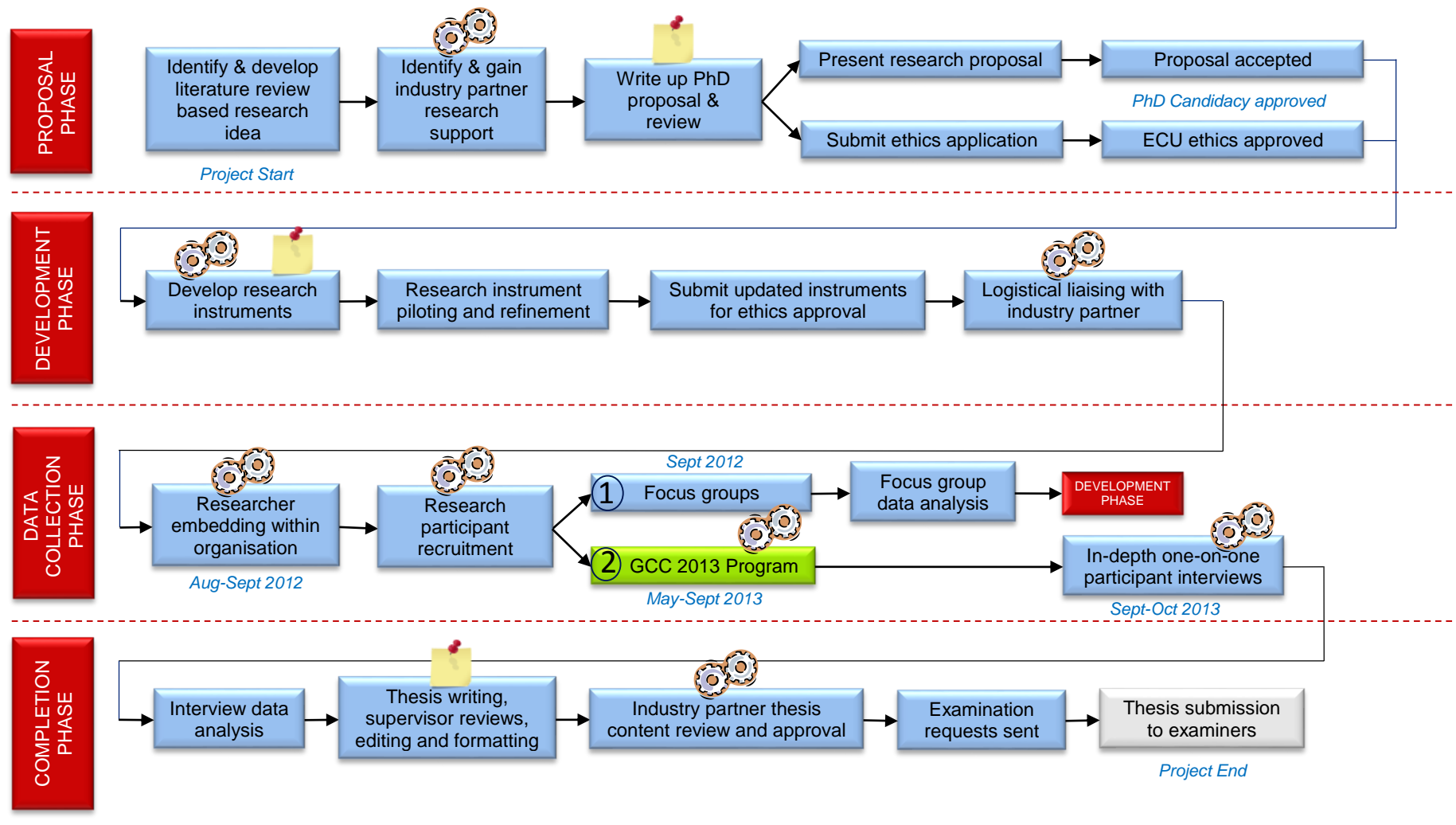


Figure 2: Research schedule diagram

As research engagement with an industry partner organisation involved that of a real-world employee workforce, the scheduling of research engagement was negotiated between the PhD candidate and the industry partner HBF's Manager – Health, Safety and Wellbeing, Mr Jon Haines, to ensure that research participant contact remained compatible with HBF's business operations.

Figure 3 below illustrates how activities relating to the 2013 GCC program (yellow), the HBF-specific GCC program (blue) and the research related undertakings (red) were scheduled alongside an approximated GCC program timeline.

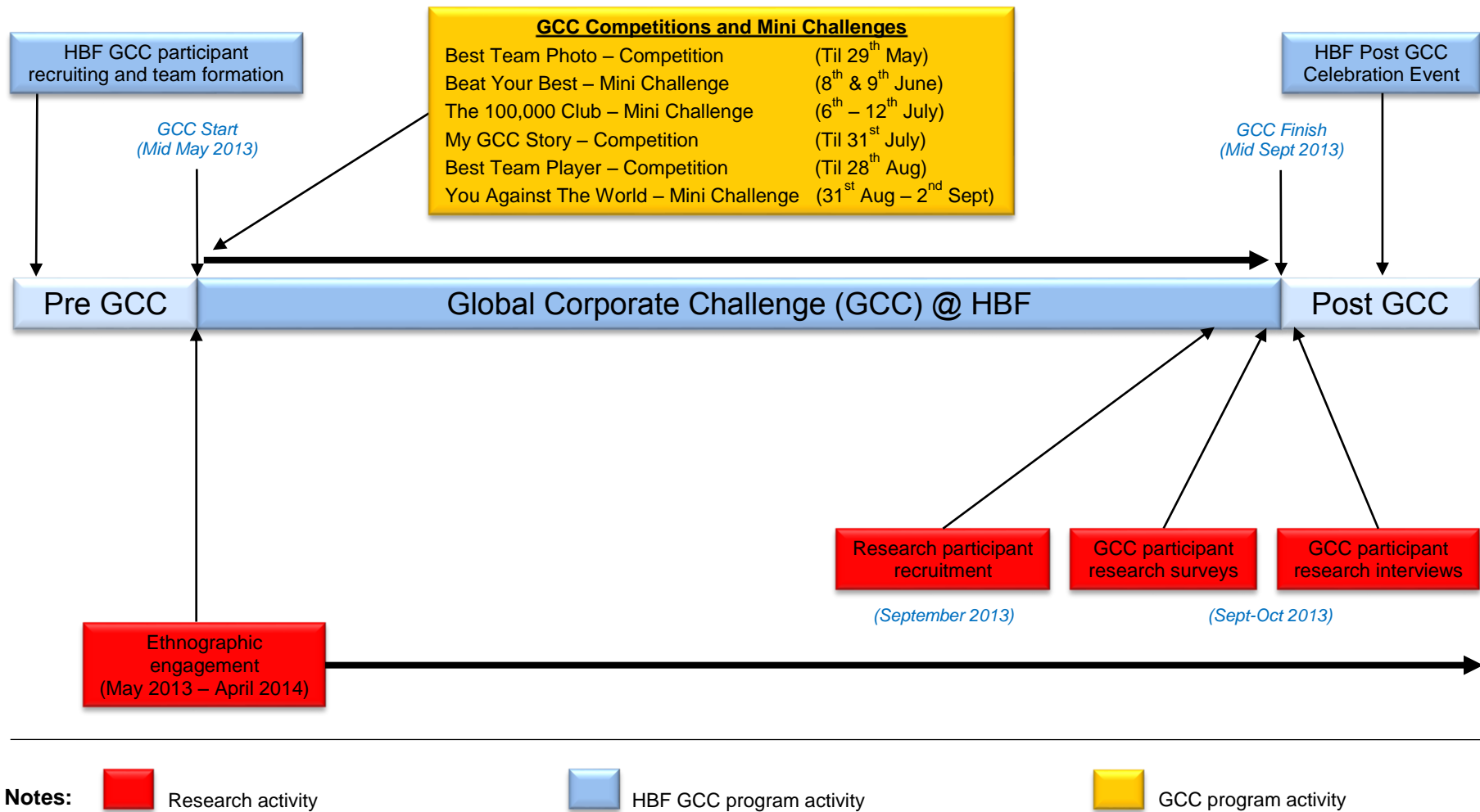


Figure 3: HBF's GCC program & research activity diagram

1.4.1 Study Progression & Publications

Figure 4 below illustrates the progression of the research studies aligned with their data collection techniques and research output publications.

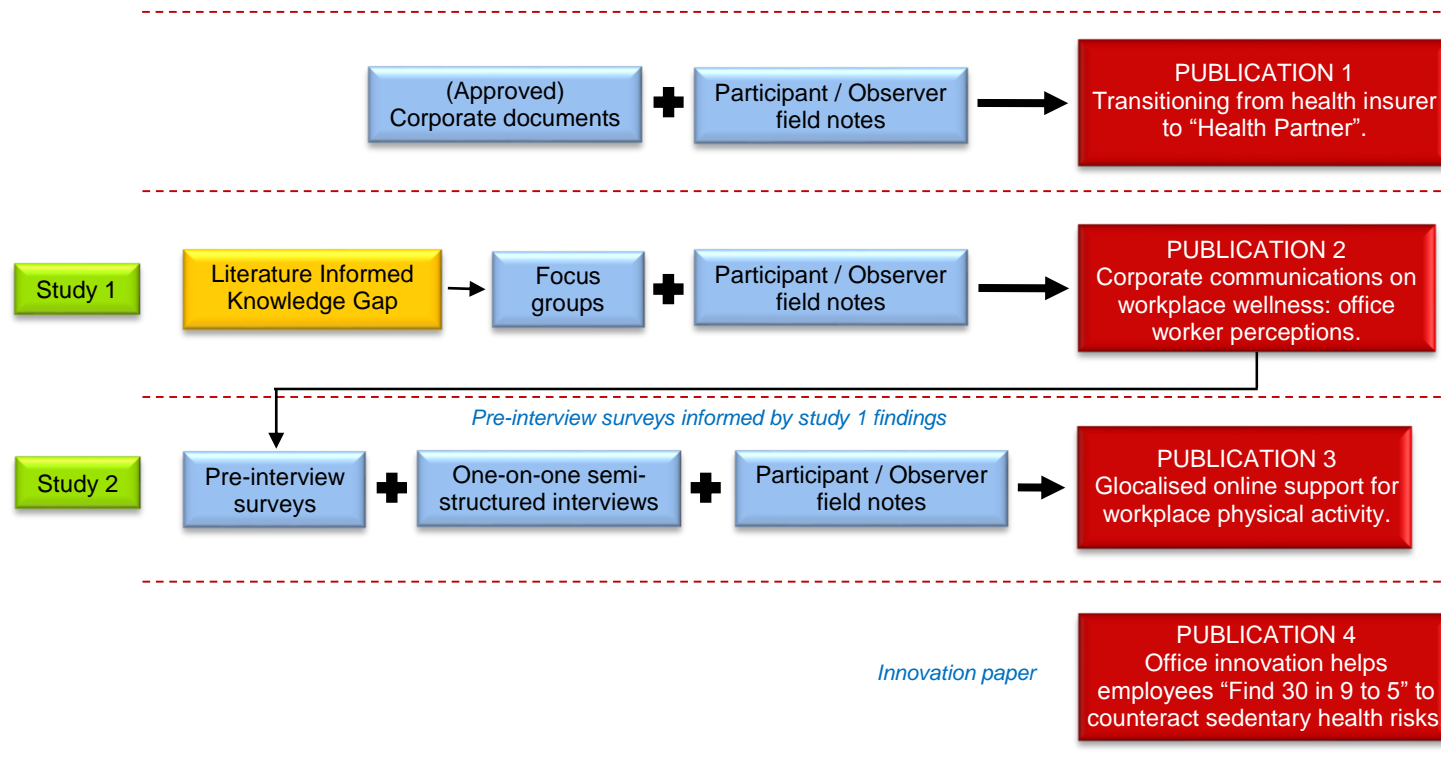


Figure 4: Research study progression and publication diagram

1.5 Thesis Overview

This thesis is divided into seven sequentially arranged chapters that guide the reader through the current relevant published literature, presents the industry partner's migration to a health focussed model of business and outlines the methodological approaches, data collection, analysis, discussion and conclusions for each of the two research studies undertaken. Chapters three, four, five and the second part of chapter six, have already been submitted to journals for publication. Detailed chapter outlines are as follows:

1.5.1 Chapter 1: Introduction

Chapter One provides an overarching introduction to the thesis through an outline of the conceptualisation of the research premise. This is followed by a synopsis of the significance of the research into addressing sedentary behaviour in the workplace, as well as its potential longer-term implications. This is sequentially complimented by an overview of the purpose of the research, including the research objectives, questions, hypothesis and rationale, as well as expected outcomes. To complete the introductory chapter, a listing of the expected outcomes and a chapter by chapter thesis overview, is included.

1.5.2 Chapter 2: Literature Review

Chapter Two presents the literature review upon which this research is based including:

- Global and national health issues
- Physical inactivity
- The office workplace and risks for desk-bound workers
- Workplace health programs, and
- Communication for behaviour change (including social media for health).

The chapter concludes by presenting the theoretical framework underpinning this research and its integration with the research design and practices.

1.5.3 Chapter 3: Organisational Ethnography (Publication 1)

Transitioning from health insurer to "Health Partner"

Chapter Three has been submitted for journal publication as an article titled, "Transitioning from health insurer to Health Partner." This chapter provides a descriptive snapshot of current organisational culture, migration status and future directions of the industry partner, HBF Health Ltd (HBF) derived from documents and participant-observations gathered by the PhD candidate while embedded with the HBF workplace. As well as describing the internally and externally focussed activities that constitute Health Partner migration, this

chapter provides an organisational context for the participant responses of the two following studies (chapters 4 and 5).

1.5.4 Chapter 4: Study One (Publication 2)

Corporate communications on workplace wellness: office worker perceptions

Chapter Four has been submitted for journal publication as an article titled, “Corporate communications on workplace wellness: office worker perceptions.” It reports on the first study’s use of employee and management focus groups as well as ethnographic participant-observation relating to the broad theme of corporate communications for workplace health and wellness. This chapter states the study’s background, methods, results and provides an interpretive and contextual discussion of its research findings, as well as outlining the study’s limitations and options for future research.

Study One’s researcher embedded ethnographic methodology practice within the organisational work environment, significantly enriched the PhD candidate’s understanding of the organisation and its people. This adopted approach allowed for both direct researcher contact enquiry and continuous longitudinal recording of employee cultural occurrences. Analysis of study one was completed prior to the commencement of study two (presented in Chapter 5) and informed the development of the second study’s approach and focus.

1.5.5 Chapter 5: Study Two (Publication 3)

Glocalised online support for workplace physical activity

Chapter Five is a qualitative study, which has been submitted for journal publication as an article titled “Glocalised online support for workplace physical activity.” This chapter shows what pre-interview surveys, semi-structured informal interviews and an ethnographic methodology revealed about:

- individual employee experiences of participation in a workplace PA program, and
- their perceptions of social media to enhance their future engagement.

As with Chapter Four, this chapter states the study’s background, methods, results and provides an interpretive and contextual discussion of its research findings, as well as outlining the study’s limitations and options for future research.

1.5.6 Chapter 6: Research Translation (Publication 4)

Office innovation helps employees “Find 30 in 9 to 5” to counteract sedentary health risks

Chapter Six has two distinct sections. The first section highlights how the research objectives are aligned with the strategic priorities of the PhD candidate's host university, offering research translation capacity as a result of new knowledge and innovative outputs developed through this research process. The second section has been submitted for publication as a journal article titled, "Office innovation helps employees "Find 30 in 9 to 5" to counteract sedentary health risks." This innovation article, provides literature grounded rationale for the development of a PhD candidate and colleague-produced software application incorporating social media, which was trialled within the industry partner workforce to reduce sedentary (office) workplace behaviours.

1.5.7 Chapter 7: General Discussion and Conclusion

Chapter Seven of this thesis provides contextual discussion of the research findings from studies one and two as well as those of former studies conducted in a broader context. It also incorporates some of the ethnographic findings that contributed to the workforce's perceptions of using social media to foster healthier and less sedentary workplace behaviours.

1.6 Conclusion

Employees who spend a significant proportion of their day desk-bound in physically inactive environments do so at significant risk to their health. Workplace physical activity programs have already been shown to reduce sedentary behaviour among office-based participants, and therefore this research investigates employee perceptions of social media mechanisms to make workplace PA programs even more effective by enhancing the experience of participants.

This introductory chapter has overviewed the formative concepts of this research undertaking, including the significance, conceptualisation, purpose, the research schedule and provided a thesis structural overview in the investigation of exploring employee perceptions of using social media to enhance workplace health and wellbeing.

CHAPTER 2: Literature Review

2.1 Introduction

This review outlines current literature surrounding the topic of sedentary behaviour as a health risk for desk-bound employees and the efficacy for social media to provide a mechanism to support workplace reduction of such risks. Obesity as a health issue is discussed from both a global and Australian perspective. The incidence of workplace physical inactivity is then highlighted along with the need to communicate positive health reinforcing behaviours within office-based populations. A recent systematic review of workplace Physical Activity (PA) interventions is discussed, exposing potential for further pathways of investigation as undertaken by this research. Next, this literature review outlines the uptake of social media in mainstream society and its potential for utilisation as a workplace wellness tool for creating peer supportive communities enhancing both employee health and workplace productivity. Finally, the literature review utilises the Theory of Planned Behaviour (TPB) to identify potential for behaviour change among employees engaging in workplace sedentary behaviour.

2.2 Global and national health issues

2.2.1 International health status

Obesity is a key risk factor for numerous chronic diseases, such as cardiovascular disease, diabetes and cancers and has therefore become a major public health concern (Kopelman, 2000). Prior to 1980, rates of obesity were consistently below 10% but have since become elevated to levels where now almost half of the populations of countries comprising the Organisation for Economic Co-operation and Development (OECD), are considered overweight. Projections following the OECD Obesity Update 2012, now indicate that two out of three people in some OECD countries, will either be overweight or obese by 2020 (OECD, 2012).

Body Mass Index (BMI) is used as a simple measure to classify individuals according to pre-defined categories (underweight, normal weight, overweight or obese), and is calculated by dividing a person's weight in kilograms by the square of their height in metres (kg/m^2) (Australian Bureau of Statistics, 2013a). An individual with a BMI of 18.5 kg/m^2 to less than 25 kg/m^2 is defined as normal weight, while a BMI of 30 kg/m^2 or more is considered obese, according to Australian standards based upon World Health Organization (WHO) classification. While the use of BMI is age independent and gender non-specific, there are

ethnically defined population based factors, such as different body proportions that may result in differences in BMI grading of health risk interpretation (World Health Organization, 2006). The addition of waist circumference as a simplistic additional measure to enhance BMI status accuracy has been suggested as a mechanism to cater for overweight/obesity clinical management cut-offs. Waist-hip ratio measures (waist circumference divided by hip circumference) was also reviewed as a further anthropometric measure of body fat distribution to determine its efficacy to serve as a further predictor of non-communicable disease (NCD) risk (World Health Organization, 2011). While influencers of BMI such as height and weight have increased since the 18th century, the tipping point between healthy beneficial body mass of the time, has now morphed into one of disease risk increase. While internationally more females are obese than males, rates of male obesity have increased faster throughout a majority of monitored OECD countries (OECD, 2012).

As part of the national standard of living metric Gross Domestic Product (GDP), federally regulated healthcare expenditure is typically managed to maintain acceptable standards of health services for the wider population. Australia has consistently spent 9% of its annual GDP on all health related expenses, emulating the OECD countries average of 9.3%. The United States by comparison records health expenditure of up to 17%, almost double that of the OECD mean, indicating disproportionate health related drain on financial resources in that geographically located population (OECD, 2014c).

Health expenditure related to obese persons can be up to 25% higher than that spent on individuals who maintain a healthy weight range and costs escalate comparative to increases in BMI excess. OECD listed countries also record obesity as a singular category, incurring directly attributable financial impacts upon national health budgets. OECD averages account for between 1–3% of total national health expenditure, while contrastingly United States health expenditure on obesity represents between 5–10% of total health expenditure, with costs expected to rise as obesity-related diseases further manifest within the population (OECD, 2012). According to the Australian Institute of Health and Welfare, costs associated with healthcare were estimated to be AU\$140 billion for the year 2011–12, which equated to 9.5% of all goods and services. Increasing faster than that of any other type of goods or services over many years, the ratio of health expenditure to Gross Domestic Product (GDP) increased from 6.8% in 1986–87 to 9.5% in 2011–12 (Australian Institute of Health and Welfare, 2014b).

As represented in Table 1 below, a comparison between self-reported and objectively measured obesity shows a substantial variance between BMI health perception and physical realism in a negative trend deviating from OECD averages. While the United States percentages were among the highest recorded, still noteworthy figures recorded in 2007 indicate that only 21.3% of Australian adults reported themselves as obese, compared to an objectively measured 28.3% of Australian adults classified as obese in 2011 (OECD, 2013). Acknowledging the discrepancy between Australian based self-reported and objectively measured data collection time periods, based upon available data, it can still be surmised that this represents an under-representation of self-reported weight classification that potentially poses longer term health implications for this unwary population.

Table 1: Self-reported versus objectively measured population obesity in sample OECD countries (OECD, 2013).

	Self-reported	Objectively measured
United States	28.1% (2010)	36.5% (2010)
Australia	21.3% (2007)	28.3% (2011)
OECD Average	15%	22.6%

According to the Global Risks 2014 Insight Report (World Economic Forum, 2014), the societal risk of an unmanageable burden of chronic disease such as that of overweight and obesity, has been identified as a risk factor and trend to watch for the future. This is built upon the projected treatment costs associated in managing the sub-optimal health of individuals for longer, owing to increased life expectancy trends (Lehnert, Sonntag, Konnopka, Riedel-Heller, & Konig, 2013).

2.2.2 Australia's health status

In 2011, Australia was ranked sixth for males and seventh for females in terms of life expectancy amongst comparative countries in the OECD (Australian Institute of Health and Welfare, 2014c), and in 2012, the last time these figures were reported, a male child being born in Australia was expected to live to 79.9 years and a female child to 84.3 years of age (Australian Bureau of Statistics, 2012a). Being that life expectancy has been used as a measure of a population's health, a range of factors such as enhanced control over infectious diseases, improvements in hygiene and sanitation, advances in medical treatments and improved health education have led to an increase in life expectancy over the past century (Magnus & Sadkowsky, 2006).

Projections of the Australian population-based incidence of overweight and obesity as stated in the 2008 government document, “Australia: The Healthiest Country by 2020”, estimated that if current trends were not reduced, nearly three-quarters of the Australian population would be classified as overweight or obese by 2025 (Preventative Health Taskforce, 2009). Of significance was the rate at which population wide increases occurred during the 15 year period from 1990 to 2005, where over 2.8 million additional Australian adults had become either overweight or obese. This significant increase was not restricted to adults with approximately a quarter of Australian children in 2005 being considered overweight or obese, up from an estimated 5% in the 1960s (Preventative Health Taskforce, 2009).

The more recent 2011–12 Australian Health Survey, considered to be the largest assessment of the nation’s health ever conducted, found that 70% of Australian men, 56% of Australian women and 25% of Australian children were now, according to BMI classified as either overweight or obese. This therefore represented an average increase of 2% over the prior four year period in those aged 18 years and above (Australian Bureau of Statistics, 2012d). Over time, prevalence of overweight/obesity in Australian adults 18 years and over rose to a new high of 63.4% in 2011–12 from 61.2% in 2007–08 and from 56.3% as recorded in 1995 (Australian Bureau of Statistics, 2012d).

For comparative purposes between the 2011–12 and prior 2007–08 survey results, methodologically similar approaches were used with researcher measured BMI using digital scales for weight and a stadiometer for height, as well as a waist circumference measure as a means to address participant subcutaneous abdominal fat storage. The quantifying of such adiposity as a measure of positively correlated disease risk is recommended by the WHO for enhancing accuracy in population-based data collection (Australian Bureau of Statistics, 2013b).

While the reporting of such objectively measured overweight/obesity results is important for understanding the current health status of the Australian population, a self-reported comparison of respondent condition via self-reported means, offers an insight into perceived health condition. Using self-assessed measures of health status is a common quantifier based upon a person’s own perception of their health condition at a given point in time (Idler & Benyamini, 1997). This recognisably subjective measure, when applied to larger sampling regimes, can be contextually indicative of a wider population’s perceived health status. What can emerge of interest is the discrepancy between self-perceived and nationally

standardised measures of health condition in the population. For example, in 2011–12, of the 63.4% of Australian adults who were reported as being either overweight or obese, 55.6% of Australians aged 15 years and over considered themselves to be in very good or excellent health, and only 4.0% rated their health as poor (Australian Bureau of Statistics, 2013c).

2.2.3 Australian health priority areas

The National Health Priority Areas (NHPAs) as defined by the Australian Institute of Health and Welfare, seeks to promote health and exercise-based research via linkages to many of the nine disease conditions that are known to respond positively to regular PA (Australian Institute of Health and Welfare, 2013a). Those applicable include:

- Cancer control (Sabiston & Brunet, 2011)
- Cardiovascular health (Myers, 2003)
- Diabetes mellitus (American Diabetes Association, 1998)
- Injury prevention and control (Sherrington et al., 2008)
- Mental health (Taylor *et al.*, 1985)
- Obesity (Shaw, Gennat, O'Rourke, & Del Mar, 2006).

“Indeed, with the possible exception of diet modification, we know of no single intervention with greater promise than physical exercise to reduce the risk of virtually all chronic diseases simultaneously” (Booth et al., 2000, p. 778).

Contributing towards these NHPAs are a number of risk factors which often coexist and interact to impact upon the development of any one or number of the listed NHPAs or unlisted diseases. These risk factors can be of a behavioural, biomedical, environmental, genetic or demographic nature and pose varying health risk to individuals of the Australian populace.

Behavioural risk factors include:

- Tobacco smoking
- Excessive alcohol consumption
- Poor diet and nutrition
- Physical inactivity
- Excessive sun exposure
- Insufficient vaccination
- Unprotected sexual activity (Australian Institute of Health and Welfare, 2013b).

The Australian Institute of Health and Welfare (2013c) classifies physical inactivity as a behavioural risk factor to human health due to its harmful effects and the associated contributing to illness, disability, disease or death. Through appropriate lifestyle or behavioural changes, these risk factors can be either eliminated or reduced.

A marked increase in the incidence of global population overweight/obesity as a public health concern represents significant health and economic challenges as highlighted above. With the 2011–12 Australian Health Survey identifying that 70% of Australian men, 56% of Australian women and 25% of Australian children are now classified as either overweight or obese, addressing the contributing behavioural issues, such as physical inactivity, has never been more critical.

2.3 Physical Inactivity

2.3.1 Contribution of sedentary behaviour to health condition

The Sedentary Behaviour Research Network (SBRN) defines the term “sedentary” as describing any waking behaviour characterised by energy expenditure ≤ 1.5 METs while in a sitting or reclining posture (Sedentary Behaviour Research Network, 2012). The word itself is derived from the Latin word “sedere” which translates to “sit” (Latin-Dictionary.org, 2013). As physical activity is defined as a process of bodily movement utilising skeletal muscles requiring energy expenditure (World Health Organization, 2015), a lack of such is appropriately termed “inactive” and describes those not meeting recommended guideline levels of physical activity (Sedentary Behaviour Research Network, 2012). Sedentary behaviour poses a health risk to persons who remain seated for excessive periods of time, which have been known to contribute to a number of human disease related conditions.

An early identifier of sedentary behaviour in the workplace was Jeremiah Noah "Jerry" Morris who as a Scottish epidemiologist in 1953, observed that physically active bus conductors suffered fewer heart attacks than sedentary drivers as a result of their job defined tasks. His connection that the regular PA performed by bus conductors contributed to the reduction of adverse cardiovascular events was a ground-breaking step into the understanding of exercise's positive effect on individual health in association with the workplace (Morris, Heady, Raffle, Roberts, & Parks, 1953).

In a systematic review of literature and proposed biological mechanisms related to sedentary behaviour and cancer by Lynch (2010), the author identified 18 articles reflecting various

levels of association. Of these, 11 studies (listed incorrectly as 10 in journal article) quantified sedentary behaviour and cancer risk, four sedentary behaviour and cancer mortality and three sedentary behaviour and adiposity or weight gain in cancer survivors. Of the 11 cancer risk studies, eight showed positive correlations, one was borderline statistically significant, one was non-statistically significant and a further one showed a non-statistically significant reduction in cancer risk. From the four cancer mortality studies, one reported statistical significant increased risk, two non-significant increased risk and the fourth study presented null results. Of the final three studies addressing sedentary behaviour and adiposity/weight gain, one prospective study showed positive correlation, one cross-sectional study indicated association and the final cross-sectional study showed no discernible linkage. In summary of this systematic review it can be stated that there appears to be strong associative connection between the practice of sedentary behaviour and increased cancer likelihood.

Further, this review supported an association between adiposity and metabolic dysfunction in relevance to sedentary behaviour as a contributor to increased cancer risk. It was subsequently suggested that reducing sedentary behaviour may be a viable mechanism to reduce cancer prevalence (Lynch, 2010). Partially owing to the emergence of research in this field of sedentary behaviour, as noted in the discussion, few sedentary measures have been validated to date, and only two studies in total used an objective measure for assessment of sedentary behaviour. One consideration perhaps overlooked through keyword based selection of reviewed articles could be the omission of keywords such as: touchscreen, screen-based and VDU (Visual Display Unit), which could have attenuated recognisable sedentary activity reporting and led to subsequent deleterious exclusion in the systematic review.

A longitudinal review of a population-based case-control study of colorectal cancer patients from 2005–07 in Western Australia showed high disease association linkage to all colon cancer sub-site localities except for proximal colon cancer patients, among whom no long-term sedentary behavioural association was shown. The study (Boyle, Fritschi, Heyworth, & Bull, 2011) consolidated the linkage between lifestyle, PA and prior ten year job history, in which there was found to be a significant increase in both distal colon and rectal cancers in those reporting sedentary work-based practices even in association with sufficiently physically active recreational lifestyles. This cancer specific research increases recognition of foundational work by Katzmarzyk et al. (2009) who identified a dose-response relationship

between the practice of sedentary behaviour and numerous causes of mortality, in isolation of leisure PA levels. Participant baseline sitting time, leisure time PA and other measures were recorded and the cohort prospectively followed for a period of twelve years to establish mortality status. The study concluded that the significant morbidity and mortality risk factor reduction benefits of regular exercise may in fact be countermanded by extended periods of sitting and is therefore recognised as an independent risk factor.

In an American Journal of Clinical Nutrition article by Swinburn, Sacks and Ravussin (2009), the authors suggest that increased food energy intake and not other factors such as physical inactivity, largely explains the reason for population-wide weight gain in review of the US obesity epidemic. These results were based upon National Health and Nutrition Examination Surveys (NHANES) measured mean body weights for both children and adults in the 1970's (1971–1976) and 2000's (1999–2002) as well as US food supply data for comparable years. The impacts of this proposed obesogenic driver are further reinforced in a subsequent paper by Swinburn *et al.* (2011), arguing that increased availability of energy-dense foods, which according to the authors is representative of consumption, and since the 1960s–70s has adversely created a population-level energy imbalance. Clarification of this therefore advocates Swinburn's position that caloric intake is principally responsible for national obesity status, which itself is directly resultant from an individual's response to the obesogenic environments that are regularly engaged with. Swinburn further suggests that counteracting such adverse environmental influence will take prioritised policy driven supportive mechanisms for individuals and government leadership to effect change.

In a more recently published article (Ladabaum, Mannalithara, Myer, & Singh, 2014), utilising the same NHANES dataset as above, exploration of trends in obesity and levels of PA and caloric intake indicated a contradictory perspective to that of Swinburn's conclusions. Comparative measures of abdominal obesity, captured by BMI and waist circumference, across the 22 year survey period, increased from 19.1% to 51.7% in women and from 11.4% to 43.5% amongst men across all age groups in those not taking part in any PA. While the results of leisure-time PA impact upon adult abdominal adiposity are considered statistically significant, these authors determined that no significant association between caloric intake and increased BMI and waist circumference measures existed. The paper concludes by outlining the longer-term obesity trends in younger adults and particularly in women at the population level and offers the necessity to address this through PA as a way to reduce associated burden of disease.

In discussion of the above, the PhD candidate surmises that the notable increase in abdominal obesity over the two decades of NHANES survey data collection may be indicative of both an energy imbalance and possibly the mechanism of adoption (or non-adoption) of other mitigating factors by individuals. While it has been extensively published that positive health behaviour such as PA is a key influential factor for weight management, consideration must be given to the nature of the requirements upon an individual. For example, participation in physical activities are largely an active process (excluding workplace driven tasks) whereby adoption of health benefitting exercise by an individual requires an active lifestyle driven effort. Contrastingly, caloric intake can be considered as a passive process as it occurs through natural and regular consumption (eating) of energy providing foods which are essential for sustaining metabolic functioning and ultimately life. Without food we would die, but we can survive much longer without actively participating in PA. Such, the PhD candidate believes is the conundrum faced in identifying alternative ways to reduce the negative health consequences of excessive energy consumption in association with sedentary behaviours as it relates to individual and population health status.

2.3.2 Physical activity recommendations

The American College of Sports Medicine (ACSM) released its updated position stand on exercise guidelines for developing and maintaining health in apparently healthy adults in 2011. These guidelines recommend a regular program of exercise comprising of cardiorespiratory, resistance, flexibility and neuromuscular exercise in excess of that undertaken in the duty of everyday living tasks. The ACSM recommendations outline that adults should partake in moderate-intensity cardiorespiratory exercise for ≥ 30 mins per day on ≥ 5 days per week for a total >150 mins per week, vigorous-intensity cardiorespiratory exercise for ≥ 20 mins per day on ≥ 3 days per week (≥ 75 mins per week) or a mixture of moderate and vigorous intensity exercise expending ≥ 500 -1000 MET mins per week (Garber et al., 2011).

The National Physical Activity Guidelines for Australians state the recommended minimum daily exercise investment for adults as a weekly accumulation of between 150 to 300 minutes ($2\frac{1}{2}$ to 5 hours) of moderate intensity physical activity or 75 to 150 minutes ($1\frac{1}{4}$ to $2\frac{1}{2}$ hours) of vigorous intensity physical activity, as a minimum considered to enhance the health of an individual. Muscle strengthening exercises are recommended on 2 or more days per week (Department of Health, 2014b). This basic level is not endorsed to achieve

a high-level fitness, for sports training or to attain weight loss. As well as contributing to a reduction in occurrence of heart disease, stroke, high blood pressure, type II diabetes and some cancers, regular exercise has also been recognised for its bone and joint strengthening attributes leading to reduced injuries (Department of Health, 2014d). Further to this, Taylor *et al.*s (1985) review of evidence-based publications of regular exercise suggests that PA enhances mood and promotes psychological well-being.

Based upon an evidence-based review of global health risks (World Health Organization, 2009), the long-standing Australian Physical Activity Guidelines from February 2014, now includes Sedentary Behaviour Guidelines to address the relationship between sitting time and health outcome indicators including risk of chronic disease and obesity (Department of Health, 2014b).

2.3.3 Neurological implications

The healthy human brain is subject to a normal age-related deterioration, which from an approximate age of 55 years, leads to volumetric decline and progressive cognitive impairment. This process, while previously thought to be unstoppable and irreversible, is now considered as able to be mediated by PA through neurogenesis that maintains or increases brain mass and positively influences potential cognitive impairment (Aimone *et al.*, 2014). With the expected increasing prevalence of age-related neurodegenerative diseases such as Alzheimer's disease (Barnes & Yaffe, 2011), further research into the neurorestorative benefits of PA is well justified (Erickson, Gildengers, & Butters, 2013).

Exercise has for some time been demonstrated to induce positive anatomical changes to neuroplastic regions of both rat (Nelson, Juraska, Musch, & Iwamoto, 2005) and mammalian (human) neural structures (Pereira *et al.*, 2007). Further studies reviewed in the Encyclopedia of Behavioural Neuroscience (Kobilo, Potter, & van Praag, 2010) highlighted that a lack of PA can inversely alter the structural and functional capacities of specific regions of rat brains. Imaging studies of the region that controls the sympathetic nervous system in both humans and rats, indicate that both have the same brain region and that they function in a similar way. Overstimulation of the sympathetic nervous system, which controls blood vessel constriction and dilation, can lead to high blood pressure and more serious cardiovascular damage. While this has not yet been demonstrated in humans, the results underscored the fact that physical inactivity can influence the structure and function of the brain adversely, while exercise can impact positively.

2.3.4 Australian sedentary behaviour social trends

Social trend data from the Australian Bureau of Statistics, recorded from 1998–2011 (where available) have yielded comparisons showing increases in Australian averages of sedentary (or low exercise level) behaviours for both males and females aged 18 years and over in alignment with increases in national overweight/obesity averages. As is shown in Figure 5, male sedentary behaviour increased 3.6% between 2001 and 2008, while overweight/obesity rose in the same population by 5.3% over the same time period. Likewise female sedentary behaviour increased nationally by 2.4% with a 5.2% increase in recorded overweight/obesity in Australian females older than 18 years of age (Australian Bureau of Statistics, 2012f). This slight increase in both male and female sedentary behavioural practices in parallel to increased overweight/obesity trends over the last decade, suggests a potential associated health risk to both individuals and the domains in which they function, including workplaces.

Of further interest is that these results mirror potential associative decreases in adult participation rates in organised sport, which have fallen from 31.4% in 2002, to 26.0% in 2006 and were most recently recorded as Australian social trends at its lowest level of 24.4% in 2010. The noted decrease of 7.0% in eight years suggests that PA outside of the workplace, where most recreational organised sport is conducted, had up until 2010 become less of a national pastime that anecdotally Australia has historically been known for. As cited for interpretation of this data, understanding of survey data collection frequency, where monthly data recordings were made for 2005–06 and 2009–10 as opposed to quarterly for 1998–2000 measures and impact of question wording and sequencing, may play an influencing role (Australian Bureau of Statistics, 2012e). The following graph illustrates organised sport participation in green.

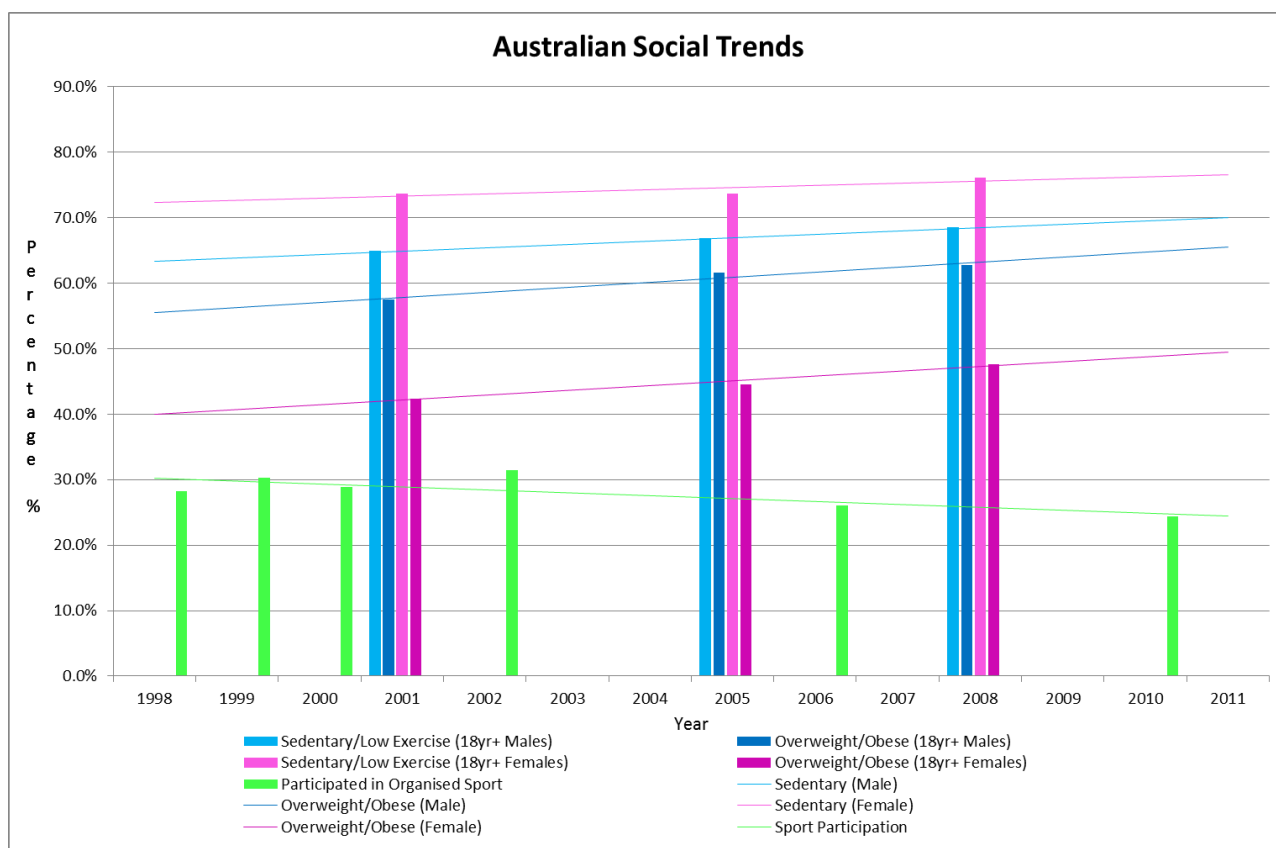


Figure 5: Graphed comparison of Australian Social Trends (1998-2011) for population estimated sedentary behaviour, overweight/obesity (Australian Bureau of Statistics, 2012f) and participation in organised sport (Australian Bureau of Statistics, 2012e).

Derived from data collected for the 2011–12 Multipurpose Household Survey (MPHS), updated measures of national participation in sport and physical recreation show the frequency of participation to have fluctuated little from 65.9% in 2005–06, 63.9% in 2009–10 and to 65.0% in 2011–12 (Australian Bureau of Statistics, 2012b). While this self-reported result based upon a population representative 13,630 household dwellings is not directly comparable to the former social trend statistics due to sport and recreational activity definition changes and methodological differences (Australian Bureau of Statistics, 2012c), it does indicate stability in line with population growth estimates between these three time periods.

2.3.5 Environmental factors influencing sedentary behaviour

Environmental factors such as the Japanese earthquake and tsunami on March 11, 2011 have recently been reported as having played a role in elevated levels of childhood obesity within the region affected by this natural disaster. As informed by the Japanese education ministry, school health check-ups between April and June 2012 (approximately one year

after the subsequent melt-down of the Fukushima Daiich nuclear power plant) showed obesity surrounding the local Fukushima Prefecture to be almost double the national average. As noted by the Fukushima Prefectural board of Education, significant restrictions to daily PA in school aged populations were implemented immediately following the radiological hazard events of March 2011. The incident resulted in 71 public elementary schools refraining from conducting outdoor physical education classes due to the community health fears posed by lingering radiation risk, and a further 242 schools restricting outdoor activity to between one and four hours a day. Such a phenomenal occurrence as the nuclear radiation leakage left a unique and distinctive imprint upon the childhood exercise capabilities of the school aged population, the unpublished data of which suggests, led to an increase in circumstantially related obesity (The Asahi Shimbun, 2012).

More recently in March 2014, continuing physical activity limitations for children in the City of Koriyama which lies 55km west of Fukushima, has been found to noticeably decrease physical capabilities in school children. Toshiaki Yabe, a Koriyama official anecdotally reported, that both strength and ability tests including grip strength, running and throwing continued to be affected as a result of persisting parental concern over radiation exposure while at play outdoors, despite recommended outside exposure times being lifted in October 2012 (Hanai & Lies, 2014). Despite a number of news-based sources reporting upon the obesity and physically related impacts of perceived Fukushima radiation risk among school-aged children, primary source confirmatory data originating from Japan's Ministry of Education, Culture, Sports, Science and Technology (MEXT), has been elusive. In what might be attributed to traditional Japanese values of stoic patriotism, such concealment of primary source documents simply contributes to the scarcity of accurate information from which to report for this literature review.

Official publication on the radiation exposure health risks by the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR, 2014) released in March 2014 outlined that the committee did not expect significant changes in cancer statistics attributable to exposure from the accident, but acknowledged theoretical increased risk of [metabolic influencing] thyroid cancer among the most exposed children. The PhD candidate recognises that correlation is not causation in reference to the increased sedentariness of the Fukushima affected school children and their increased rates of obesity. However, owing to the UN ruling out of confounding metabolic thyroid issues as a result of radiation

exposure, this therefore strengthens the argument for the influence of environment, in reduced PA capability, upon child behaviours leading to increased obesity.

In a 2013 publication as a result of the Perth, Western Australian based RESIDE study, walking related exercise was longitudinally monitored to assess impact of urban design on PA uptake by new housing development residents. It was found that in contrast to the obesogenic environmental constraints of the Fukushima school children, positive health behavioural changes, such as increased PA can be encouraged through the creation and access to facilities that promote it (Giles-Corti et al., 2013). As Sallis, Bauman and Pratt (1998) identified in a review of ecological models influencing health behaviour, PA interventions should be tailored to each setting, and target changes to a number of domains including that of the physical environment.

2.3.6 Life expectancy

Using data from both the Australian Bureau of Statistics and the 1999–2000 Australian Diabetes, Obesity and Lifestyle Study (AusDiab), a life table analysis by Veerman et al. (2011) concluded a positive correlation between television viewing time and reduced life expectancy. Based upon 2006 Time Use Survey (TUS) data collected by both computer assisted personal interview and respondent diary completion, Australian population usage of leisure-based electronic media increased from 1.5 h/day in 1992 to 2.2 h/day in 2006 (Australian Bureau of Statistics, 2008). The increased sedentary state reportedly contributed to an average viewer life expectancy reduction of 21.8 minutes for every hour of TV viewed after the age of 25 (Australian Bureau of Statistics, 2008). Former studies using data from America (Patel et al., 2010), England (Wijndaele et al., 2011) and Scotland (Stamatakis, Hamer, & Dunstan, 2011), relayed complementary albeit varied findings showing increase in all-cause mortality risk per daily hour of TV viewing.

Unfortunately due to the early 2013 cancellation of the Work, Life and Family Survey (WoLFS) associated with the TUS (The Australian National University, 2013), no recent comparative statistics are currently available. Considering the eight year gap [2006-present] since the ABS collected data on leisure-based electronic media usage, continuing incremental increases of internet-enabled and mobile computing devices at home, as recorded by the Household Use of Information Technology (HUIT) component of the 2012–13 MPHS (Australian Bureau of Statistics, 2014c), may have also increased personal screen-based activities for leisure and associated sedentary/life expectancy risk.

Following the initial research conducted in 2009 by Katzmarzyk et al., (as previously highlighted) which established a link between sitting duration and mortality from all causes in isolation of leisure PA levels, Katzmarzyk and Lee (2012) demonstrated that increases in the American populations life expectancy could occur simply by reducing sitting and sedentary television viewing behaviours. The cause-deleted life table analysis suggested that limiting time spent sitting to <3h/day and television viewing to <2h/day, may increase life expectancy from birth by 2.0 and 1.4 years respectively. This seminal research held significance in addition to the prior risk realisation, that a life expectancy increase could be theoretically possible through undertaking an active sedentary reduction approach, such as limiting daily sitting and television viewing.

As outlined by the above literature, physical inactivity contributes to a number of disease conditions and just as importantly, sedentary behaviour has been identified as an independent risk factor unabated by guideline levels of daily exercise. With one Australian social trend data set suggesting physical inactivity and obesity increasing against a nation-wide decrease in participation in organised sport by the general public, this can only give rise to further detrimental impacts. Environmental factors also play a role in influencing health behaviours associated with physical inactivity, as does the permeation of technologies and its content (such as TV viewing) further promoting sedentary lifestyles and overweight / obesity within the Australian population.

2.4 The office workplace and risks for desk-bound workers

The structure of the workforce has changed significantly since first being measured by the Australian Bureau of Statistics over 50 years ago. In a change from what was a principally full-time male dominated workplace environment, the trend since has morphed into one where increased numbers of people now occupy part-time, temporary or casual positions. Nowadays, 45.0% of working Australians are women, compared with 30.0% fifty years ago which has commensurately changed the composition of the 21st Century Australian workforce (Australian Bureau of Statistics, 2014b).

The workplace landscape has likewise changed to a more technologically enabled environment, which includes the computerisation of workplace processes and by default, an increase in the sedentary oriented tasks of desk-based employees. In November 2014, national employment for both full and part-time employees was recorded as 11,613,900

employees or a 64.6% national employment participation rate, recognisably forming a considerable percentage of the total Australian population (Australian Bureau of Statistics, 2014b). This suggests that a significant “human capital” proportion of the national population is also the critical human infrastructure upon which many companies rely to conduct business. Likewise this figure represents considerable employer opportunity to positively influence health decision-making for those within their employ, enabled by the amount of time that employees spend at the workplace.

According to the latest available results published by the Australian Bureau of Statistics (ABS) in 2006, Australian men and women spent on average, approximately 52 hours per week engaged in either paid or unpaid forms of work. This was an increase of more than two hours per week since the previous survey in 1997 and marked a decrease in health promoting activities such as playing, i.e. physical exercise and social interaction, as well as sleeping and eating (Australian Bureau of Statistics, 2006).

In comparing OECD statistics, Australians work some of the longest weekly hours in the developed world, whereby the average Australian employee worked 42.4 hours a week or almost an hour extra per day compared to an equivalent worker in Norway (38.1 hours) or Denmark (37.2 hours) in 2013 (OECD, 2014a). As further comparison reported by The Australia Institute (2012), Norwegian employees receive a minimum of five weeks annual leave in contrast to Australia’s standard four weeks, yet both countries preserve economic stability through similarly high national credit ratings.

Employee reported dissatisfaction with work hours additionally contributed to adverse health impacts and the likelihood that they would suffer these adverse effects. Two thirds of the respondents who subjectively considered themselves overworked, reported a negative effect on their wellbeing and half reported at least one adverse effect on their family and social life (The Australia Institute, 2012). Another contributor to work-life imbalance as reported by the Better Life Index (OECD, 2014b), is the significantly higher number of weekly hours dedicated to household tasks further contributing to the pressures placed on employees, from within their home environments. In comparison of the household work hours of males and females across 36 OECD countries, Australian males spend 28 hours compared to 21 hours per week doing domestic tasks while Australian females average 36 hours per week compared to 32 for OECD averaged females. This additional household work which often occurs in tandem with paid employment, further impacts on work-life

balance and potentially strengthens the argument that additional work contributes to the reporting of employees feeling overworked.

Further compounded by poor employee work-life balance is the failure to retain appropriately qualified and skilled workers, a 2007 estimate factoring: recruitment, training, specialist knowledge and productivity, placed replacement costs at 150% of the employee's salary. Staff retention issues can therefore pose real financial threats to organisational effectiveness and business performance (Australian Human Resources Institute, 2008).

2.4.1 Sedentary workplace risk

Sedentary behaviour is endemic within most office-based workplace environments (Prodaniuk, Plotnikoff, Spence, & Wilson, 2004), and sitting consumes a significant portion of employee time at work. The constraints imposed by workplace tasks and the work environment prevent workers from engaging in PA and increase the likelihood that physically passive activities are reinforced within the workplace. Low workplace employee mobility holds numerous and varied consequences for those who continually work within such sedentary domains.

As part of the 2011–12 Australian Health Survey, sedentary activity for the average Australian adult was reported as 39 hours per week, of which 16 hours were spent at work. Occupation type played a significant role in reported sedentary behaviours with clerical and administrative workers reporting an average of 22 sedentary hours per week. Role-based physical inactivity levels, characterised by 75% or more of employee work time spent sitting, identified that desk-bound occupations such as those of a Clerical/Administrative (63.6% of those in that classification), Management (37.2%), or Professional (49.5%) nature, were the most inactive in the prior week's activities. Contrasting this sedentary occupational trend, 89.8% of labourers reported less than 25% of their work times were spent doing seated tasks (Australian Bureau of Statistics, 2013e). Figure 6 below illustrates sedentary time by occupation as a proportion of work task related time spent sitting in the prior reported week.

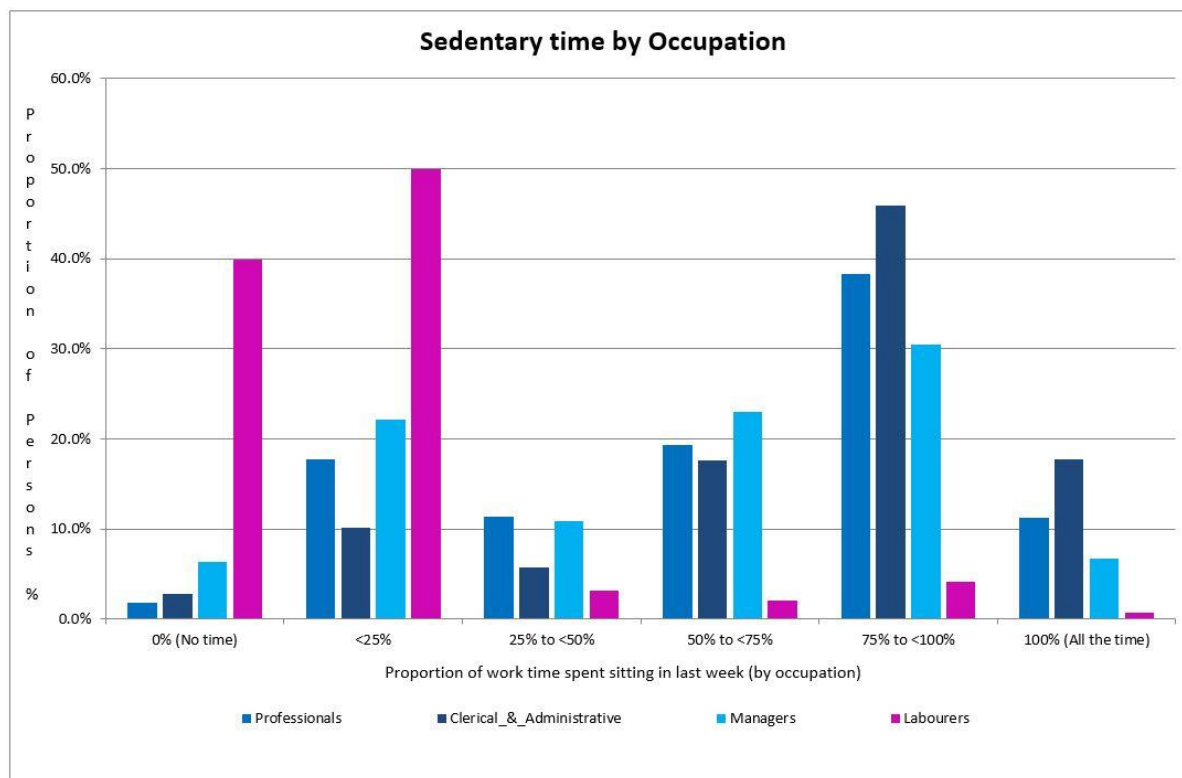


Figure 6: Sedentary time by Occupation – Proportion of work time spent sitting in last week (Australian Bureau of Statistics, 2013e).

While the majority of the 2011–12 Australian Health Survey was based upon subjectively measured responses, an additional pedometer data collection component objectively recorded an adult average of 7,400 steps, with only one in five adults (19%) recording the recommended 10,000 steps per day average (Australian Bureau of Statistics, 2013d). This number is based upon the recommendations of the World Health Organization (WHO) that use it to promote sufficient adult daily PA and thereby decrease the risks of lifestyle related disease. The number itself is derived from Japanese walking clubs and a pedometer manufacturer's slogan from the 1960's. According to Dr Yoshiro Hatano who spoke at the 2001 annual American College of Sports Medicine, a pedometer was produced in 1965 for the Japanese Commercial Market called "Manpo-kei" which translates to "ten thousand steps meter" (Tudor-Locke & Bassett, 2004), (Hatano, 1993). While the 10,000 step figure has not been empirically tested, it is often used as a convenient daily PA target (Tudor-Locke, Hatano, Pangrazi, & Kang, 2008).

As published in a literature review of multiple studies that used the 10,000 step-based benchmark in 2007, this walking tally benchmark was found to be not typically achieved through a participant's daily routine of activities, leading to a consequential average deficit

of some 4,000 steps in the studies reviewed (Choi, Pak, Choi, & Choi, 2007). A New Zealand study of six different occupational categories, also using the 10,000 step metric, identified that only 78 (43%) of the 181 participants (60 male and 121 female) reached this daily target average. Blue collar classified workers achieved the highest comparative step counts, while those in office-based environments recorded the least (Schofield, Badlands, & Oliver, 2005).

While work environments vary greatly, recognition for the need to reduce excessive employee sedentary time during both work hours and non-work hours is critical, as both contribute to an employee's sedentary total and health risk potential. In identifying the volumes of opportunistic time available for adults of industrialised and developing countries to sit during non-exercise waking hours, awareness for a potential of 15.5 hours per average weekday, excluding sleeping was highlighted (Owen, Bauman, & Brown, 2009). It was also stated by the authors that there was future research value through the breaking up of prolonged sitting time and investigating how this might relate to increasing light and moderate to vigorous intensity physical activities.

Due to recognition that an increasing percentage of employees now occupy physically inactive work roles (Kirk & Rhodes, 2011), patterns of occupational physical activity (OPA) has emerged as a priority for research focus. In investigating patterns of sedentary time, a cross-sectional observational study was conducted in a Perth, Western Australian office setting to determine total and patterns of exposure for sedentary, light and moderate/vigorous physical activity (MVPA) across employment and non-employment time. Objective accelerometer data taken over a continuous seven day period in 2008–09, revealed that the 50 participant office-based employees recorded 81.8% of work-time as sedentary. A further 15.3% was considered light activity and only 2.9% of daily office employee time was definable as of a moderate or vigorous nature. Moreover, the influence of the work environment reduced the number of instances for which sedentary work behaviours were interspersed with activities of increased physicality (Parry & Straker, 2013).

Employees with poor general health who work in predominantly sedentary jobs often lack motivation to perform regular PA (Booth *et al.*, 1997), contrastingly however, it is exercise that has been shown to enhance physical condition and mental/emotional status as well as significantly reduce preventable disease risk factors. In a review of over 1,000 published research articles surrounding exercise and mental health prior to 1985, Taylor, Sallis and

Needle (1985) clarified the overarching associations as sufficiently favourable, despite evidence of anecdotal, editorial or methodologically excluded data. Since then, research into the mental health enrichment capabilities of exercise have been studied extensively in both clinical and non-clinical settings to establish effective outcome causality (Stathopoulou, Powers, Berry, Smits, & Otto, 2006).

2.4.2 Technological implications for the workforce

Technology has been by far one of the greatest drivers of workplace change, leading to many advantages over previous business practices and mechanisms of communication. Today emails are sent effortlessly across international networks, and virtual collaboration using electronic documents and databases occurs, where once we were required to physically transport paper-based documents. While efficiency objectives that save time and associated employee costs have been optimised within the typical office workplace, a negative by-product of the desk-bound workforce has resulted in a marked decrease in OPA (Philipson & Posner, 2003).

With recognition of the built environment as a significant correlate for PA, settings such as sedentary work-style (ways of working) fostering workplaces pose a significant domain specific health risk to its work-time exposed occupants. It is of importance to note however that the published literature to date has primarily focussed on the sedentary behaviour and environmental inter-relationship in children rather than adults. This therefore indicates a need for evidence derived from observational studies to inform on environmental and social determinants of sedentary behaviour for working adults (Owen, Salmon, Koohsari, Turrell, & Giles-Corti, 2014).

Reiterated from above, Australia's national employment rate currently stands at 64.6% of the total Australian population (Australian Bureau of Statistics, 2014b). This Australia-wide employee base therefore constitutes the critical human labour force upon which many companies rely to conduct business. The demanding and competitive nature of modern business can generate a diverse range of employee stressors, such as excessive hours, unrealistic deadlines, poor communication and office politics, that can place a worker or workforce under unnecessary duress. If such practices are sustained within the workforce and/or are ineffectively managed, these stressors can have a significantly detrimental health impact upon employees as well as reduced workplace productivity (Colligan & Higgins, 2008). Despite the well-recognised time saving advantages of business process

enhancement through workplace computerisation, particularly within the office workplace, such benefits have largely been absorbed by new and/or additional business tasks. In doing so, employees are involved in contributing more hours to manage increasing workloads, which can adversely affect desk-based employees.

Gravitation towards technology in the workplace has generated work system design hazards that consequently require addressing from a workplace health and safety perspective. Ergonomics, which is the scientific discipline concerned with work systems and their interactions with humans, focusses on optimising human well-being and overall performance. Use of physical workstation computer systems and job design or task components, fall under the purview of occupational ergonomics charged with preventing ill health among employees (Buckle & Buckle, 2011). While findings of associations between obesity and the musculoskeletal system have been shown to contribute to degenerative and inflammatory conditions (Anandacoomarasamy, Caterson, Sambrook, Fransen, & March, 2008), the impact of specific lower back pain as a result of postural stress from excessive sedentary behaviour is believed to also contribute to musculoskeletal degradation.

Although review of published literature surrounding workplace ergonomics and public health priorities was collectively deemed insufficient to allow a systematic review, Buckle and Buckle's (2011) comparison of multiple study data did yield associated implications for obesity causative disorders of the musculoskeletal system. Acknowledgement was made within the article that the assessed studies were predominantly laboratory-based offering small sample sizes and therefore would appropriately need to be replicated with a wider set of subjects, before being useful for workplace design purposes. It was further stated in relation to presenting an impact upon the future of the UK workplace, that local population obesity projections in December 2012 estimated that 60% of men and 50% of women in the UK could be considered clinically obese by 2050. Furthermore, financial costs associated with the condition of overweight and obesity in this population could rise as high as £50 billion per annum if pre-emptive action through public health and workplace wellbeing is not taken (Buckle & Buckle, 2011).

In seeking to develop effective and sustainable approaches to a projected 40 year impact of obesity in the population, the UK's 2007 Tackling Obesities: Future Choices (TOFC) report, advocated cross-sectoral and multidisciplinary methodologies incorporating both the biological and social science disciplines (GOV.UK, 2007). The inclusion of these areas

offers greater understanding of the diverse and inter-related environmental and biological factors that characteristically define obesity. Taking a multi-level societal approach with partnerships between government, science, business and civil society as suggested by the TOFC report and its 2012 follow up (GOV.UK, 2012), aids in recognition of employment having an impact upon employee health and wellbeing across physical, mental and social wellbeing areas.

Business concerns revolve around employee absenteeism, where an employee is physically ill and unable to attend work to perform duties, and presenteeism, where workplace performance is degraded comparative to a healthy similarly capable employee (Burton, Conti, Chen, Schultz, & Edington, 1999). Table 2 below represents the comparative workplace and health status differences between typical unhealthy and healthy workers in Australia, according to the Medibank Private (2005) workplace health survey of 3,620 employees from corporate and small business domains.

Table 2: Comparison of the Australian Worker (Medibank Private, 2005).

Comparison of the Australian Worker	
Unhealthy	Healthy
18 days annual sick leave	2 days annual sick leave
Self-rated performance 3.7 / 10	Self-rated performance 8.5 / 10
49 effective hours worked (F/time) per month	143 effective hours worked (F/time) per month
High fat diet	Healthy diet
Low energy levels & poor concentration	Fit, energetic and alert
Obese or overweight	Normal body weight
Irregular sleep patterns	More attentive at work & better sleep patterns
Poor stress management techniques	Actively manage stress levels

As occupational custodians of their staff, employers need to be aware of the role passive workplace influences can have upon employee health and wellbeing. As suggested by long-held views within literature concerning health promotion in the workplace, “*the most compelling reason to promote health in the workplace is that work and the work environment can harm workers*” (Chu, Driscoll, & Dwyer, 1997). The United Nations’ Universal Declaration of Human Rights underpins all Australian work health and safety legislation with two key principles, these are: allowing all workers the right of being engaged in a healthy and safe work environment as well as; being able to carry out well-designed, healthy and safe work tasks to offer employees productive working lives (Safe Work Australia, 2012). Inequality potential exists in the identification and mitigation of passive risks, such as sedentary behaviour among desk-bound computer-based employees, particularly where other more obvious health and/or safety risks may take priority. However being that the

work-induced consequence of prolonged sitting is a direct contributor to employee health risk under employer governance, inadequate recognition of such slow acting passive contributors may present widespread adverse impacts to population health over time.

Prolonged workplace sitting presents an occupational health risk that continues to gain recognition through health promotion strategies among the general population in outlining its lifestyle-related diseases. Research approaches in this arena now seek to determine under which circumstances its effects can be obesogenic. Obesity arises from complex social and biological phenomena, and while it is often perceived as the result of an individual's behaviours outside of work, aspects of employment such as shift-work and long working hours have been found to be associated with elevated body weight and obesity (Schulte et al., 2007).

2.4.3 Obesity and workplace injury

A literature review by the Australian Institute of Health and Welfare (2011) raised awareness of the increased concern of injurious risk and consequence associated with obesity in particular settings, including the workplace. Australian BMI guidelines as previously outlined, are based upon global recommendations (exclusive of superfluous variances), used to quantify the severity of health risk as classifications of being either overweight by having a BMI ranging between 25.00 kg/m² and 29.99 kg/m²; and over 30.00 kg/m² as obese (World Health Organization, 2006). Results of a cross-sectional analysis of a U.S. nationally representative study of 42,304 adults, showed a clear link between increased BMI as indicated in obesity, and the probability of injury (Finkelstein, Chen, Prabhu, Trogon, & Corso, 2007). This raises concern of further impacts within the work force resultant from obesity and its potential consequences upon both obese and non-obese individuals alike.

With a high proportion of the population being classified as overweight/obese, researchers have more recently directed their attention to identifying injury risks associated with obesity. Previous research has been predominantly focussed on specific population groups such as the very young and the aged, but there is new evidence to suggest that obesity does contribute to an increased risk of unintentional injuries in obese persons. The form of injury can be diverse in nature (i.e. fractures, sprains, lacerations), through its causation (i.e. fall, contact with a sharp object) and in its circumstances of occurrence (i.e. workplace or motor vehicle crash). While there has been a limited number of studies undertaken within the

workplace, obese workers typically report a greater incidence of work-restricting pain in the neck, back and lower extremities (Norton et al., 2011).

A systematic review of data from 1980–2005 identified 12 peer-reviewed papers comparing employee obesity with an association for non-fatal traumatic occupational injury in non-office based populations. Despite not reporting statistically significant findings, comparisons between obese and non-obese populations did show elevations of injurious risk among obese employees. This article conceded that low study numbers were unable to explore mechanisms of obesity-related injury, and further research needs to control for confounders while applying statistically sound methods to assess contribution of obesity to the risk of injury. It was suggested that while injury prevention programs incorporating weight control strategies offered benefits for healthcare and personal costs, consideration in addressing concerns of a workplace environmental and sociocultural nature needs to be factored in fostering effective interventional strategies (Pollack & Cheskin, 2007).

Utilising data from Canadian biennial National Population Health Surveys (NPHS) of household and institution individuals, a longitudinal analysis used to predict reports of unintentional occupational injury in relation to obesity, was published in the Journal of Obesity in 2011 (Janssen, Bacon, & Pickett, 2011). Using a population representative sample of 7,678 Canadian adult workers, BMI was recorded in the 1998 NPHS which served as a weight categorisation baseline and compared to reported occupational injuries in the sequential 2000 survey. Logistic regression as a probabilistic interpretative measure was used to evaluate relationships between these two key variables. While it was reported that more than half the respondents performed sedentary occupations, and were either overweight or obese at the time of the 2000 survey, obesity was demonstrated to present a 1.5-fold increase in the adjusted relative odds of serious workplace injury. Even though the most prevalent injury type reported sprains and strains as well as injuries to lower limbs, both females ≥ 40 years, as well as those in sedentary occupations were identified as particularly vulnerable to workplace injury. Such increased risk was not recognised among overweight classified workers (Janssen et al., 2011).

In understanding that the 1998 biennial NPHS was selected for baseline due to lack of comprehensive injury data prior to the 2000 survey issue (Government of Canada, 2012), the PhD candidate notes a recognisable criticism of this study exists due to a lack of a more recent comparative data set. While the NPHS survey conducted by Statistics Canada since

1994–95 notes the longitudinal survey review of the same group of respondents every two years, the survey’s weakness is in its reliance upon self-reported data and the lack of an objective measure for increasing validity through multiple sampling strategies (Government of Canada, 2012).

In summary, the Australian workforce currently comprises approximately 11.6 million full-time and part-time employees (Australian Bureau of Statistics, 2014b). As outlined, with recognition that healthier employees are more productive, as well as more cost-effective to employ within business organisations, the most compelling reason to promote health in the workplace is that work, if not holistically addressed, can ultimately harm workers. Technology has played a role in creating process efficient but physicality reduced work environments that are now recognised as being detrimental to human health. Further, occupation type bears influence upon employee sedentary incidence and it is the PhD candidate’s opinion that effort be directed toward investigating newer mechanisms to enhance workplace health program uptake among varied role and workforce populations.

2.5 Workplace health programs

2.5.1 Workplaces as wellness settings

Due to the stable nature of workforce populations and ongoing regular contact time with employees, workplaces represent an excellent environment to deliver individual and group targeted wellness programs. In recent years the workplace has been seen by government and private sector management as an environment suitable for human capital investment, where employers can positively influence the health behaviours of their employees through healthy worker initiatives (Department of Health, 2014c). In addressing these “settings-based interventions”, employers may capitalise on the nature of the employer/employee relationship that involves significant daily time investment from both parties. These workplace social interactions offer great potential to improve uptake of health behaviour enhancement programs within their workforces, and through the often incredibly varied array of intervention activities (PA workplace programs), offer employers numerous benefit realisation challenges (To, Chen, Magnussen, & To, 2013).

Some specific examples of workplace health programs include:

- External gym memberships/access or internal gym facilities, e.g., Salary packaging
These can be costly for employers to financially support
- Social clubs (with a health interest), e.g., Lunchtime walking group

Organisational based social clubs offer a combination of social interaction and often health practices, but this alone can fail to cater for all employees

- Computer software, e.g., Wellnomics Workplace®
Wellnomics Workplace is a well-known computer program that monitors computer usage and prompts users to take regular work breaks. The software is primarily targeted at reducing computer overuse injuries (Wellnomics, 2014)
- Externally or internally coordinated programs, e.g., Global Corporate Challenge®
These online or offline delivered programs, while strong in concept, are often of short duration and participants often report reverting to pre-involvement habits (Scherrer, Henley, Sheridan, Sibson, & Ryan, 2008).

Financial return on investment (ROI) is an important consideration in evaluating the cost to benefit ratio in implementing workplace health and wellbeing programs. An evidence check review (Bellew, St George, & King, 2012) for the NSW Ministry of Health suggested that for every dollar invested in workplace health screening programs alone, there is a mean ROI of \$3.20. Further to this, there was sufficient evidence demonstrating that such workplace health risk assessments increased potential for employees sourcing additional preventative care services. This is significant because a reduction of those identified as being at high health risk leads to a proportional decrease in demands upon health services and costs associated with healthcare in the longer term. Increased outcome effectiveness was reported following combinations of health risk assessment and health enhancing interventions, leading to even superior ROI where high health risk employees are incorporated.

In a study addressing the value of return on public health investment of moderate PA intervention types, costs and their cost effectiveness, Pringle *et al.*, (2010) identified that savings per participant exceeded program implementation costs. This was calculated through cost-effectiveness analysis (CEA) which evaluated data from seven different community-based behaviour change interventions types promoting moderate PA, showing considerable ROI and potential savings to the UK National Health Service (NHS).

While comparison between health enhancing interventions can often be difficult to quantify due to the variable type of health targeted activity, such as: physical activity, smoking cessation, nutrition or stress related objectives, the measure of financial ROI is widely used as a yardstick in the reporting of business value. In a review of current literature regarding

workplace wellness programs for both healthy employees and those with elevated cardiovascular (CV) risk factors, numerous studies reported cost beneficial worksite health and wellness interventions (Arena et al., 2013). One review of 14 absentee studies found program ROI values of between US\$2.50 and US\$10.10 associated with every US\$1 invested in the employee wellbeing program (Aldana, 2001). Such financial cost/benefit ratios are recognisably of significant value to employers in validating initial outlay and representing management employee value to employees.

In recent years, greater public awareness concerning the consequences of physically inactive lifestyles and work-styles has resulted from public health promotion in representing the consequences of sedentary behaviour and highlighting the sedentary combative benefits of regular movement and exercise (Healthier Workplace WA, 2014). As a way to translate this to workplace practice a number of different strategies have been utilised as a way to return increased physical workloads, to what some nowadays would argue are insufficiently physically challenging work environments. Straker and Mathiassen (2009) identify that the traditional physical ergonomics paradigm of reducing employee risk by reducing physical load can be inappropriate in consideration of modern occupations. They offer through an alternatively proposed paradigm that, more rather than less can be better, leading to an ergonomically driven capacity to improve employee physical health and reduce injury risk simultaneously.

The introduction of alternative workstation configurations such as height-adjustable “sit-stand” desks has been another way employers have approached the objective of reducing the harmful effects of excessive workforce sedentary behaviour. Such desks are designed to give employees alternative postural options, such as sitting or standing while working. In one small scale quasi-randomised controlled trial of sedentary office-based employees, a multi-component intervention involving sit-stand desks, organisational and individual level support elements was trialled across three comparative administrative cohorts. Results indicated that relative to the comparison group’s (n=14) baseline of 365 minutes / 8 hours, the multi-component cohort (n=16) that had use of sit-stand desks in association with support mechanisms, reduced their sitting by 89 minutes, and the sit-stand desk only cohort (n=14) reduced their daily workplace sitting time by 33 minutes (Neuhaus, Healy, Dunstan, Owen, & Eakin, 2014). This almost three-fold enhancement in reducing sitting time through incorporation of multi-component support mechanisms between the two intervention cohorts is therefore representative of significant effect in achieving this result. As the authors note,

this is the first study of its kind in incorporating and measuring the value of organisational and individual support elements in addition to the sit-stand desks themselves. While the three armed quasi-randomised controlled trial utilising objective physical monitoring was a research design strength of the study, the limited recruitment numbers, workspace restrictions imposed on intervention participants in relation to the retro-fitted nature of the sit-stand desks to existing furniture, a female biased cohort and three month study duration are notable study deficiencies.

Australian government departments have also taken part in office-based evaluations of sit-stand desks as a strategy to reduce sedentary work-styles. Three month pre-post self-report measures and qualitative interviews revealed that effective behavioural enhancements in reduced daily sitting time was achieved, 85% at baseline versus 60% at follow up (Grunseit, Chau, van der Ploeg, & Bauman, 2013). As the authors state, this like the university-based study by Neuhaus et al. above, is similarly a first study employing sit-stand desks, that instead qualitatively describes usability and acceptance in office environments. In discussing limitations of this article, small participant numbers as well as high participant variation in recorded changes of sitting time meant that reporting confidence was consequently low. Use of objective measures to triangulate self-reported postural changes would have strengthened the quantitative findings of the mixed methods study.

In a 2011 study by Thomson and Levine focussing on reducing sedentariness in a population of desk-bound transcriptionists, treadmills set at slow walking pace (approx. 1mph) were utilised to increase mean energy expenditure of research participants. It was found that energy expended while walking and working on a treadmill workstation over sitting and working was 119 ± 25 kcal/hour, which if used for half of the working day would equate to total increased energy expenditure of 500 k/cal per day. There were no reported differences in task related errors, although there was a notable 16% reduction in transcription speed when walking and using an unfamiliar tape playback configuration. Two of 11 research participant transcriptionists said they felt more tired using the treadmill for work, however the other nine disagreed, saying they felt more energised and all said they would use the treadmill desk if it were available following the study (Thompson & Levine, 2011). Given that the research was designed to investigate productivity, further studies were suggested, during which further treadmill familiarity and training time, the speed of transcription may increase to equivalent or even exceed that of regular sitting transcription times.

New social media entities have now emerged online in support of peers using treadmill walking stations, allowing for community shared experience and expert advice on this workplace practice. Office Walkers, whose website states: “A network for people experimenting with the treadmill desk and the idea of walking while working, developed by Dr Levine at Mayo Clinic” (Office Walkers, 2013), is an example of social media fostering community development of like-minded individuals seeking to reduce their sedentary workplace behaviours.

In a workplace study across five organisations of employees meeting the inclusion criteria of 5 hours sedentary behaviour per day, the introduction of a daily 15 minute workplace exercise break was reportedly highly beneficial by the 82 employees who participated. The qualitative study identified a number of beneficial themes, including (i) reduced stress and promoted enjoyment, (ii) increased health awareness and facilitated behaviour change, and (iii) enhanced workplace social interaction. These “Booster Breaks” were intended to give both physical respite from sedentary behaviour as well as a break from potentially monotonous work tasks, which was successfully evident, based upon the qualitatively derived themes (Taylor *et al.*, 2013). The current literature therefore seems to suggest that a combination of regular work breaks incorporating workplace-endorsed exercise based activities may prove similarly effective in addressing the health risks of sedentary office employees.

2.5.2 Workplace physical activity interventions – systematic review

A number of workplace PA intervention centred systematic reviews have been published in recent years, seeking to assess the effectiveness of PA programs in the workplace. The most recent, published in the American Journal of Health Promotion, was based upon 20 print articles during the 2000–10 period which highlighted a number of noteworthy findings (To *et al.*, 2013). Research designs were highly variable and durations of interventions ranged from six weeks to two years. Covering an international dataset, the majority of interventions had a PA focus with 6 of 20 also including an employee dietary component. A total of 9,865 employees formed the research population from workplaces that included: government agencies, academic institutions, medical centres, manufacturing plants, bus garages and fire departments. Females made up a higher proportion of recruits and the majority of both males and females were either overweight or obese while engaged in the OPA intervention. Seven out of 20 workplace interventions within the systematic review included activities targeted at environmental and social levels, while most of the other

interventions only targeted the interpersonal or intrapersonal level activities (To et al., 2013). Table 3 below identifies the activities of each intervention classification.

Table 3: Systematic review of workplace physical activity intervention activities (To et al., 2013).

Social and Environmental Activities	Interpersonal and Intrapersonal Activities
Maps with routes & distances	Delivery of pedometers
Staircase promotion & walking circuit	Regular educational materials (online)
“Action days” & “Gymnastic breaks”	Regular educational materials (offline)
Management/Employee committees	Establishing competitive PA teams
Management endorsements	Hosting regular meetings or consultations
Fitness facility improvements	Offering fitness classes
Fitness expos (exercise instruction)	

A variety of theoretical models were referred to in the literature among 12 of the 20 interventions, where the singular transtheoretical model of health behaviour change was used in six, the social cognitive theory in three and the 5 E's (evidence, engage, educate, environment, and evaluate) in one intervention. The other two interventions used dual theoretical models, which independently combined the transtheoretical model of health behaviour change with the theory of planned behaviour and also with social cognitive theory. Additionally, commonly utilised goal setting and reward based strategies were used across a variety of interventions (To et al., 2013).

Intervention PA effectiveness was predominantly defined by standardised questionnaires, which were used by 14 of 20 interventions, and three interventions deployed non-standardised surveys. Pedometers (step counts) were also used to report outcomes in seven workplace programs, as well as an additional intervention that measured percentage of pedometer use rather than step counts. BMI variation was also reported as an outcome for 11 interventions. Five interventions in total identified significant effectiveness on numerous outcomes while a further seven were found to be effective for at least one outcome objective (To et al., 2013).

Further to the consideration of theoretical models in OPA interventions, the 2013 published systematic review concluded that those with simplified and less rigorous research designs were more likely to report workplace PA effectiveness. In contrast, those research intervention programs of longer duration were typically of a randomised control trial (RCT) study design and seven out of 12 demonstrated no outcome benefit (To et al., 2013). This

indicates that theoretical grounding and research design validity do not specifically guarantee optimal intervention outcomes.

Factors that positively influenced intervention outcomes included: pedometer usage, internet-based approaches, as well as an engagement strategy comprising social and environmental components. Pedometers featured among 9 of the 13 effective interventions, 6 of 13 applied online accessible information which participants could conveniently access at will, and less definitively 5 of 13 workplace PA studies used social and environmental level targeting among research cohorts. As well as these efficacious common characteristics, suggestion for future studies included:

- Program sustainability to ensure effect maintenance (10 of 13 effective interventions were of less than six months duration)
- Personalisation of the health message (online allows for enhanced privacy)
- Paid PA time for employees (especially if they don't wish to use their own time)
- Employee PA dose-response relationship for productivity measures
- Measures of employee intent to change
- Consideration of business activity (peak vs quiet business periods)
- Employer PA program endorsement and participation, and were all surmised to be possible future research directions (To et al., 2013).

An earlier systematic review (Dugdill, Brettle, Hulme, McCluskey, & Long, 2008) covering 33 studies (38 papers) from 1996 to 2007, additionally found that despite there often being confounding effects of multi-component intervention types, there was strong evidence from a number of studies that workplace counselling positively influenced PA workplace behaviour. The use of pedometers to promote walking activity among employees was additionally found to be effective despite a potential for bias and over-estimation of step counts. Limitation of the self-reported nature of results was acknowledged against the studies reviewed, and emphasis of the paucity of research into small and medium enterprise (SMEs) PA interventions was highlighted as a future direction. Robroek *et al.*, (2009) published a systematic review of worksite health promotion programs, presenting a limited median participation rate of 33%, and a variance of between 10% and 64%.

2.5.3 Internet / software based approaches

The use of internet-based and software-driven resources for promoting health behaviour change in the workplace is by no means a new approach in workplace wellness (Marcus, Owen, Forsyth, Cavill, & Fridinger, 1998) and indeed many workplaces have work processes

inextricably facilitated by their ICT hardware and software infrastructures. Existing employee familiarity with computer-based work processes offers a useful segue to the introduction of a software-based mechanism for workforce adoption of positive health behavioural change right at the computer terminal itself.

One software program targeted at workplace risk reduction management of computer overuse related injuries is Wellnomics' WorkPace which regularly prompts users to take "Micropauses" or stretch break exercises, to reduce the likelihood of Occupational Overuse Syndrome, formerly known as RSI (Repetitive Stress/Strain Injury) (Wellnomics, 2014). While this software can be used at-the-desk for immediate user benefit, an employee lock-out feature has anecdotally been reported as a drawback to workflow and during longer forced-breaks, employees may find alternative activities, some of which may be detrimental to health. Such potential adverse risks are often difficult to predict or counter.

2.5.4 The Global Corporate Challenge (GCC)

The Global Corporate Challenge (GCC) is one of the most widely utilised corporately targeted employee wellness program that has emerged in recent years. Based upon WHO recommendations in promoting the achievement of 10,000 steps per day for adults as a practical guideline for sufficient PA and health benefit, the 16 week program runs from May to September annually. Participants form teams of seven employees, whose activities are objectively measured via pedometer step counts enabling healthy workplace competition (Gibbs & Cartwright, 2010). It is to be noted that the objectively measured steps by the pedometer are prone to subjective interpretation during GCC website manual entry by the participant, allowing for potential reporting bias within an honesty-based PA program. The GCC program encourages multiple internal organisational teams to compete against each other and collectively against other external organisations (Gibbs & Cartwright, 2010).

In informing organisational adoption, the GCC's parent organisation Get The World Moving Ltd, publishes study findings through the Foundation for Chronic Disease Prevention (FCDP) (Get The World Moving Ltd, 2014). A collaborative study between the FCDP and the Centre for Organisational Health and Wellbeing at Lancaster University, focussed on the GCC as a workplace health intervention and identified significant benefits as a result of program uptake. The report of the multi-business study of 752 participant pre and post intervention returned surveys highlighted health enhancement among participants, particularly for those reporting more sedentary lifestyles prior to the program. Further to

productivity increases where 17% more employees reported they considered themselves 90% or more productive in their job after the program, the study reinforced the importance of incorporating such employee workforce resilience strategies into organisational cultures (Batman & Cartwright, 2011).

Statistics from the 2013 Global Workplace Health and Wellness Report (Get The World Moving Ltd, 2013a), which surveyed health and wellness managers from 378 diverse sector organisations across the globe, provided a comprehensive analysis of workplace health and wellness strategies and initiatives. Limited time was the most common barrier that 86% of respondents stated as a reason for program activity avoidance and secondly was the employee perception that the offered program was not perceived as fun, interesting or engaging. Key findings therefore identified that organisations need to: 1) indicate clear management approval of employee participation time and, 2) prioritise participant fun in the design of employee health and wellness initiatives. There was also a significant disparity in “planned” or “planned to have” a health and wellness strategy (95%) compared to the 22% of organisations who have a fully implemented one.

While the GCC (2013d) has achieved widespread corporate setting adoption with over 1,300 organisations from 110 countries now engaging over a quarter of a million employees worldwide in 2013, social media services such as Facebook (2013b), Twitter (2013f) and LinkedIn (2013e) have empowered a global program participant audience. With the rise in mainstream popularity of social media for keeping people socially connected, this offers potential for inquiry of social media usage to sustain employee participation in PA programs from within the workplace.

2.6 Communication for behaviour change

2.6.1 Technology usage for communication

Communication is a critical component in the functioning of organisations. Business organisations function much like communities, whereby information is redistributed by interpersonal communication pathways in a number of different ways including: traditional face-to-face verbal or non-verbal communication pathways or via more modern day electronic communication channels, such as email (Sethi & Seth, 2009).

In the same way that email, invented by Ray Tomlinson in 1971 (Tomlinson, 2011), changed the way we communicate with our family and friends utilising the vast connectivity of the

Internet, the avenues of business communication have likewise been changed forever. Geographic and political barriers that once represented insurmountable challenges for communication, now through business adoption of technology enablers such as email, the World Wide Web and ICT infrastructures, are considered a necessity for business survivability.

According to the Australian Communications and Media Authority (2014), as at June 2013 65% of Australians aged 18 years and over, reported using the Internet more than once a day, and only the 65yrs+ category recorded less than an 80% home internet connectedness. With such population embedded technology usage for domestic tasks like: using email (96% of those surveyed), gathering information (95%), buying or selling goods (65%) or using social media services (65%), it is understandable why in 2013, popularity for the Internet's many usages continues to increase. Further stated by the same report (2014), social networking was most popular among 18–24 year olds with 94% reporting regular usage, and 82% within the 25–34 age bracket reporting similar practices.

Contributing to the increase in online activities is the growth in mobile platform or smartphone usage to access the Internet, with a 510% increase in the five-year period from June 2008 to June 2013, and a mid-year total of 7.50 million active users. It is suggested that such rapid adoption of smartphones was buoyed by the expansion of faster and more widespread mobile network infrastructures across Australia (Australian Communications and Media Authority, 2014). Such mobility affords greater opportunity for Internet access location variation and the ACMA report identified that 98% of those surveyed actively accessed the Internet from home and 50% accessed it from work during the June quarter of 2013. In recognising that technology has revolutionised the way we communicate both at home and within the work environment, the PhD candidate notes somewhat of a dualistic irony in using technology-based approaches to propose solutions in environments where potentially detrimental computer use is prevalent.

As identified above, Australians readily use technology to conduct business, stay informed and communicate as a regular part of home and workplace daily life. As such, a participative intranet or Internet based approach could potentially offer employers an opportunity to influence their workplace health behaviour culture and provide employees with health purposed communication and support.

2.6.2 Organisational communication culture

Organisations are composites of a wide variety of influential inputs, ranging from organisational structure and management style to business objectives and employee composition. Cohesive business cultures have for some time been considered to positively influence productivity, improve employee morale, affect work attitudes (Connor & Becker, 1994) and commensurate levels of employer loyalty and commitment (Deal & Kennedy, 1999). Organisational research pioneer and expert on corporate cultural change, Edgar Schein has long stated that organisational culture is dynamic, is created, it evolves and can be one of the most challenging characteristics of workplaces to change (Schein, 1992). Given the diversity of workplaces today, organisational cultures are founded on the widely varying values, beliefs and understandings that employees have in common. Successful organisations therefore embrace these commonalities to foster strong cultures that attract, retain and reward dedication in service of common values (Sun, 2008). While many definitions of organisational culture exist, further definition also incorporates the meanings inherent in the actions and procedures specific to organisation operations (Limerick, Cunnington, & Crowther, 1998), some of which include: visions, norms, working language, systems, symbols and habits (Azadi, Farsani, Rizi, & Aroufzad, 2013).

Organisational communication culture is a critical driver of how information is exchanged both formally and informally within the context of the workplace. Such communication climates can have significant effects upon workforces in establishing and maintaining information pathways within organisational contexts, where an open and clear communication climate positively influences employee productivity and retention (Falcione, Sussman, & Herden, 1987). Organisational communication culture is also influenced by other factors, including use of communication technologies and the size of the workforce itself. While larger corporates have more standardised and formalised processes and behaviours, small and medium-sized enterprises (SMEs) are often more organically structured (Ghobadian & Galleary, 1996). A preliminary study investigating the perceptions of organisational culture within small, medium and large organisations by surveying Australian business executives, concluded that organisational size poses unique practical and theoretical implications for alternatively sized corporate entities (Gray, Densten, & Sarros, 2003).

Regardless of organisational size, employee health and wellbeing, as a subculture of organisational culture is influenced by a number of variables, a critical one of which is

workplace communication offering the potential to implement positive health behaviour (Kummerow & Kirby, 2013). In enabling an organisation's communication culture to underpin the establishment or ongoing support of business subcultures, such as that for employee health, many organisations use value and policy driven approaches to employee engagement as a strategic way to reinforce organisational objectives.

Specifically in the case of health promoting organisations that have both internally (employee) and externally (business customers and the wider public within whom exist potential future customers) focussed objectives, Korda and Itani (2013) noted that publically available communication mechanisms such as social media are becoming preferred methods of health promotion with growing evidence for effectively reaching public audiences.

2.6.3 Social media

The term "social media" typically defines a communication mechanism through which users of an individual or a group based nature, can socially interact to share content either in a public or private online environment. It is most commonly associated with electronic delivery via the Internet, which allows for a global audience of fellow users to respond or similarly share their own content. Well known examples of social media include:

- Social networking sites or services, such as Facebook, Twitter and LinkedIn
- Personal or organisationally controlled "Blogs" (derived from "Web-Log")
- Information repositories often termed "Wikis" (i.e. Wikipedia)
- Video (i.e. YouTube) and Picture (i.e. Instagram) file sharing sites
(PilchConnect, 2011).

Additionally there is often content type cross-over between social media entities, which include social networking sites that allow image and video sharing, or Wikis that enable embedded video content.

In 2002, the world's pioneer social networking site "Friendster" (Facebook.com, 2013) became the first of many websites to attract over one million electronically connected members. Since then a raft of social networks have been created as a result, two of particular note include "MySpace" in August 2003 (About.com, n.d.) and "Facebook" in 2004 (Facebook.com, 2014) to further enhance human connectivity through the Internet digital medium.

In today's online culture, Facebook has essentially changed the way people communicate among "friend" associations and resultantly become the gold standard by which online social popularity is measured. Facebook has an extensive global following of over 1.35 billion active users that frequent the popular social networking website on at least a monthly basis, and 864 million users who log-in on a daily basis as an average for the month of September 2014. Mobile platform access has increased 31% annually (Facebook.com, 2014) and Facebook is consistently ranked in the top two websites of Alexa's Global Traffic Rank, the benchmark for web-based metrics. According to Alexa, the average visitor to Facebook.com spends 30m:32s per day engaged with the site and views an average of 15.9 unique pages (other people's pages) per day (Alexa.com, 2014). This global level of social network popularity and its capability to repeatedly draw users back for extensive time commitments, is testament to social media's ability to act as a social catalyst for human connectedness.

As part of a Facebook user's social representation, relationship status is a key identifier of an individual's closest associations. With such popularity and integration of the social medium into user's lives, quite often the lines blur between whether the virtual world mirrors the happenings of the physical world in terms of relationships or if it is indeed vice-versa. To wit, Facebook relationship status has become contemporarily regarded as the primary indicator of one's official intimate relationship status, bringing the term "Facebook official" into popular terminology (Urban Dictionary, 2005). In acknowledgement of emerging interest in online social representation, research by Papp, Danielewicz & Cayemberg (2012), suggested that users intentionally portray themselves online in a way that is often reflective of a person's real-world characteristics. This indicates a "spillover" association between a user's online representational use of social media technology and their offline behaviours and relationships.

As recognition of this crossover, some online social media based communities have shown an adeptness to translate virtual communication into offline or real-world socialisation opportunities through highly popular websites like Meetup.com. Globally accessible websites such as these allow members to locate others with similar interests, such as politics, books, games, movies, health, pets, careers or hobbies, and using geo-location services, coordinates their connectivity. Meetup's stated mission is to "revitalize local community and help people around the world self-organize" and claims with a member base of over 15 million people in 196 countries, to receive more than 24 million event RSVPs per year (Meetup.com, 2014).

The effectiveness of New York City based Meetup.com, stands as testament to the Internet driven capacity to connect people, especially as was critical for many thousands of traumatised citizens in the wake of the tragic events of September 11, 2001. Meetup.com CEO Scott Heiferman stated that the manner in which New Yorkers came together, served as inspiration for using social media via the Internet to connect strangers within their local communities (CeliaSankar.com, 2011).

The 2012 U.S. Presidential election campaign led social media usage to new extremes. Both candidates, existing Democrat U.S. President Barack Obama and Republican candidate Mitt Romney fiercely gathered support with social media services like Facebook and Twitter, in what was frequently referred to as the “social media election”. A report focusing on social media use during the election campaign highlighted that as high as 45% of registered voters aged 18–29 had been directly encouraged to vote for a particular candidate from a family member or friend via a social media channel. Even more significantly, 34% of registered voters, actively encouraged others through social media to vote for a particular candidate, showing high levels of active reciprocal engagement as opposed to passive or non-contribution based interaction (Pew Research Centre, 2012).

As further validation of social media usage in the mobilization of political behaviours, the usage of a randomized control trial by Bond *et al.* (2012), in association with the 2010 US congressional elections, identified that messages delivered to 61 million Facebook users, showed social transmission effect on real-world voting behaviours could be larger than the effect of direct messaging. The study revealed that capitalising on the ability to reach such large national populations through an online social network meant that even small voting behaviour changes among millions of people, has the potential to yield significant impacts upon real-world political election outcomes.

Social media has repeatedly proven a powerful entity for galvanizing public action for a diverse range of humanistic endeavours. Disaster management messages, alerting Brisbane residents to life threatening risks in January 2011, were only transmitted through Queensland Police Facebook and Twitter channels, offering up to the minute information for those trapped in their homes by rising floodwaters. During what ultimately affected more than 90% of the state of Queensland and was considered as one of the worst natural disasters in the history of the state, the police and emergency services were critically able

to communicate with the people of Queensland through social media. Other benefits such as closer community engagement have also been a noted highlight of the police force's ongoing adoption of social media (Queensland Police Service, 2011).

Another humanitarian example is that of a 90-year-old Australian serviceman's loss of his veteran service medals that were of significant sentimental value to him. Where previously these medals could have potentially been permanently lost due to delays in police resources being allocated to locate them, the use of Facebook rapidly enabled the notification to "go viral" to over 60,000 members of the public, leading to the return of the service medals after just three hours (NineMSN.com.au, 2013).

"Web 2.0" social media networks that allow user generated content (UGC) have permeated the homes and lives of users from cross-sections of populations the world over. Uptake of social media for business purposes, as most recently outlined by the Australian Communications and Media Authority (ACMA) Communications Report 2011–12, increased from 10% in 2010 to 18% in 2011 and as of June 2012, 27% of Australian small and medium sized enterprises (SMEs) now engage with customers online. Facebook has consistently recorded the strongest supportive business user base, with 86% of all SMEs now using it for business purposes. Despite having appeal across a wide array of age ranges that includes, children, teenagers and 65+ age groups, social media is most popular among adults aged 25–49 who account for between 46% and 57% of those who use social networking websites (Australian Communications and Media Authority, 2013). This is particularly pertinent given that it is this social media-familiarised age-group, that concurrently makes up a significant proportion of the Australian workforce.

Principal reasons for individual social media use typically include: communication with existing friends, keeping up to date with other user's happenings and the ability to make new friends with similar interests. Equally, businesses utilise social media for similar functions, in communicating with known customers, and promoting opportunities for potential customers to establish communication with the business organisation (Sensis, 2014). Based upon a 77% uptake in having an organisational social media presence in 2014, large business (200+ employees) in Australia has recognised value in social media usage for communicating through these online channels. In a continuation of previous year trends, 2014's total percentage of SME's hosting a social media presence has now reached 37%

up 6% on 2013, and substantially increased from the 2011 inaugural reporting of 15% (Sensis, 2014).

The following table (table 4) lists some of the most common reasons businesses of various sizes use social media and the strengths of their business usage. Perhaps most interesting is the importance placed upon two-way communication with clients and customers across the varying sized organisational profiles, noting that SME social media usage may be comparatively attenuated by potential technical or human resource capability limitations.

Table 4: Common reasons for businesses to use social media (Sensis, 2014).

	Small business	Medium business	Large business
Invite online comments, ratings and reviews	46%	59%	53%
Use social media for two-way communication with clients and contacts	45%	55%	65%
Offer incentives to consumers via social media	28%	43%	41%

In May 2014, Sensis, who offer marketing services for Australian businesses, released their “2014 Yellow Social Media Report”. This report showed that responsibility and engagement with social media connected customer bases, shifts from the business owner/manager in small business, to a combination between business owner/manager and marketing department in medium businesses, to an almost entirely marketing driven approach in large enterprises (Sensis, 2014). This is significant as it represents business capacity to cater for organisational engagement with the wider online community.

Interestingly, while social media is often used by 60% of businesses to receive complaints, over 99% of organisations chose to respond to them, which demonstrates a recognition of social media being used to rapidly communicate either brand beneficial or harmful news in response to customer grievances. The report also noted that there was a high propensity for organisations of all sizes to regularly update their social media profiles, thereby seeking to maintain contact in developing informed customer-based communities (Sensis, 2014).

The establishment and effective value measurement of a socially-oriented online business presence, is one that many companies are now monitoring through various return on investment (ROI) measurement strategies. Up to 38% of large businesses measure their return on their social media investment, with 55% of all businesses monitoring responses

and 50% determining success based upon the number of social media likes, followers and channel subscribers. Acknowledging that smaller businesses have less capability to do this, the overarching consensus is that the majority of both small and medium sized organisations plan on spending similar budget resources in the next year, while 51% of large sized organisations plan on spending more on their social media budget within the next 12 months. In terms of business performance for those SMEs that engaged in social media, 38% recorded increased sales, 35% recorded increased profitability and 64% were more likely to be seeking to expand their business, compared to 39% of those without a social media presence (Sensis, 2014).

As has been represented, social media can offer business benefits for customer engagement and profitability margins, but the use of a social media mechanism to support internal workplace wellness programs is something currently of limited adoption by businesses. The use of online community social media to reinforce internal workplace wellbeing culture is a novel and interactive means through which this research proposes a potential for health behaviour change.

Lifestyle behaviour contributes significantly to human health status (Johansson & Sundquist, 1999). Through employee self-investment in workplace endorsed social networks, the capability for individuals to create their own health-oriented social support networks is, literally, at their fingertips. This aligns with government directives to encourage individuals to take more control of their own health leading to health improvements. In the government document, “Australia: The Healthiest Country by 2020” by the Preventative Health Taskforce (2009), acknowledgement is made that leadership-based action is long-overdue in Australia. It states that future action needs to be focused on whole-of-life strategies, enabling enduring opportunities that influence beneficial change. Social media employee, peer-based networks, therefore, could offer unique opportunities for exactly this requirement as the medium has already proven effective in promoting strong community associations in mainstream populations.

Although the introduction or usage of social media is unlikely to be viable in all workplaces due to the wide-ranging scope of workplace practices, business infrastructures, organisational objectives and cultural perspectives, social media for health within the workplace could play a pivotal role in encouraging and maintaining employee participation in health programs. An obvious criticism of social media usage for workplace wellness is

potential for abuse by employees either from a content (what they post) or a time (how much they read/post) perspective. As stated in the introduction chapter, it is not an objective of this research to address potential issues of excessive or abuse related use of social media within the workplace, but rather employees' perceived benefits of using social media for PA program enhancement. In introducing social media into a workplace, organisations may need to pre-define excessive employee limits for its use in regard to these potentials for abuse. As of May 2014, up to 73% of large organisations have well established social media policies outlining employee personal and business usage of their workplace social media access (Sensis, 2014).

The popularity of professionally focused, social media-based representation has now reached the significant milestone of having 300 million LinkedIn.com subscribed members in April 2014 (LinkedIn, 2014). Such engagement value by the global professional workforce supports further business connectivity between members, demonstrating that appropriately targeted social media platforms can create and unite a global village of professional job seekers, service providers and general networkers.

Largely owing to the “boundary-crossing” technology of social media, distinct division between private and public, the home environment and the workplace, discernible lines of public citizen/employee status have often become indistinct (Sánchez Abril, Levin, & Del Riego, 2012). Along with greater business policy support for social media in the Australian workplace, many employers now routinely screen prospective employees on globally accessible social media websites to ensure those they intend to employ will not bring their organisations into disrepute. Social media is often used by recruitment agencies or in-house human resource departments for employment talent acquisition through the posting of job availabilities, and for direct access to broad networks of social media savvy potential employees. Commensurately, job seekers are using social media channels to connect with organisations and attempt to summarise their CVs within Twitter's trademark 140 character limit or as six second videos for purposes of self-promotion. Twitter, a highly popular social media service targeted at disseminating regular user updates among “followers”, although not initially developed for employment purposes, is one way that social media has become integrated into workplace processes (Silverman & Weber, 2013). The existing use of social media in this and aforementioned ways, may well provide an effective segue into its usage as a socially enabling and physically enhancing workplace strategy for health.

2.6.4 Social media for health

Utilising the power of social media is not a new approach in offering health and wellness solutions to user groups, as demonstrated by the use of “Step Matron”, a Facebook application utilised to socially support increased pedometer based step counts within a UK hospital environment. This study among a small sample of ten nursing staff led to a significant increase in step activity as a result of a socially enabled cohort, thereby highlighting the potential of social media to support positive PA program outcomes (Foster, Lineham, & Lawson, 2010).

Technology, in acting as an enabler for the social network phenomenon of peer based influence has far reaching health communication implications for health risks and their mitigation. Social networks (electronic or otherwise) have not only direct but also further removed association-based impacts that can influence others within social networks, either positively or negatively (Christakis & Fowler, 2007). Christakis and Fowler suggest that the relationships we form and maintain within these diverse multilayered social networks can influence our behavioural traits and health status. A review of 12,067 people within the Framingham Heart Study from 1971 to 2003 isolated obesity outcomes among a 32-year longitudinally tracked cohort. The study found that obesity prevalence was increased in those people whose social networks reinforced the health behavioural traits of obesity. It was suggested that this social network phenomenon occurs because an individual’s own health risk is based upon social network driven influences of peers, and therefore to a degree, so is their health (Christakis & Fowler, 2007).

With recognition that collateral health consequences may be transferred through social network driven influences, comes an understanding that the potential for both positive and negative implications also resides within such network phenomena. For example, treating parents with depression may increase the proclivity of those parents to vaccinate their children thereby decreasing their disease risk, thus improving family health. Alternatively if a social norm of alcoholism is established among peers, the harder it then becomes for a socially indentured individual to break social convention and drink more moderately or abstain altogether. Christakis states that network phenomena have already seen increased attention associated with those in engineering, biology and sociology, but advocates that such social peer influence should be considered in health interventions and medical clinical trial contexts. The ability to explore such effects, would integrate a research participant’s

information with that of their social associations (relatives, friends, neighbours and co-workers) to better understand social influence and health outcomes (Christakis, 2004).

In a recent systematic review and meta-analysis of social media usage for diet and exercise behavioural enhancement, 22 RCT studies predominantly consisting of middle-aged Caucasian women, showed no significantly reportable differences with social media usage (Williams et al., 2014). While the overarching objective of these studies was to effect healthy behaviour change, only 12 RCTs used comparison groups featuring an intervention without social media. Intervention participants were voluntarily recruited from the general population and diet/exercise-based programs ranged between three months and two years duration. Social media entities varied greatly and included non-interactive information-based blogs, discussion boards and two studies incorporating mainstream Facebook/Twitter services. Despite limited significant benefit in social media enabled groups, the authors noted that poor reporting within the reviewed studies may have contributed to the outcomes. Sustainable participant engagement was discussed as a common limitation of numerous studies, pointing to the fact that simply integrating a social media component with an intervention will not necessarily invoke social engagement translating to enhanced health outcomes and adherence. In identifying these current limitations of social media usage as a healthcare intervention support system, this clear research gap suggests that applied social media research is still in its infancy.

In June 2013, Dr Megan Lim from the Burnet Institute was a successful recipient of a Preventive Health Research Fellowship based upon her work focussing on using social media to reduce the impact of harmful alcohol consumption in young Australians (Australian National Preventive Health Agency, 2013). Such investment reinforces the Australian Government's position in investigating social media usage as a mechanism to address health issues as a product of social influence. While the realisation that utilising social media for targeting health related issues is not a new approach, it is an objective of this research to gain employee perspectives of social media usage for addressing sedentary behaviour in ubiquitous desk-bound office populations.

2.7 Theoretical Framework

The use of an appropriate theoretical framework in research guides and exposes knowledge associated with the topic under investigation. Such frameworks assist the research process through developing structure for a series of interrelated concepts that aids in identifying important themes that pose influence upon health behaviour. The development of a variety of health promotional theories and models have been drawn from behavioural and social sciences, which can be used to investigate a wide range of health topics, and guide planning, implementation and evaluation stages (Nutbeam, Harris, & Wise, 2010).

While a number of theories and models offer a focus on explaining behavioural change within communities, organisations or in using communication strategies for promoting health, a few such as the Health Belief Model (HBM), the Theory of Reasoned Action (TRA) / Theory of Planned Behaviour (TPB), the Transtheoretical (stages of change) model and Social cognitive theory, place their focus on the individual. Owing to the traditional application of the HBM for screening and immunisation purposes, as well as the transtheoretical model's stages of change driven process in referencing an individual's progress state within an intervention that may not be equally applicability to all participants (Nutbeam et al., 2010), both were ruled out. Likewise, social cognitive theory which represents relationships between individuals in contextual settings such as workplaces and takes into account peer influences, (Nutbeam et al., 2010) was considered to be less interventionally applicable than the TPB.

A commonly applied theoretical framework for studying intrinsic factors influencing human health behaviour, the Theory of Planned Behaviour (TPB), is a refinement of Ajzen & Fishbein's Theory of Reasoned Action (TRA), which sought to identify attitudes and beliefs associated with intention and behavioural practices. The convergence of such attitudes and beliefs with a component of Perceived Behavioural Control (PBC) enhanced the theoretical capability to include non-volitional behaviours. This individual's control over the performance of the behaviour is highly influential in understanding and predicting participation in health contributing practices, such as involvement in workplace wellness programs. The TPB emphasises behavioural intention through the association that individuals tend to engage in behaviours they intend to perform. Variability of perceived behavioural control acts to increase likelihood where recognisable control is present or conversely reduced control, acts to inhibit behavioural uptake (Conner & Armitage, 1998).

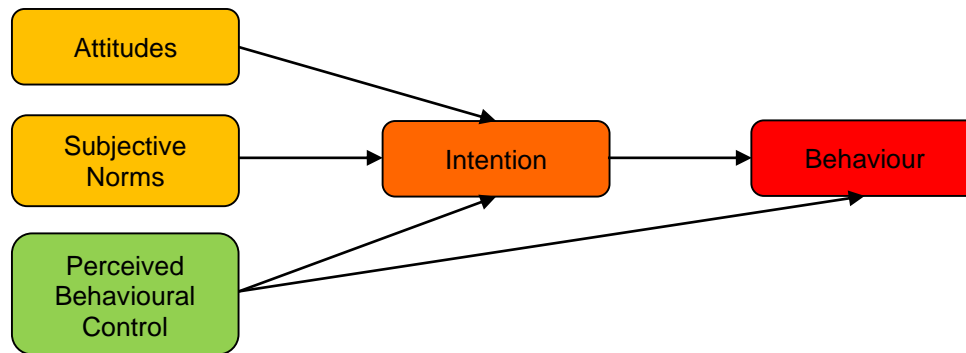


Figure 7: The Theory of Planned Behaviour (TPB)

In relation to this research, the TPB offers an appropriate theoretical model for predicting behavioural responses in addressing the research question of potential for social media to enhance uptake of workplace wellness programs and thereby reduce harmful sedentary behaviour. As illustrated below (Figure 8) in a comparative representation of the TPB, the key attitudes of 1) exercise offering a health benefit and 2) sedentary behaviour posing a risk to health, conceptually represent outcomes-based behavioural beliefs. The notion of 3) social media offering peer support is a subjective norm based in the individual's perception of other associates of influence and their viewpoint for engagement. Perceived behavioural control as theoretically distinct from self-efficacy has strong utilisation support as outlined by Conner and Armitage (1998), the studies of which cover a diverse array of behaviours, (e.g., food choice, exercise and academic achievement). Therefore, perception of behavioural control for engaging in exercise, allows for individual capability recognition which employees can use in the intent or behavioural adoption of a 4) workplace wellness program in which they can self-define participation. Another PBC variable is one of enablement through 5) employer endorsement, thereby facilitating prospective participation.

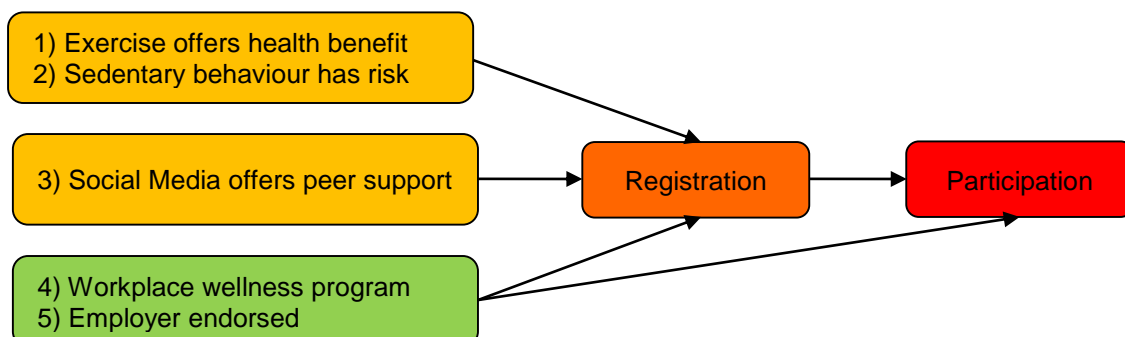


Figure 8: Conceptualisation of key theoretical variables as informed by the TPB.

The development of such a conceptual framework allows for the operation of the theory incorporating the researcher's standpoint on the research proposition and allows for

adaptation of the theoretical framework to the interrelated variables. Conceptual frameworks also assist in informing development of appropriate research methods, through which to answer the research questions (Khan, n.d.). Being that this research seeks to observe behaviours among office-based employees; and owing to the above noted dearth of qualitative studies, such an approach has been taken in finding reasoning behind the use of social media to support worker wellness programs.

2.8 Conclusion: Literature Review

The published literature supporting the need to address an increasingly sedentary employee workforce is clear. Widespread recognition of the sedentary health risk that modern desk-based employment entails, is a critical step in countering the effects of reduced PA within the office work environment. According to the latest systematic review done on OPA interventions by To *et al.*, (2013), those programs adopting pedometer usage, internet resources and engagement strategies targeted at both environmental (within the workplace) and social (among co-workers) levels, were found to have distinctly superior outcomes.

As already outlined within the literature review, despite wide societal adoption of social media for personal use, as well as business adoption of the electronic medium for customer communication, there has been limited usage of social media mechanisms to promote the health and wellness message to employee workforces. The undertaking of this research therefore seeks to identify employee perspectives of social media usage in positively influencing office-based workers during workplace team-based exercise.

CHAPTER 3: Organisational ethnography (Publication 1)

*The following publication is currently under review at the
Journal of Organizational Ethnography (JOE)*

<http://www.emeraldgrouppublishing.com/products/journals/journals.htm?id=joe>

Transitioning from health insurer to “Health Partner”

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Abstract

Purpose – This paper seeks to offer insight and interpretation of ethnographic data on an organisation in the early stages of transitioning from a long-held role as a health insurer to a more preventatively health focussed and community engaged “Health Partner” for its members, employees and the wider Western Australian community.

Design/methodology/approach – Data for this paper was collected primarily via participant observation and reviews of policies, administrative communications and other corporate documents undertaken during the twenty four months in which the researcher was embedded within the organisation beginning the transition to its new role.

Findings – As part of its transition process, the organisation introduced new strategies for communicating health messages and enabling both its members and employees to adopt, embrace and demonstrate healthier lifestyles. First-hand observation of behaviour within the workplace and at community engagement events sponsored by the organisation confirmed that the overwhelming majority of employees shared their organisation’s vision of providing products and services that fostered healthier lifestyles.

Originality/value – The primary purpose of this paper was to investigate the early stages of an organisational transitioning from a narrow and long-held role as a health insurer to a more expansive and preventatively health focussed role as a “Health Partner” from an ethnographic perspective.

Keywords: Organisational change, health insurer, health partner, organisational values, employee engagement.

Paper type: Research paper

This paper seeks to make a contribution to knowledge in relation to the business migration of HBF Health Ltd from health insurer agency to “Health Partner” in aligning member needs with current and future health product and service provision.

Research methodology

Development of this paper has been made possible as a result of industry-partner engagement, allowing for an ethnographic methodological approach as a participant-observer in not seeking either visibility or invisibility (Geertz, 1973), during a significant period of business direction change. In order to document a thick description of employee social interactions and gain meaningful understanding of natural employee organisational engagement, the researcher engaged in typical office duties within the HBF’s Perth-based head office and participated within a wide range of organisationally engaging activities.

A variety of data sources were used as McCall and Simmons (1969) described that participant-observation so consist. Access to internal organisational documents such as the HBF Employee Code of Conduct, the HBF Community Spirit Program Policy, the HBF Safety, Health and Wellbeing Culture Strategy, the HBF’s Wellbeing Culture and the pivotal “From Health Insurer to Health Partner – Our five year plan to transform HBF” document, gave the researcher a rich source of organisational records from which to report.

It is the use of this ethnographic material in the form of corporately approved documents as well as access to the organisation’s intranet which provided an effective source of “live” content that complimented field notes taken by the researcher. This multifaceted data collection approach adds credibility to the environmental observations and discussions based upon these sources, which were contextually assessed for relevance.

Introduction

HBF Health Ltd (HBF) is a non-profit organisation established in 1941 to provide West Australians with insurance to cover the cost of their hospital treatments. Its member base of over 900,000 people (HBF Health Ltd, 2014i) makes it the largest health insurer in Western Australia, a state with a population of some 2.55 million (Australian Bureau of

Statistics, 2014a). As one of the most iconic brands in Western Australia, HBF has extensive associations with a wide variety of government, non-government, not-for-profit and community-based organisations.

Since 1941, HBF has expanded its capacity to include other product ranges including: home, car and travel insurance as well as financial planning services (HBF Health Ltd, 2014c), but its decision in 2012 to re-invent itself as a “Health Partner” for its members constituted a significant change of focus and a recognition of increasing expenses aligned with previous year on year health insurance premium increases (Department of Health, 2014a). With hospital treatment benefits increasing by 8.8% and total benefits increasing by 9.6% over a 12 month period (Private Healthcare Australia, 2014), HBF chose to make significant business changes.

Making its migration to a Health Partner manifest

HBF’s decision to become a Health Partner rather than continue in its existing role as a health insurance provider was first made public in a 2012 interview with HBF’s Managing Director, Mr Rob Bransby. Stating that significant health insurance premium increases were likely owing to expected rises in people needing health treatments and the increasing health care costs linked to alcohol, obesity and physical inactivity, he expressed a need for more people to take greater responsibility for their own health (Herald Sun, 2012).

"We are no longer content to just be a payer of people's bills," Mr Bransby said. "We will continue to do that, but we want to play a more active part in keeping our members well through encouraging them to be more active, eat healthier, drink responsibly and not to smoke." It is hoped that by encouraging and empowering members, employees and those of the wider community to reduce the likelihood of lifestyle related diseases, through increased take up of preventative health strategies, HBF can more effectively utilise projected member treatment savings for further proactive health and engagement services.

To this end, HBF embarked on an ambitious 5-year (2012–17) strategic plan to transform itself into a health partner creating a “unique community where members are renowned for being healthier, happier people” (HBF Health Ltd, 2014d). Its transition will be considered complete when by 2017 it has implemented the new business initiatives and achieved the projected outcomes listed below in Table 1.

Table 1: HBF's five year (2012–17) Health Partner Strategic Plan

Initiative	2017 Outcomes - Members	2017 Outcomes - Employees
Grow the business steadily	Increase Western Australian market share, Confirmation that HBF members feel “healthier” and “happier”, Achievement of industry-leading HBF member loyalty scores,	Employees are engaged and aligned,
Evolve the brand	Reposition HBF as a Health Partner, with high market awareness of the change,	
Create a new “Value Proposition”	Positive take-up of services and offers,	
Ensure ongoing HBF Innovation	New procedural, product and service innovations taken up between 2012–17,	Staff embracing innovation, which is now a key element of the culture
Aligned and Engaged Culture		Employees are measurably more engaged and aligned with goals and strategies, Employees are supported to seek ways to innovate, Employees are passionate and committed to helping members lead healthier and happier lives, Employees readily adopt new technologies to enhance service delivery and efficiency,
Develop a new HBF Web Portal	Providing regular health risk assessments from members, Healthier and happier members through provision of information and programs,	
Develop a Complex Care Service	Better management of vulnerable members, Decreased hospital admissions, Higher member satisfaction, Position HBF as a health partner rather than a funder,	
Develop a HBF Wellness Strategy	HBF members understand the concept of wellness, HBF members carry out regular personal health risk assessments, HBF members engage in healthy physical activity (including at HBF events), HBF members improve their nutrition,	
Improve first-line Health and Medical Services	Improved member access to quality primary care services, whenever needed,	
Enhance HBF's Digital Activities	The “HBF App” captures member health data, provides information and advice,	

(HBF Health Ltd, 2012a)

Health partner centred strategic planning has led to the identification and development of a range of health and wellbeing products and services tailored for the wide ranging needs of its members. These product and support level categorisations include: fit and well, at risk, chronic disease, and complex care. In this context, HBF's acquisition of a chain of WA pharmacies in 2013 demonstrated its intentions to increase HBF's community engagement with both current and potential future members (HBF Health Ltd, 2013d).

As an outward sign of organisational health partner migration, a complete corporate rebrand was released to HBF members and the general public on the 25th of September, 2013. This signified the intentional shift to a more proactive model of member health care provision in association with existing services catering for members with ongoing health cost concerns. As well as logo and service branch location updates, a new advertising campaign delivered through conventional media as well as online social media using the tag line "a healthy body can do amazing things", showcased images and video footage of people doing physically demanding activities from around the world. This entire member-encompassing approach is also reinforced through the use of the new organisational marketing slogan "every body benefits" [note the separation of "everybody"] as displayed under the corporate logo (HBF Health Ltd, 2013a). The objective behind this was to divert from the existing "rational" advertising approach of product features and benefits, and instead evoke a sense of positive energy among its members through the healthy activity opportunities HBF offers.

HBF social media usage

Social media is another mechanism through which HBF communicates to its members and the larger Western Australian community. In addition to its website pages listing organisationally relevant content for members, the company has a team of employees dedicated to maintaining an active social media presence on internet-based platforms such as Facebook, Twitter, Instagram and YouTube. HBF's most popular social media platform is its Facebook page which is divided into a Community Health Advocacy Group with discussion, photo and video posting capability and healthy living links, while its events page promotes events organised or sponsored events by HBF (HBF Health Ltd, 2014e). As evident by HBF's establishment of multiple social media communication channels, there has been clear recognition that this technological medium offers great capability for supporting their business products as well as engaging with members and the larger West Australian community whom they seek to positively influence.

Organisational Structure

Like most large corporate entities, HBF has a highly complex business structure that consists of employees assigned to a wide range of business function driven departments. HBF employs approximately 800 staff based within a nine storey building in the Perth Central Business District (CBD) and a further 150 employees located among the 19 retail branches across the geographically large state of Western Australia. “HBF House” serves as the organisation’s administrative hub whose office environment predominantly features open plan desk-based workstations and private meeting rooms on most levels. A small gymnasium featuring basic exercise equipment, complete with showers and change rooms are available for all HBF employees to utilise on level eight of the building. All levels of the building are connected by three elevators and two stairwells, one at each end of the building. Following a building foyer redevelopment in mid-2013, the ground floor now boasts an in-house café that serves a variety of healthy food options, provides an internal business meeting catering service and manages a seated area for staff and business guests to enjoy.

Key Influencers

In respect to hierarchical directive and the values imparted to employees, two HBF “People Leaders” stand out as exemplifying the company health and wellbeing message. These people include Managing Director Mr Rob Bransby and Manager of Health, Safety and Wellbeing, Mr Jon Haines who both not only seek to deliver a health and wellbeing message but to model positive health and lifestyle behaviours to others.

The current Vice President of Private Healthcare Australia (PHA) (HBF Health Ltd, 2014a), Mr Rob Bransby, HBF’s Managing Director since 2005, and the leader of HBF’s transition to Health Partner, has focussed on proactively engaging with members, employees and the community. He believes it is important to be an open communicator as the boss and to “*Get out there and share the journey because people (of the organisation) want to know where they’re heading and why*” (DeCeglie, 2012). This is important as it highlights the understanding from senior HBF management that communication is recognised as a key mechanism through which to establish team-oriented organisational direction.

When asked in an interview about his career pathway if he hypothetically wasn’t “at the helm of HBF”, Mr Bransby stated, “*I feel so fortunate to be in a job that brings together some of my key passions - Western Australia, its people and health. And now, we’re about to embark on a challenging and exciting journey to achieve our vision of creating a unique community where members are renowned for being healthier and happier – and there’s a lot to be done*

there” (Perth Now, 2012). It is the managing director’s own passion that integrates well with the company vision of creating a “unique community where our members are renowned for being healthier, happier people”.

In 2012, following the announcement of the migration to health partner, Mr Bransby used his HBF intranet social media blog to announce to HBF employees that he had met with the Western Australian Minister for Health, Dr Kim Hames who strongly supported HBF’s future direction in improving the health and happiness of the community. He blogged about his political meeting and posted, *“The journey has begun and I am even more excited than ever about creating a community of healthy, happy people. Bring on 2013”* (Rob Bransby, 2012). This use of modern communication tools such as social media is another way by which HBF’s Managing Director has shown leadership in posting regular “journey” communications as well as encouraging others within the company to regularly engage with himself by reciprocally posting their own ideas through this forum.

In a continuing trend of assisting those in the community who may be struggling for even the most basic of needs such as housing, Mr Bransby attended the 2013 Vinnies CEO Sleepout. This now annual event saw 108 West Australian corporate CEOs spend a cold night in June at the WACA and raised \$1.1 million dollars to support Vinnies homeless services in the process (St Vincent de Paul Society, 2014). Utilising the capacity to communicate its corporate support for the event, HBF used its corporate Instagram social media account to show the Managing Director’s participation in representing his organisation at the event supporting WA’s homeless (HBF Health Ltd, 2013b).

Despite the responsibility of leading such an organisation and the undoubted managerial pressures that brings, Mr Bransby still finds time to model healthy behaviour and runs every morning at 5am, having done so for the last 30 years (DeCeglie, 2012). This leading by example ensures that the management health message is not received by employees as without substance and that personal health investment should be a priority for even the busiest employees.

The second HBF employee who continues to play a critical role in shaping the organisational culture is Manager of Health, Safety and Wellbeing, Mr Jon Haines. One of the longest serving employees in the company, Mr Haines is responsible for the planning and execution of all workplace safety, health and wellness services for employees across the entire

company. In this role (or similar) that he has held for over 23 years, Mr Haines like the managing director, has long recognised the importance of demonstrating positive health behaviours among those to whom he promotes workplace health program participation. Mr Haines coordinates a number of safety, health and wellbeing roles that answer directly to him, which include a Health and Safety Advisor, an Injury Management Coordinator and a Wellbeing Coordinator.

In concert with these fellow professional employees, Mr Haines coordinates a number of employee workplace programs for health, professional development, safety and first aid knowledge and social value activities that form a large part of the cultural profile for HBF employees. As well as demonstrating a deep personal commitment to his role, he uses his buoyant personality to inspire passion for both internal company and external community enrichment through a number of philanthropic strategies. For his long-term role in this, he was recognised in 2009 by United Way (WA) as a Corporate Champion for his efforts in leading and motivating others in philanthropic engagement within the community (United Way (WA), 2009).

A regular volunteer for many HBF community engagement events, Mr Haines' athletic actions in competing in a number of local (such as the annual HBF Rottneest Channel Swim), state and international open water swimming events, clearly displays the traits of an individual well placed to inspire a positive health and wellbeing culture within the organisation.

Employee focus

Based upon researcher observation through work-integrated participation within the human resources department of HBF, it soon became apparent that advertised employment positions were extremely well contested with hundreds of applications for even entry level positions, most likely owing to public perception that HBF is a top employer. In creating such a reputation, HBF realises that in order to authentically advocate healthier lifestyles among their members and those of the wider community, firstly they must model healthy lifestyle behaviours among their own employees. Through casual workplace discussion with numerous managers (or in HBF terms "people leaders") about the organisation's new directions, it became clear that the ideal employee was not someone who simply fulfilled a job task, but an individual referred to as a "good fit" with the company values and emerging health partner direction.

For commencing employees, HBF has a formalised employee induction process that outlines organisational values, instruction for safe workplace practice and introduction to the culture of the organisation as a whole. Part of the mandatory induction is facilitated through a modular online workplace policy compliance training program, and annual renewal is required for all employees. The modules cover areas including: privacy laws, the competition and consumer act, equal employment opportunity, ethics and conduct, safety and security, sexual harassment prevention, social media usage and workplace health and safety. These modules are used to both teach and test employee understanding of HBF's employment expectations based upon applicable laws and organisational policies. This certification process serves to provide clearly defined workplace behavioural expectations of HBF employees by promoting both a safe and employee valuing organisational culture. Owing to the research directed necessity for workplace integration, the researcher also completed these online modules, which were found to be both comprehensive and organisationally insightful.

From November 2012, all HBF employees were additionally required to sign a new HBF employee code of conduct document which outlines the expectations placed upon employees in addition to HBF's organisational values of:

- Caring
- Being open and honest
- Looking for better ways and
- Having community spirit.

These organisational values are further linked to workplace translatable "Hallmark Values" which offer employees a guideline by which to function to maintain a positive personal and organisational engagement culture (HBF Health Ltd, 2012b). In January 2014, the community spirit value evolved into "We are committed to health and wellbeing" underlining the preventative approach in moving to that of a health partnering role.

HBF as a business has a rich organisational employee culture that serves as a cornerstone for member, allied business and community engagements. As a not-for-profit-organisation, HBF's activities can best be described as either internal (for employee benefit) or external (for member or community benefit). It is to be acknowledged that many activities or programs have a crossover of benefits enabling employees to gain multiple benefits through

the nature of their participation, such as with many of the philanthropic events that HBF employees attend (Haines, 2014). HBF's organisational health and wellbeing culture as outlined in Figure 1 below, encompasses six areas that form a holistic employee approach to engaging with the workforce and by extension, fostering a health partner driven ethos among HBF members and the wider community.

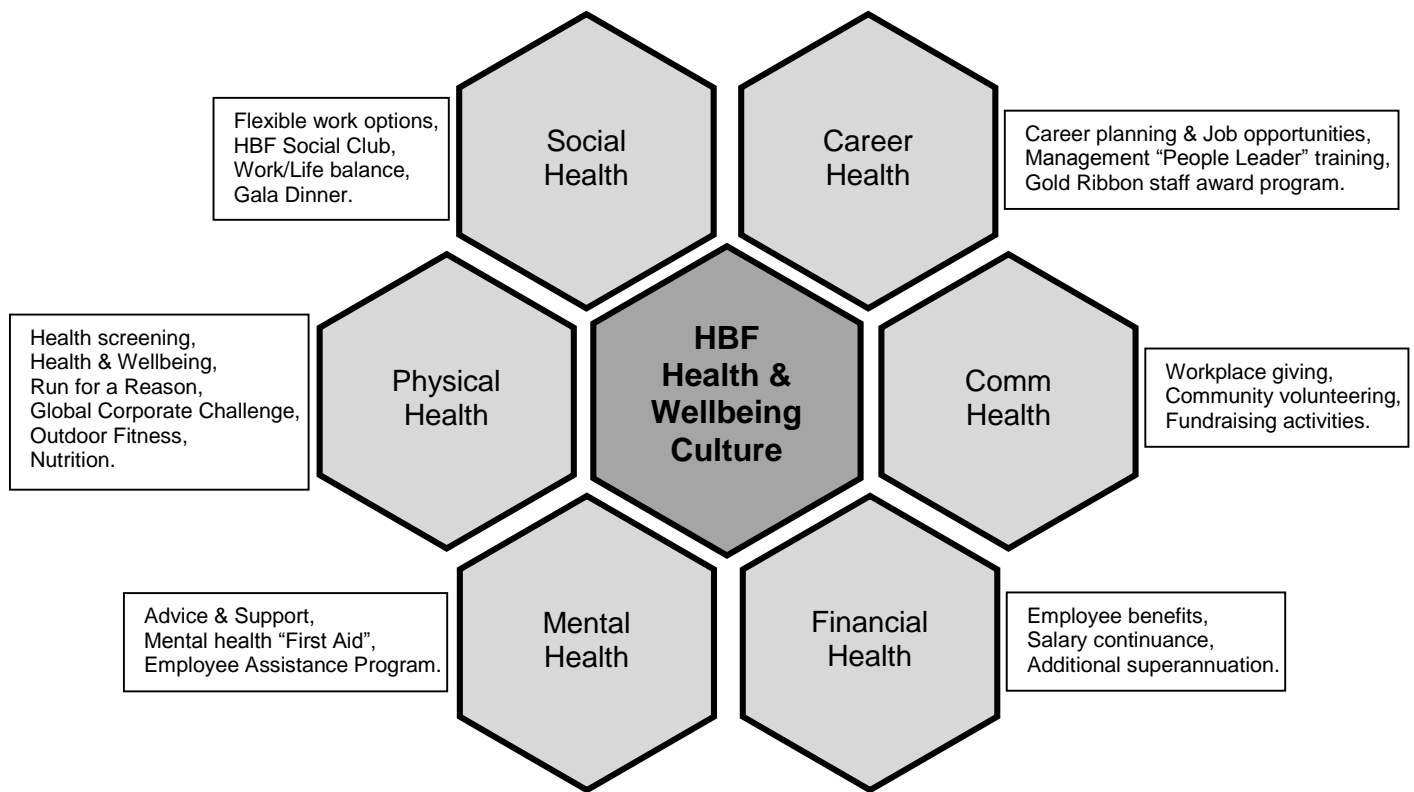


Figure 1: HBF's employee health and wellbeing culture areas (HBF Health Ltd, 2014f)

Much of the HBF's health and wellbeing activities are communicated through the organisation's intranet website known as "The Pulse" which is accessible as the browser homepage on all employee workplace computers. From diverse departmental casual discussions with employees, the researcher uncovered that a morning viewing of the company intranet homepage was in fact used as a "daily reminder" about what was happening within different departments and across the wider organisation as a whole. "The Pulse" it appeared, did live up to its name.

Under the team-based leadership of Mr Haines, the HBF Employee Wellness Program consists of a wide variety of health focussed programs targeted at enabling participants to live healthier and happier lives both as employees and individuals. The following list of organisationally endorsed employee wellness program activities outlines a number of

healthy lifestyle fostering activities offered to employees either as pre-scheduled or in an ongoing format throughout the year.

Global Corporate Challenge

The Global Corporate Challenge (GCC) is an employee wellness program designed to foster increased physical activity among corporate employees through pedometer based daily step counts. The program is based upon the World Health Organization's (WHO) recommendation in achieving 10,000 steps per day as a convenient physical activity target for remaining sufficiently active in reducing personal risk of lifestyle related disease (Get The World Moving Ltd, 2013c). Employees compete as individuals and teams within their corporate organisation via stage based competitions and mini-challenges. In 2013, having already participated in the GCC for three years, HBF has seen first-hand the value of facilitating employee physical activity promoting programs through recognisable health and social benefits to its employees and organisational culture. As an organisation seeking to promote health and wellbeing in both its members as well as in the community as a whole, programs such as the GCC align well with the corporate strategic direction to effect positive health behaviours among employees. To this end, HBF's significant financial contribution to their employee's GCC registration costs demonstrates a strong commitment to the value of employee health.

The GCC was promoted among employees via the workplace intranet and other highly visible health promotion mechanisms such as posters, mentioned at other workplace presentation gatherings as well as directly to employee email accounts in the months preceding program registration. With a workplace environment successfully adorned with GCC promotional material, Mr Jon Haines as HBF's Manager for Health, Safety and Wellbeing registered 455 employees from a diverse range of organisational departments that formed 65 teams in the 16 week 2013 GCC workplace wellness program. During the May-September period of the 2013 GCC, the researcher was able to actively join-in on a weekly basis with a group of 10 step-seeking employees who pre-organised to meet in the foyer of HBF House at 11am on Tuesdays to make use of the building's eight flights of stairs. Walking up the stairs from the ground floor, the building lifts were used to reach the ground floor allowing the participants to catch their breath before doing the stairs up to four times or a total of 32 flights of stairs. Employee pair-based conversations were held during the exertion, and the researcher's conversations involved making new as well as enhancing existing relationships, and peer encouragement was a common feature shared vocally

among the group. As identified by an additional as yet unpublished study by the author, a small proportion of HBF employees reportedly found value in utilising social media to announce their GCC participation and a majority expressed interest in utilising a workplace specific social media mechanism through which to coordinate GCC team-based activities. End of GCC event celebrations were held to recognise individual, team and company achievements in becoming more physically active.

HBF Angels

Approximately 20 employee volunteers from across the entire organisation form the workplace-based community outreach committee known as the “HBF Angels”. This passionate group is responsible for coordinating much of the employee driven philanthropic endeavours throughout the year, which includes: fundraising informal dress days, emergency appeals, community volunteering and the employee Workplace Giving Program. As was anecdotally reported to the researcher, it can be argued that self-satisfaction and enjoyment felt on the part of the HBF employee participants, can be equal to or greater than that of the recipients.

Educational Sessions

HBF also coordinates a number of pre-scheduled “Lunch and Learn” sessions that employees can attend within HBF House to learn about a wide array of beneficial topics covering: health, nutrition, mental wellbeing, finance, career planning, workplace giving, community volunteering and others, during their lunchtime break. The researcher attended a number of these in-house sessions and found registering employees attentive and keen to learn about topics of their own interest.

HBF Gala Dinner

The annual HBF Gala Dinner is held in November each year and is an organisational highlight providing opportunity for employees to socialise and recapture the enjoyment of the past year’s events. Each dinner has a different theme and attendances of over 1000 employees and their invited guests are common. The 2013 HBF Gala Dinner was held at the Crown Perth and was themed “Oz” incorporating the company’s health partner journey along the yellow brick road.

HBF Gold Ribbon Award

HBF as a company regularly recognises its employees through quarterly presented “Gold Ribbon Awards” by the Managing Director, Mr Rob Bransby. The awards are presented to those who have demonstrated exceptional contribution to both their employment role and

their fellow employees. As only 10–15 award certificates are presented once every three months, competition is tough among the 1,000 employees, and awardees are corporately recognised which further builds positive workplace culture. An overall annual HBF Gold Ribbon Award winner is announced at the company's annual Gala Dinner each year.

HBF Workplace Giving Program

HBF inspires a strong community benefit ethic amongst its employees and this has consistently been echoed through generous employee contributions to the HBF Workplace Giving Program. Coordinated by the HBF Angels, this program contributes over \$100,000 annually to West Australian charities with half from employees and the other half via HBF's employee fundraising activities. With the majority of financial support coming through the philanthropic payroll deductions of HBF employees, since its inception in 1996 over \$680,000 has been contributed by employees to worthy organisations, as a way to give back to the community of Western Australia (HBF Health Ltd, 2014b). Charity selection is based upon initial HBF Angel shortlisting before seeking management approval and workforce final selection. Primary funding criteria is based on firstly ensuring employee workplace giving results in the greatest possible impact, and secondly that employee volunteering opportunity exists within the charity as this contributes equally valuable community engagement prospects. In attending a number of workplace giving events, the researcher found that substantial employee turn-out demonstrated a widespread workforce understanding that their support engagement was far greater than simply financial.

In 2013, 313 HBF employees participated in workplace giving based philanthropy with organisations: Kids Camps Inc in assisting children with disabilities, Orana House in supporting a protective behaviours program, and Riding for the Disabled Association by enabling disabled children opportunities to interact with horses as part of their care.

HBF Community Volunteering Days

Twice a year, HBF employees are given the opportunity to participate in their own volunteering during work hours in place of their usual employment work tasks. Employees are paid their regular wage for their volunteer days, so this external community benefitting action represents a financial cost to the organisation while simultaneously boosting workplace culture through both employee and HBF corporate investment (HBF Health Ltd, 2013e).

One annual event that is extremely popular among HBF employees is tree planting, which since 2008 has given HBF's employees the opportunity to demonstrate community spirit through volunteering whilst also making a positive difference to the environment. Since its inauguration, over 50,000 trees have been planted by HBF employees, and on Friday the 20th of September 2013, a group of 32 HBF employees (including the researcher) planted approximately 10,000 more tree saplings at a privately owned farm in Baskerville, Western Australia. Despite it raining for some of the day, employee social cohesion was enhanced by HBF management's inviting of a cellist who played in the paddock while employees enjoyed each other's company in the tranquil countryside and planted trees. Lunchtime offerings included on-site gourmet wood fired pizza and a fully catered array of healthy and filling foods to keep energy levels maintained before an end of day visit by professionals with non-venomous live specimens from a local reptile park which were able to be handled under supervision. Not only did this provide an educational experience conclusion to the community spirit day but, based upon the researcher's post event conversations, created further workforce attendance interest in future volunteering events.

From an outsider's perspective, one would think the workplace culture of HBF as an emerging health partner organisation, would be full of fit and healthy individuals all leading active lifestyles which would seamlessly flow into the workplace on a sustained daily basis. This unfortunately during the September 2012 – August 2014 period of engagement was identified through researcher participant observation as not the case with many employee work-styles being analogous to other office-type employment environments featuring predominantly sedentary desk-bound employees, most notably within the member call centre. Management awareness of the harmful health risks associated with prolonged workplace sitting, led to the Managing Director's social media blog announcement on March 14th, 2014 stating "*We have just agreed to purchase you all stand up/sit down desks for our new King's Square office, read the following link to understand why. Reason why sitting is killing you. Let me know your thoughts..... Roll on King's Square.*" (HBF Health Ltd, 2014h). Such direct senior management communication and openness for workplace health discussion was seen as positive by both the researcher and a number of the employee base who posted positive responsive comments to the managing director's intranet blog.

As a further by-product of individual health behaviours revealed by researcher workplace integration, a number of cigarette smokers wearing HBF uniforms were regularly observed in the street outside the organisation's building. Casual discussion with management

identified that this was a recognisable problem in wearing company branded clothing and smoking, which contradicts the health and wellbeing message of HBF, however in the public environment of the street, little can be done to reduce this other than to offer free access to employee Quit smoking programs and request smoking not occur while in uniform.

Member and community focussed activities

HBF Outdoor Fitness

In an effort to foster healthier members within the wider West Australian community, the “HBF Outdoor Fitness” 2013 program is an after work hours physical activity program that is free for HBF members and inexpensive for those who aren’t but wish to participate. Targeted at all levels, qualified exercise physiologists or personal trainers offer free group-based exercise instruction at up to 18 different geographic locations across the state. Run from September to March over the summer months, certain locations additionally cater for parents to exercise with their children as young as four years of age and in doing so, model healthy lifestyle behaviours while providing them with safe and enjoyable physical activity related benefit (Business News, 2013).

Corporate organisations are also increasingly taking advantage of the free professional outdoor training for their corporate employees’ preparation for team involvement in the late May HBF Run for a Reason (Business News, 2013). Backed by the Heart Foundation WA and Cancer Council of WA’s “LiveLighter” public health campaign to encourage healthy eating, increased physical activity and healthy weight maintenance (Heart Foundation WA and Cancer Council of WA, 2014), HBF’s Outdoor Fitness program has repeatedly found instructors being requested to continue when the sessions finish in March (Business News, 2013).

HBF Run for a Reason

HBF’s Run for a Reason is the organisation’s premier physical activity community engagement event for the year. The annual event is open to Western Australian individual, family, charity or corporate entrants and invites participants of all ages to walk or run either of the predefined 4km or 12km courses available. With a community engagement event focussing on physical activity participation rather than finishing times, although that is fiercely competitive, its growing popularity enthuses considerable corporate competition in seeing who can field the greatest number of company participants or raise the most money for local charities (Business News, 2013). The 2013 HBF Run for a Reason held on Sunday the 27th of May, attracted 29,517 participants and saw more than \$1.3 million raised for

charity. The event requires a large volunteer coordination presence on the day and out of approximately 500 volunteers, almost 350 were HBF employees themselves, with another large number of HBF employees running as a corporate team in the event (Business News, 2013).

In May, prior to HBF's community engaging Run for a Reason and the workplace-based GCC, a large number of posters for both activities were displayed around the office environment as a reminder that both events were coming. As the GCC started before the Run for a Reason, participant involvement in the run counted towards employee GCC step based totals and this was considered by many as a motivating factor for additional training and physical activity.



Figure 2: HBF 2013 Run For A Reason – Official start volunteer's photo

The researcher was a 2013 HBF Run for a Reason employee volunteer and despite the 5:45am briefing arrival time in the Perth CBD, participation in the event was an amazing and unique community engagement experience. Employee volunteers actively talked about the event for many weeks in the lead up and after the event, with many private Facebook accounts displaying photos of thousands of participants all wearing HBF Run for a Reason T-Shirts and peer involvement in "selfies". The 5th Run for a Reason was held on Sunday the 25th of May 2014, which the researcher was again a volunteer participant for marshalling over 30,000 runners who collectively raised \$1.4 million for affiliate charities (HBF Health Ltd, 2014g).

HBF Rottnest Channel Swim

In order to promote healthy physical activity among the competitive swimming population of Western Australia and beyond, the HBF Rottnest Channel Swim (RCS) is a 19.7km open water swim from Cottesloe Beach to Perth's iconic Rottnest Island held in February each year. Managed by the Rottnest Channel Swim Association, and sponsored by HBF, the event sees individuals, duos or teams supported by a network of paddlers, boat skippers and additional support crew to ensure their safety (Rottnest Channel Swim Association, 2014). With the event's international recognition growing and competing participants numbering 2,300 each year, the RCS is certainly Rottnest Island's biggest sporting calendar event. As an avid swimmer, HBF's Manager for Health, Safety and Wellbeing, Mr Jon Haines has participated annually in the event for the last 16 years, demonstrating repetitive personal dedication to supporting his organisation's community focussed health and wellbeing events.

HBF Junior Sports Heroes

In association with the Community Newspaper Group, HBF supports the HBF Junior Sports Heroes which seeks to recognise the sporting achievements of children aged 8–18 years of age. The program operates from August to January and applies to individual and team sport players as well as seeking to acknowledge the efforts of those who train, mentor or act in critical administrative roles for such sporting programs. The ambassador for the HBF Junior Sports Heroes Program is Australian cricketer Michael Hussey who was ranked as the world's top batsman in 2006 and has led a distinguished international career giving him great credibility and capacity to act as a role model for aspiring sporting juniors. Successful HBF Junior Sports Heroes are also selected on the basis of their ability to inspire others within their community, or as recognition for those having overcome a significant adversity through their participation in their chosen sport. Winners are profiled in local community newspapers and given cash prizes for their efforts in enhancing the community by involvement in sporting endeavours (Community Newspaper Group, 2013).

HBF Pioneer members' morning tea

The annual HBF pioneer members' morning tea was created as a way to recognise the membership loyalty commitment of HBF's longest term members, some dating back to the 1940s and 50s. Hosted by HBF, the event is often attended by 400–500 members and is an example of how Managing Director Mr Rob Bransby and senior company managers show their appreciation for long-term member loyalty. Through the recognition in holding an event

such as the pioneer members' morning tea, this reinforces the organisational culture that HBF not only appreciates extended membership loyalty but also takes time to celebrate it amidst a busy organisational schedule of other community engagement activities.

HBF Corporate Wellness Index

As an extension of health insurance products, HBF has an extensive corporate health profile with many Western Australian corporate organisations, and as a way to measure the effectiveness of wellness services within those workplaces, in 2013 HBF introduced the HBF Corporate Wellness Index. Organisations are ranked upon results of HBF's Healthy Heart Check workplace risk assessment and the top ten are displayed online (HBF Health Ltd, 2013c).

Building the future

Based upon the decision that HBF's current location and place of business does not meet the planned needs of the organisation as it migrates to a "health partner", a new purpose built building is currently being constructed to cater for future directions (Lague, 2013).

Set for completion and employee occupation in 2015, the building is located within the future King's Square precinct of the Perth CBD and features improved employee work spaces and facilities including:

- Sit/Stand desks for all Head Office employees,
- "Tall tables" for standing meetings,
- Wide internal stairways in the centre of the floors for exercise in addition to emergency stairways,
- Increased numbers of bike racks,
- Improved end-of-trip facilities, (showers, lockers etc.)
- Increased natural lighting (HBF Health Ltd, 2013f).

Discussion with employees about the building project overwhelmingly found that most viewed the move to a new building and location as a physical iconic symbol of organisational change. Employee access to regular building progress updates via "The Pulse" (organisational intranet site) nurtured employee personal investment in looking forward to office relocation. Several employees also specifically mentioned intentionally walking past the construction site to check on progress with their own eyes.

The notion that HBF employees can, through the undertaking of their paid employment, enable both members and those of the wider community to self-invest in their own health

status through participation in healthy lifestyle behaviours, is a source of passion for many HBF employees. This was also noted as a factor contributing to positive job satisfaction during casual workplace employee conversation.

Concluding remarks

HBF is a well-established and highly recognised brand among the West Australian population, that continues to undergo a significant corporate migration from a health insurance agent to that of a health partner organisation. A large component of the organisation's culture stems from the innate health focus of the organisation's vision in creating a "unique community where members [and now employees also] are renowned for being healthier, happier people" (HBF Health Ltd, 2014f).

HBF's vision and values are made clear through its compulsory employee induction and annual refresher, as well as the 2012 introduced HBF employee code of conduct. Communication throughout the complex organisational structure is additionally enhanced by intranet-based social media enabling authoritative direct communication from the managing director. Having passionate leaders like Mr Rob Bransby and Mr Jon Haines who continually exhibit positive healthy lifestyles as managers of HBF, undoubtedly reinforces the preventative health directive of the emergent health partner organisation.

Based upon numerous corporate documents already outlined and researcher participant observation, employees have considerable opportunity for peer engagement through a vast number of workplace facilitated programs and activities. From catered in-house educational "Lunch and Learn" sessions to events fostering employee community spirit through volunteering days, HBF recognises the value of these self-enhancement and sociocultural endeavours and duly recognises them through the organisation's prestigious Gold Ribbon awards. Halfway into a five year (2012–17) business direction migration, HBF has made significant progress in its delivery of external health partner initiatives as well as internal employee health and wellbeing culture alignment. Through ongoing delivery of bidirectional (inward and outward) initiatives of the HBF health partner strategic plan, contemporary communication (including social media) mechanisms are being used to promote HBF as the health partner of choice for existing and potential members as well as an employer of health passionate and engaged employees.

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Author biography

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CHAPTER 4: Study One (Publication 2)

The following publication is currently under review at the International Journal of Workplace Health Management (IJWHM)
<http://www.emeraldgrouppublishing.com/products/journals/journals.htm?id=ijwhm>

Corporate communications on workplace wellness: office worker perceptions

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Abstract

Purpose – The purpose of this research was to investigate employee perceptions of the impact and effectiveness of corporate communication related to the health hazards linked to sedentary behaviour and other workplace wellness issues within a health insurer's office environment.

Design/methodology/approach – This study adopted a two-pronged approach. Initial data collection from four workplace-based focus groups comprising 29 employees, was followed by an ethnographic study drawing from nine months of participant observation while embedded within the organisation.

Findings – Employees were aware of the health hazards posed by office workplaces and sedentary behaviours. They identified a range of barriers and enablers relating to improvement of workplace health, understood the importance of an alignment between their personal values and corporate commitment to workplace health and saw value in the offering of workplace health and wellbeing enhancement programs, including that of team-focused use of social media for peer fostering wellness support.

Originality/value – Contributes to the debate on how best to promote and support employee health and wellness in an office environment and the role that social media can play.

Keywords: Workplace health, Office workers, Physical activity, Sedentary behaviour, Social media, Qualitative research

Paper type: Research paper

1. Background

As sedentary behaviour is now so much a part of the developed world's office-based workplace environments (Prodaniuk et al., 2004), whereby an increasing percentage of employees now occupy physically inactive work roles, research interest into understanding sedentary behaviours and counteracting occupational physical activity (Kirk & Rhodes, 2011) has increased. The 2011–12 Australian Health Survey (Australian Bureau of Statistics, 2013e) found people in desk-bound occupations such as Clerical/Administrative, Management or Professional roles reported having the most sitting time, with clerical and administrative workers accumulating 22 sedentary hours during their average work week. Parry and Straker's (2013) seven-day accelerometer study of 50 office-bound employees within the resources industry, categorised more than 81% of their work time as sedentary and a further 15% categorised as light activity. Sedentary bouts of >30 minutes were also more common during work time than non-work time suggesting that fewer breaks contributed to employee sedentary exposure time while at work.

The technology enabled optimisation of employee time and cost efficiencies within the modern office environment has produced a marked decrease in employee workplace physical activity (PA) (Philipson & Posner, 2003) and is now acknowledged as having impacted negatively on the health of desk-bound workers. Other workplace employment considerations such as shift-work and long working hours have independently been found to contribute to elevated body weight and obesity (Schulte et al., 2007).

Foundational work by Katzmarzyk *et al.* (2009) identified a harmful dose-response relationship between sedentary behaviour outside leisure time and numerous causes of mortality. A longitudinal review by Boyle *et al.* (2011) consolidated the linkage between lifestyle, PA and prior ten year job history and found those reporting sedentary work-based practices (even in association with sufficiently physically active recreational lifestyles) had significantly increased rates of both distal colon and rectal cancers. Recognition of extended sitting as an independent health risk factor led Katzmarzyk and Lee (2012) to use cause-deleted life table analysis to demonstrate that limiting time spent sitting to less than 3 hours per day and television viewing to less than 2 hours per day increased life expectancy from birth by 2.0 and 1.4 years respectively. Workplaces that foster sedentary work-styles thus appear to pose a significant domain related health risk to work-time exposed occupants.

Despite this, the published literature to date has primarily focussed on the inter-relationship of sedentary behaviour and environment in children, rather than adults, and a notable dearth in observationally based studies (Owen et al., 2014).

As of August 2014, Australia's national employment rate stands at 65% of the total Australian population or 11.6 million people (Australian Bureau of Statistics, 2014b), which understandably represents a sizable human workforce upon which many organisations rely to conduct business activities. As reported by The Australia Institute (2012), the average Australian employee works 43 hours a week in the office and hence government and private sector management have seen the workplace as an environment suitable for positively influencing the health behaviours of their employees (To et al., 2013).

Health and wellbeing facilities and programs like corporately subsidised gym access (in-house or external), social clubs (with a health interest), workplace computer facilitated risk reducing stretch-break software like Wellnomics Workspace (Wellnomics, 2014), as well as PA promoting programs, like the Global Corporate Challenge (GCC) (Get The World Moving Ltd, 2013d) have become the staples of many organisational health and wellness strategies. The introduction of alternative workstation configurations such as height-adjustable "sit-stand" desks has been another way employers have approached the objective of reducing the harmful effects of excessive workforce sedentary behaviour (Neuhaus et al., 2014).

Workplaces are, however, about much more than organisationally provided facilities, employee health and wellbeing programs and ergonomically factored furniture. One recent qualitative study of regional Australian workplaces (Dickson-Swift, Fox, Marshall, Welch, & Willis, 2014), concluded that positive organisational culture incorporating supportive management and good communication played a considerable part in boosting employee wellbeing through the meeting of psychosocial needs. Understandably as individual office workers' perceptions of their health status and health risk influences the extent of workplace PA program uptake, as Booth *et al.*, (1997) noted, employees with poor general health working in predominantly sedentary jobs often lack motivation to perform regular PA.

Social networks (electronic or otherwise) can directly or indirectly influence others within their social networks either positively or negatively. Just as an individual's own health risk is based upon social network driven influences of peers, so too it appears is their health (Christakis & Fowler, 2007). Christakis therefore advocated that this social peer influence

from associations with relatives, friends, neighbours and co-workers be considered in both health interventions for its potential multiplicative effects and medical clinical trial contexts to better understand individual and collateral health outcomes (Christakis, 2004).

Social communication in office workplaces has now moved beyond word of mouth and in-house newsletters, bulletin boards and social clubs to include electronic word of mouth (i.e. email) and social media. With the increasing popularity of mainstream internet-based social media and other computer-mediated technologies ubiquitously available across fixed and mobile device platforms, using socially oriented communication channels is no longer a new approach in offering health and wellness solutions to user groups (To et al., 2013).

The range of social media mechanisms reported in a recent systematic review and meta-analysis of social media usage for diet and exercise behavioural enhancement (Williams et al., 2014) did, however, consist mainly of non-interactive information-based blogs and discussion boards, with only two studies incorporating mainstream Facebook/Twitter services. As Williams *et al.* (2014) noted, the majority (12 out of 22) of the reviewed studies employed no social media comparison group and this along with poor reporting may have contributed to the limited benefits identified for the social media enabled groups. Given sustainable participant engagement has emerged as a common limitation of numerous health promotion studies (Williams et al., 2014), it is unlikely that simply including a social media component within a health intervention will automatically elicit social engagement that translates into enhanced health outcomes and adherence.

Therefore, the efficacy of these social network fostering technologies for promoting and supporting workplace health behaviour modifying interventions that positively impact on employee health and social inclusion, remain a clear research gap suggesting that applied social media research is still in its infancy (Williams et al., 2014).

In a commensurate manner, corporate and all other forms of workplace communication for promoting and supporting employee workplace health and wellness, including social media, needs to be assessed within a holistic framework taking account of built environment, furniture, role requirements, formalised corporate programs and practices as well as the social networks within that organisation.

This research study investigated employee perceptions of the impact and effectiveness of built environment, furniture, formalised corporate programs and practices to inform use of in-house social media as corporate communication addressing sedentary and other workplace wellness issues within a health insurer's office environment.

2. Methods

This qualitative study used workplace-based focus groups in combination with a nine-month ethnographic study to investigate employee perceptions of the current and potential in-house communications related to addressing the hazards of sedentary behaviour in an office environment. This combination of methods acknowledged that while explicit cultural knowledge may be immediately apparent or able to be discussed at a focus group, time and behavioural observation are needed to uncover tacit cultural knowledge (Spradley & McCurdy, 2012).

Embedding the researcher within an organisation to conduct an ethnographic study opened a window into the human, social and cultural aspects influencing both the cultural actions of employees and their organisation. As Gold (1997) noted, effective organisational ethnographic research of this type requires the researcher to gain participant approval using face-to-face relationships developed by the researcher within a variety of participant-centric environments (such as the office environment during workplace activities) to demonstrate the researcher's trustworthiness and value of informant contributions. Gaining cultural insights within the real-time environment of complex employee-workplace-organisation interactions extended and complemented the data gathered from focus groups.

2a Study setting and design

The industry partner organisation for the purposes of this research was HBF Health Ltd (HBF), a not-for-profit, Australian organisation providing health insurance and other insurance products and services to its payment-based members. HBF supports globalised efforts to promote PA, such as the GCC (Get The World Moving Ltd, 2014) within its workforce and actively promotes health and wellbeing messages among the wider community within its home state of Western Australia.

After the Human Research Ethics Committee of Edith Cowan University granted approval for this research (Approval #6634), HBF authorised and oversaw the organisational engagement undertaken with the researcher. The study was conducted from September

2012–May 2013 at HBF's Perth head office, a workplace for approximately 900 full-time, part-time, casual or contracted HBF employees.

2b Focus group data collection

Using focus groups to gather evidence of organisational employee perspectives aids identification of participant similarities and differences based upon either opinions or experiences (Morgan, 1997). To help focus those collective discussions, aid collection of insightful comments and identify the commonalities and diversity of organisational employee perspectives in its workplace-based focus groups, this study used a semi-structured set of questions.

Initial assessment of pre-existing standardised questionnaires (Australian Institute of Health and Welfare's Active Australia Survey, the Occupational Sitting and Physical Activity Questionnaire (OSPAQ) and the International Physical Activity Questionnaire (IPAQ)) revealed them to be ill-suited for developing an understanding of employees' current perceptions of workplace wellness issues and identifying their awareness of any sedentary behaviour health risks related to their employment role. None of these questionnaires adequately addressed the diversity of the work environment, the workforce culture and employee understandings regarding workplace health risks (especially those relating to sedentary behaviour) or considered the current and potential use of social media as a potential mediator for reducing recognised harms.

The researcher therefore independently developed a range of questions to facilitate focus group discussions regarding:

- the personal importance of a healthy workplace
- factors affecting participation in health/wellness oriented workplace programs
- barriers in preventing employees leading a healthier life (both inside and outside of work)
- factors reducing sustainability of healthy habits
- acknowledged options available to employees and employers for improving health in office settings
- employee perceptions regarding their organisation's consideration of immediate and longer term factors impacting employee health
- identified health risks relating to the employee's current role
- sedentary behaviour risk and other identified health risk for specific employees
- employee perceptions regarding their organisation's consideration of sedentary

behaviour risk, and

- current or potential workplace health benefits afforded by use of social media.

This set of questions underwent several iterations of self-refinement. Subsequent verbal testing of the focus group instrument with unrelated test participants from the general public (n=8) resulted in further minor enhancements to this focus group instrument.

With the assistance of HBF's Manager of Health, Safety and Wellbeing, an internal company email was sent to all (n=900+) of the full-time, part-time, casual or contracted HBF employees based at HBF House in Perth inviting them to take part in one-hour focus groups. Twenty-nine respondents constituting 3% of the approximate 900 HBF House workforce volunteered to participate in the research project. These respondents (n=29) were then emailed a research information sheet and, based upon preferred employee time availability, allocated to either the management only group (FG3 with n=7) or to one of three other employee focus groups (FG1 with n=7, FG2 with n=10, FG4 with n=5). Hosting a management level focus group in isolation from other employee groups gave managers (or in HBF terms "people leaders") the liberty to comment from both their personal and managerial perspective.

To enhance the probability of employee attendance, all four one-hour focus groups were scheduled on consecutive days during lunch times and conducted within the HBF building. Each focus group session was digitally audio recorded and later transcribed.

2c Participant-observer data collection

After conducting the focus groups, the researcher spent the next nine months embedded in the HBF workplace acquiring an insider's perspective and conducting "naturalistic" participant-observer research in its most authentic form (McKechnie, 2008). This workplace-based ethnographic research sought to understand not only the cultural and social dynamics of the organisation and its employees, but also to identify the underlying values and often unspoken local knowledges typically less apparent to external parties.

As McKechnie (2008) aptly observed, establishing credibility among fresh participants as a participant-observer proved a very challenging process. Ethnographic field notes were used to record notable interactions, events or observations relevant to the research and endeavoured to capture tacit sociocultural influences within the workforce. In addition to engaging in casual employee verbal discussions both in his role as a peer employee and in

meetings with HBF management, the researcher also had access to other ethnographically valuable resources such as HBF's organisational policies, administrative communications and corporate documents. This enabled the researcher to not only identify experienced commonalities among HBF employees, but also and more importantly to attribute cultural meaning to the experiences of those involved through being a participant-observer in those experiences.

2d Analysis of focus group and ethnographic data

Following focus group data collection, the digital audio files were transcribed and rechecked against the audio source for accuracy. Each focus group transcript was read sequentially, before a coding schema was developed and all four focus group transcripts coded according to it.

Focus group data was analysed using QSR NVivo 10 software and an emergent type of coding termed thematic analysis, which offered contextual categorisation based upon data driven findings was adopted. Broad initial codes were refined through reiterative stages of reading, coding, sorting, theorising and reflecting to factor specific sub-themes or repetitively reinforced perceptions. A constant comparative method, adapted from the 'grounded theory' approach of Glaser and Strauss (2012), was used to refine the coding process in accordance with constantly evolving themes and their pattern-based recurrence. Data analysis was concluded upon reaching saturation point, where no more viable codes could form further themes. A coding sample was then reviewed by an independent researcher to establish inter-rater coding reliability.

This analysis enabled the researcher to document an understanding of the workforce employee beliefs and values of workplace health and wellbeing status as the research participants envisaged it, both individually and collectively. The focus group ID and the line number of the comment are therefore used to identify comments by this study's focus group participants cited in this study.

Analysis of the ethnographic material also used a constant comparative method adapted from the 'grounded theory' approach and mirrored the analysis of the focus group data. The wide variety of ethnographic material yielded insights that added to the richness of the research findings and contextualised focus group comments.

3. Results

Thematic analysis of the focus group data yielded five key themes, namely risk awareness, personal values, corporate commitment to workplace health, wellness barriers and enablers and the role of social support, email and social media.

3a Risk awareness

Several workplace health risks were identified as a result of working within office environments, ranging from air-conditioning and poor lighting related concerns to the most widely noted being associated with prevalent sedentary workplace practices. All four focus groups considered the extended sitting relating to their computer-mediated tasks and other employee roles posed a direct health risk. Focus group participants quantified their time-related exposure with comments such as: *“My job is pretty much seventy percent or whatever in front of the computer, or sitting during the day, so it’s not healthy.”* [FG01-L368]. Another participant linked extended sitting within HBF’s Member Call Centre (MCC) to excessive food intake contributing to weight gain. They saw their current workplace health risk profile as:

Participant A [FG2-L300]: *Sitting down all the time.*

Participant B: *Lack of movement.*

Participant A: *Leading to fatty deposits. Too much food and sitting down. There’s a running joke, especially on the first floor, if you start work in the MCC, you put on five kilos in the first couple of weeks.*

Public domain-based communication of sedentary behaviour combined with workplace self-experienced awareness has led to widespread understanding that prolonged physically inactive behaviours contributes to workplace induced health risk. Despite identification of sedentary behaviour as an independent risk factor in isolation of leisure PA levels by Katzmarzyk et al. (2009), employee perceptions that these workplace induced health risks could be offset by after work hour PA still persisted [FG1-L371].

3b Personal values

All focus groups reported an understanding that a work environment contributes to employee workplace productivity and that a healthy workplace establishes enhanced motivation for attending work. HBF employees recognised that a behavioural “flow-on effect” (or value transference) between employees who shared the same work environment for extended periods of time per week could occur, and agreed that positive influences present in the workplace are resultantly more likely to also be adopted within employee home environments.

3c Corporate commitment to workplace health

Within HBF, employee engagement with workplace health was supported through policy documents and demonstrated through the applicability of health and wellbeing programs made available to the workforce. HBF's organisational health and wellbeing culture as outlined in Figure 1 below, encompasses six areas that form a holistic employee approach to engaging with the workforce and by extension, fostering an emerging health partner driven ethos among HBF members and the wider community.

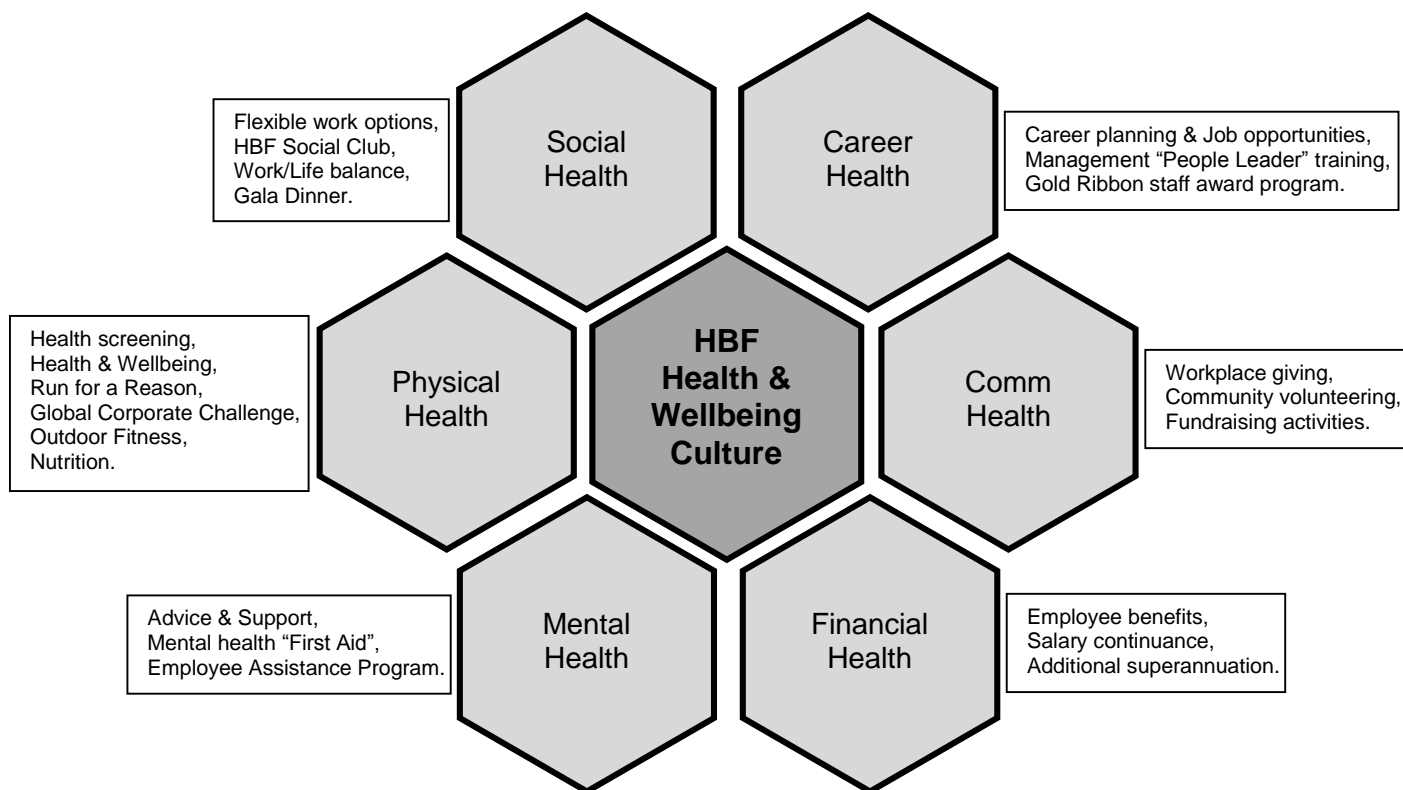


Figure 1: HBF's employee health and wellbeing culture areas (HBF Health Ltd, 2014f)

Much of the HBF's health and wellbeing activities are communicated through the organisation's intranet website known as "The Pulse" which is accessible as the browser homepage on all employee workplace computers. The healthy lifestyle intranet page provides information and accessibility to a wide variety of workplace health focussed programs targeted at enabling participants to live healthier and happier lives both as employees and individuals.

Participants of the "People Leader" (management) focus groups thought workforce consideration and consultation should be part of the planning and development phase of workplace wellness strategies for employees. One commented:

We need to perhaps go out and ask the workforce “what would you be interested in?” You know, so that whatever programs are then designed and even over a period of time, make sure that they’re meaningful for the workforce rather than saying “well, this is there and that’s there” [FG3-L85].

Corporate commitment to employee health was also evident through the stated provision of a small gym on level eight of HBF House. A people leader focus group participant outlined the management led introduction of walking meetings to enhance work-time physicality.

Participant A [FG3-L232]: One of the things that we’ve actually started in our own department is, with our one-on-one meetings, we take them outside now weather permitting and we’ve already started this. So we just walk around the block.

Researcher: So mobile meetings.

Participant A: Yeah, mobile meetings rather than just sitting inside. They’ve been working really well.

Greater ownership of employee health by employers was seen as contributing to both morale and productivity gains for workplaces. This was evident in comments such as *“they’re thinking about my health and wellbeing, so you’re more motivated to be productive at work.”* [FG2-L34]. The focus groups’ consensus on this point, identified through a lack of dissenting voices, could be considered as an informal endorsement of corporate commitment to workplace wellness.

Another focus group participant stated that they saw the Managing Director’s personal dedication to leading by example as creating a positive flow-on effect for the entire workplace.

Participant A [FG1-L474]: I suppose that’s one of the good things about the company is that you’ve got the CEO [sic] who’s really into all that health and fitness thing, so if you’ve got the leader who is into it all, there is much more of a flow-on effect the whole way down.

One participant [FG4-L459] neatly summarised the group consensus regarding the quality of workplace-supplied chairs and ergonomic challenges by stating *“I still think regardless of whether you’ve had the ergonomic assessment done or not, sitting for extended periods of time without getting up and moving, is not healthy.”*

Another research participant mentioned that staff-prompted stretch breaks had once been used to break up extended sitting some years ago when some areas of HBF were already alert to the health risks associated with sedentary behaviour.

Participant A [FG4-L306]: Yeah, the Claims Department, at ten o'clock every day, someone would blow a whistle and they'd all have to get up and stretch. Probably seven, seven-and-a-half years ago. And that happened every day without fail.

Participant B: Let me guess, that person's now left.

Participant A: It wasn't necessarily the same person with the whistle. A lot of people in the Claims Department have changed, not all of them, probably some there that'd remember but yeah, some of them went out to branches. But they used to do it without fail every day.

Researcher: So that's a regular stretching a couple of times a day?

Participant A: A couple of times a day – ten o'clock in the morning and two o'clock in the afternoon or something.

Researcher: And that was primarily with people sitting behind computers?

Participant A: Yeah, they just used to stand up at their desks and do stretches, and sit back down and get back to work.

Focus group questioning also led to the discussion of the longer-term impacts of today's workplace practices on the future health of employees. One employee stated: "*I think this company looks at long term health*", which was confirmed by other focus group attendees' head nods [FG2-L234]. Another employee mentioned continuing improvements to the in-house canteen healthy food options: "*they're trying to have more healthy selections on the whole. They don't have pies and chips and chocolates so much*" [FG2-L242].

In relation to corporate commitment for the social inclusion of new employees as a component of workplace wellness, it was recognised by people leaders that inductees could find themselves socially isolated as a result of being new to the organisation. To combat this, some business unit managers had adopted the practice of allocating an experienced employee to assist new recruits with foreign work processes and meeting engagements, enabling more rapid organisational integration as an element of workplace wellness.

Participant A [FG3-L336]: What we do where I am, we allocate someone who, once they've done their training, the new person has someone who's doing the same modality for instance that they process, sitting geographically next to each other. They not only assist them with their work but they also support them. They make sure they go to meetings and that they're involved. If they happened not to have been invited because their name's left off because they're new, then they bring them through. It just keeps them from being isolated.

3d Wellness barriers and enablers

Key reported barriers and enablers for employee participation in all types of workplace health and wellness targeted programs run within HBF related to the influential factors of time, workload pressures, the type of activity, the alignment of program objectives to participant objectives and the economic costs associated with participating.

All four focus groups reported time as the most significant constraint on employee participation in workplace health programs. Participation was often considered stronger, when employees felt enabled by the employer to prioritise participation in these programs while giving due consideration to work-related processes. Respondents stated that employees in financially related roles were less able to participate in workplace health programs during their busy end of financial year work peak during May–June.

Other respondents stated that they participated only in workplace health program activities that provided a good fit with their interests. They also valued being able to track progress to identify their achievements, as is the case with the GCC, which provides participants with a pedometer to count their steps and a website to track their achievements. Access to a reliable knowledge source to guide participation decisions was also seen as valuable in providing safe program to participant matching, particularly where employee needs are capability restricted (e.g. by pregnancy, age, injury or disability).

One focus group participant highlighted the presence of multi-story building lifts within the busy office environment as a common infrastructural barrier mechanism contributing to a decrease in potential workplace PA in using the stairs between building levels.

Participant A [FG4-L374]: I think the biggest issue that HBF has, and I know it's a gripe on the sixth, seventh and the eighth floors, is the amount of people that will forego the stairs, they'll get in the elevator and press number one to go from ground to [floor] one or press number two to go from one to two or press level three to go from two to three.

Participant B: It should be illegal unless you have a medical disability, it should be illegal to use the lift for anything less than four [levels].

Participant A: I've already spoken to Building and Facilities because they're a part of our department, the actual elevators aren't new enough to program them to prevent people from going from ground to one, or from one to two or from two to three, without special authorisation.

Participant B: And then again there might be circumstances where you need to take armfuls of...

Participant C: Yeah, you can't carry stuff upstairs.

Participant A: I mean, I would bank on seventy five percent of people that I've spoken to in HBF, have that as their biggest gripe and they're their own worst victim of it.

Another focus group's participants also saw the work environment lifts usage as potentially subverting the official corporate "take the stairs" health message. They suggested that the building's lifts could be disabled and only work during set times and even whether making

less use of lifts could be recognised as a Key Performance Indicator (KPI) in reviews of employee performance:

Participant A [FG2-L175]: Break the lift. Lifts only work between ten and eleven [o'clock].

Researcher: That's cool. I haven't heard that one yet.

Participant A: Somehow make it part of your KPIs.

Research participants outlining PA enablement resulting from a finance department targeted visit stated: "*OH and S [HBF's Occupational Health and Safety staff] came around and told us to make sure that we're moving*" [FG1-L250]. That same employee continued, "*Every forty-five minutes, you should at least get up and walk around and say hello to someone else, so that you're getting away from the computer*" [FG1-L253].

Others acknowledged their lunchtime break behaviours as contributing to their total sedentary time with the comment: "*I think one of the other things that we're guilty of in our department, is that even at lunchtime when you have your lunch break, we still sit at our desks*" [FG3-L388].

One employee evidently aware of the health risks of his largely sedentary work-style during office hours stated: "*I try to compensate with other activities outside of work.*" [FG1-L371], but did not specify the nature of his "other activities". Subsequent discussion of this shared perspective with other employees, revealed this was a commonly adopted strategy for combatting the lack of PA during work hours. Where there was an understanding of the need to move more during work hours, options for work time activity were either self-driven or tied to specific workplace PA programs such as the GCC.

Employees mentioned that other companies were introducing alternate posture workstations into their work environment and one [FG2-L354] stated, "*I think we should trial standing desks*" prompting another [FG2-L362] to add: "*Or have adjustable desks so you go up and down as you feel you need to sit or stand*".

Some employees knew of software-based solutions used by other companies to enhance workforce health and wellbeing outcomes for desk-bound employees. They discussed using such computer facilitated approaches to counteract prolonged sitting workplace behaviours by prompting employees to engage in regular work breaks incorporating stretches.

Participant A [FG3-L273]: I can remember I used to work at (another company), and they had an OSH program that was actually on the computer and it used to pop up, and sometimes it used to get annoying, but it did used to pop up every forty-five minutes to an hour.

Researcher: Wellnomics? [Commonly used abbreviation for Wellnomics Workspace stretch-break software]

Participant A: I'm not sure. It was like a little stick person sort of thing. It used to just pop up and say "now you're going to be doing such and such" and it gave you exercises to do. And it actually prompted you to do some exercise so you had to do it just for a couple of minutes and then you'd carry on again and off it went and would pop up again. And it was because we had a lot of, well, in our area, we had to use computers, so we put it onto our area to trial it.

Participant B: In the claims area, it would be perfect. A lot of processing and it's a lot of contact.

Participant A: And it actually reminded them about it, because the first few times it would come up you'd hear them, it was like "here we go again". And it would stop and then I think it got overdone, so it was quite good to put it on for say, a couple of weeks, and then take it off again and then pop it back on again, so that they weren't getting sick of seeing them all the time.

Participant B: Or change it even.

Participant A: Or change it, yeah. And for people that were either negative about doing their OSH exercises, this cute little thing would come up and "oh, we've got to do this now," and everybody didn't have to do it at the same time. It would just come up at their computer at different times.

Participant C: What a great idea.

Participant A: I've even heard of organisations where your computer is locked and you can't work. Then you have to get up and do whatever.

Participant C: Yeah, any of those would be ideal.

Some focus group participants identified an organisationally innate understanding among employees that "*prevention is better than cure*" [FG4-L366] and that in working for HBF, "others" look to HBF as a specialist in terms of health promotional practices. Researcher observation within HBF's Human Resources department revealed that HBF's high profile role in the community was seen as contributing to HBF's externally advertised employment opportunities being consistently highly prized and extremely well contested.

One employee concerned about the health hazards of smoking wondered "*if we could replace that smoking bit with something else fun or an exercise activity.*" [FG3-L251]. That employee also expressed disappointment about not being better able to assist fellow employees who smoked to quit their cigarette smoking habits and work towards healthier lifestyles:

It just bothers me that we're a health fund and we have such a high percentage of smokers in the building and I know it's an individual thing, and I know it's, whatever the reasons are, but it just bothers me that we've not been able to crack that [FG3-L243].

Employees regarded the use of global organisation group emails within an office-based environment as a poor engagement tool for communication of generic messages (including those of a health oriented nature). Such non-individualised emails were regularly disregarded as supported by the statement: *“As far as people are concerned, they will literally just go “Oh yeah, not really interested” and hit the delete key”* [FG4-L581].

Focus group participants suggested using in-house social media to strengthen employee support for workplace PA program participation. Participants stated that: *“Talking to each other is a big motivation in itself and social media is so popular,”* [FG2-L372]. *“I’m sure the capacity is certainly there, because that’s where everybody is heading for, using social media.”* [FG2-L376].

The use of an “internet support group” [FG2-L129] was seen as offering employees a valuable way to share and acknowledge the achievements of their workmates, *“So that there is someone to say, this is how much I’ve lost “Yay, well done!””* [FG2-L129].

All focus groups commented that organisationally specific supportive mechanisms such as social media may offer extra benefits for employees unwilling, disinclined or unable to engage in PA of their own volition.

Participant A [FG2-L380]: There are some fantastic weight loss stories in this business, one of the girls on our floor has lost fifty kilos, we have another who lost over sixty kilos. These are people that are still working in an office environment so have obviously found ways to get around it. So then if you’re going to use social media, like a Facebook or something, make it ours. I don’t subscribe to Michelle Bridges [A well-known Australian fitness trainer and TV personality] because it’s nothing to do with me, but if it was HBF based, and if it was people that I saw every day, that would make a greater difference to me than a *Biggest Loser* [A popular Australian reality TV show, where obese people compete to lose the most weight] celebrity.

Participant B: Yeah, I agree, because then I can grab them and go “I saw you’ve done this and you made this change and this is what I’m struggling with. How can you help me?” Do you know what I mean? So you build up a support network.

The management-oriented focus group identified age as a potential factor contributing to social media adoption. *“We have a fairly young group that we work with. A fairly large, young group, so social media definitely is something that they would engage with.”* [FG3-L457]. Further probing of the age related aspect of social media use and discussion of its proposed use within the workplace prompted the comment: *“I think they definitely would if they were given the opportunity to.”* [FG3-L463].

4. Discussion

In a survey-based assessment of employee attitudes towards barriers to workplace PA, convenient times, convenient locations and permitting paid time engagement in PA were all acknowledged as fostering employee uptake of workplace-specific employee PA programs and opportunities (Kruger, Yore, Bauer, & Kohl, 2007). Most of the barriers to PA identified by HBF employees such as lack of time to participate in workplace health and wellness programs were consistent with the work time pressure in many other corporate environments such as the call centres studied by Edmunds *et al.* (2013).

Working with an organisationally representative sample of employees, this research identified a consensus that HBF recognises and actively seeks to address workplace risk to health, including those of sedentary work-style behaviours. Findings indicated that many employees saw these organisational objectives as aligned with their personal values and employment status, rather than adverse to their interests. This perception was further reinforced by discussion and observations of employee participation in health fostering events such as the GCC, which was facilitated by employer allowances for participation both during daily work-time and employee personal time outside of work hours.

Given HBF's business role in providing health insurance and other insurance cover to members, its promotion of positive lifestyle behaviours as an emerging "Health Partner" in the wider community, and its corporate commitment to workplace health were all seen as positives. Strategies such as employee engagement during wellness program planning, the use of walking or mobile meetings to enhance workday PA during typically sedentary employee meetings and the use of supportive peer "buddies" for new employee social and workplace integration, were all perceived as contributing employees' commitment to health promoting activities and practices.

The lively discussion over the potential for lifts in the HBF building to subvert the corporate "use the stairs" message was, however, both unexpected and interesting. While internal elevators are a commonplace feature of corporate environments in multi-storey buildings facilitating convenient inter-level movement of employees, the habitual use of lifts for even one or two level commutes could ultimately as the research participants pointed out counter PA focussed corporate health messages.

In addition to formal corporate commitment, socially-influenced PA program participation with workplace colleagues was identified as a significant contributor to individual's engagement in PA. These results are consistent with those of Bennie *et al.*'s (2010) study of another Australian workplace, where perceptions of manager and colleague PA were likewise reinforced by a workplace environment supporting PA.

Use of organisational email was seen as an unsatisfactory mechanism for engaging employees in PA, as the vast majority of global emails were often ignored or deleted unless they specifically related to employee interests. Further discussion about workplace email, unearthed a consensus that HBF employees believe that they were already overloaded with email, devaluing the use of email as an effective tool for health engagement.

The idea of introducing a software-based application to prompt desk-bound employees to "get up and do whatever" in an effort to reduce prolonged sitting was regarded as a useful if annoying reminder mechanism. As the potential for repetition of such regular break prompting becoming annoying was mentioned, the potential for social media driven peer support mechanisms may prove less irritating and be better suited to providing peer support for workplace programs to promote health and decrease the health hazards associated with sedentary behaviour.

In gauging perceived efficacy for use of social media to promote healthier workplace practices among desk-based populations similar to their own workplace, HBF employees were open to using an "internet support group" offering peer-based support within their office environment. Such an approach to workplace wellness was seen as both offering team-based PA program accountability and a mechanism for promoting organisationally commendable employee achievements. HBF employees also acknowledged a need for a "HBF based" workplace social media platform personalised to their organisation. Recognition of employee achievements and workplace-relevant content contributed by colleagues they knew was seen as increasing the value of such a platform. Some employees referred to HBF already having an active external or outwardly directed social media profile used as a communication tool for marketing and member/community business communication. Management participants noted that younger employees having grown up with social media as a part of their daily lives may be more inclined to actively use workplace-based social media for personal health and wellness.

5. Limitations and future research

The organisation selected for study, the employee focus group sizes and the form of organisational engagement adopted, limits the generalisability of this study. The inherent health-orientation of the emerging pro-health “Health Partner” workforce under investigation as well as the self-selection of focus group participants increases any potential reporting bias towards those more willing to offer more extreme perspectives and has to be acknowledged. Reliance on focus group data also raised the possibility that social desirability bias can promote participant input based on culturally informed knowledge and foster responses likely to receive peer approval. The participant-observation based collection and analysis of ethnographic data did, however, contextualise the focus group responses and confirm the validity and significance of the identified themes.

This study highlights the need for further research on the use of in-house social media based corporate communication to enhance workplace wellness, specifically in reducing sedentary behaviourally related health risks through employee PA programs.

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CHAPTER 5: Study Two (Publication 3)

The following publication is currently under review at the International Journal of Workplace Health Management (IJWHM)
<http://www.emeraldgrouppublishing.com/products/journals/journals.htm?id=ijwhm>

Glocalised online support for workplace physical activity

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Abstract

Purpose – The purpose of this research was to investigate the experiences of desk-based employees participating in the Global Corporate Challenge (GCC), a globalised workplace physical activity (PA) program and their perceptions of how social media use impacted on that experience.

Design/methodology/approach – Workplace PA program participants (n=41) employed by the not-for-profit health insurance/partner HBF were surveyed and interviewed about their experience of the program and potential to enhance this experience. The researcher also spent 11 months embedded within this office-based workplace gathering ethnographic data on employee workplace health culture during and after the PA program.

Findings – The HBF employees' understanding that sedentary workplace behaviours posed a health risk to their wellbeing, contributed to their participation in the GCC program. An organisationally provided, intranet-based, open access forum was considerably underutilised despite most employees valuing workplace integrated social media support for the GCC and other workplace PA programs. Some employees established their own social media communication mechanisms to better address their glocalised peer support needs.

Originality/value – This research builds upon prior investigation of office-based employee perceptions regarding use of social media to enhance employee engagement with workplace health and wellbeing programs. This study extends this by identifying the potential to augment participant experience and reducing sedentary health risk exposure via

the integration of localised workplace-specific social media with a globalised corporately targeted PA program among desk-bound employees.

Keywords: Sedentary behaviour, Physical activity, Global Corporate Challenge, Social media, Qualitative research.

Paper type: Research paper

1. Background

Referred to as Australia's greatest health challenge in the biennial Australia's Health 2014 document, chronic diseases already contribute substantially to an interlinking of diseases, conditions and risks responsible for 90% of all nationally recorded deaths (Australian Institute of Health and Welfare, 2014a). Using Body Mass Index (BMI) status as a measure of population health status, the recently released Australia's Health 2014 (Australian Institute of Health and Welfare, 2014c), indicates that 63% of Australian adults (70% of men and 56% of women) were considered either overweight or obese in 2011–12. This represents an increase from previous figures of adult overweight/obesity in Australian adults of 61.2% in 2007–08 and from 56.3% as recorded in 1995 (Australian Bureau of Statistics, 2012d).

In light of seminal research by Katzmarzyk *et al.*, (2009) who identified a dose-response relationship between the practice of sedentary behaviour and numerous causes of mortality in isolation of physical activity levels, the Australian Government has now added sedentary behaviour guidelines to the long-established physical activity guidelines (Department of Health, 2014b).

Given that national employment volumes for both full and part-time employees in November 2014 was recorded as 11,613,900 employees or a 64.6% national employment participation rate (Australian Bureau of Statistics, 2014b), this highlights that a considerable percentage of the total Australian population constitutes the critical human workforce upon which many organisations rely to conduct business.

While technologies that optimise work processes, saving time and associated employee costs have been integrated within the typical office workplace, a negative by-product of the desk-bound workforce has resulted in a marked decrease in employee workplace physical activity (Philipson & Posner, 2003). The contribution of office work to sedentary behaviour associated risk was recently reinforced through a cross-sectional study of 50 office-based

employees that found sedentary time accounted for 81.8% of employee work related activities across an objectively measured seven day duration. A further 15.3% of employee work time was categorised as light activity with only 2.9% considered as moderate or vigorous in nature (Parry & Straker, 2013). The study also found that sedentary bouts of >30 minutes were more frequent during work time comparative to non-work time, which indicated that less breaks contributed to employee work time sedentary health risk exposure.

The 2011–12 Australian Health Survey further indicated that occupational role played a significant part in reported sedentary behaviours with desk-based clerical and administrative workers being the most physically inactive based on the prior week's reported activities (Australian Bureau of Statistics, 2013e). Considering recognition that a third of an employee's life while awake is spent engaged as an employee within the work environment, often for many decades (Bupa, 2009), sedentary workplace behaviours understandably translate to a progressively widespread problem as a result of increasing percentages of employees now occupying physically inactive work roles (Kirk & Rhodes, 2011). Despite such an understanding, the published literature to date has primarily focussed on the inter-relationship of sedentary behaviour and environment in children, rather than adults, presenting a notable dearth in observationally based studies to inform on environmental and social determinants of sedentary behaviour for working adults (Owen et al., 2014).

Due to the stable nature of workforce populations and ongoing regular contact time with employees, workplaces represent an excellent environment to deliver individual and group targeted wellness programs. In recent years, the workplace has been seen by government and private sector management as an environment suitable for human capital investment, where employers can positively influence the health behaviours of their employees. In light of this however, systematic review of worksite health promotion programmes by Robroek *et al.*, (2009) identified that participation levels can vary from between 10% and 64%, with a median participation rate of 33%. Settings based programs, including those focussing on increasing PA within office based workforces, have sought to promote positive health behaviour change through engagement with corporately targeted programs such as the highly popular Global Corporate Challenge (GCC).

The GCC is an annual 16-week, worldwide corporate employee PA program that seeks to foster long-term positive health behaviour change among corporate employees.

Participants wear pedometers throughout their awake hours, enabling them to track their individual and team step counts on the GCC website (Get The World Moving Ltd, 2013c).

Previous studies based on the GCC have shown that such programs contribute positively to employee health and sedentary awareness while enhancing corporate community by fostering social interaction among employees. One study highlighted the need to address the participation of sedentary employees and to enhance sustainability (Scherrer, Sheridan, Sibson, Ryan, & Henley, 2010), something the same authors earlier noted that GCC participants often reported reverting to their pre-involvement habits (Scherrer et al., 2008).

Since effective communication and informational approaches are critical to the delivery of physical activity promoting campaigns (Heath et al., 2012), a regular motivationally engaging communication strategy is a key element in facilitating workplace participation in the GCC. GCC registered organisations can use the program's globally accessible Facebook, LinkedIn, Twitter and YouTube social media channels as well as a wide range of other GCC resources to promote and facilitate the program in their workplaces (Get The World Moving Ltd, 2013b, 2013e, 2013f, 2013g).

A small scale study of ten research participant nursing staff, found that a Facebook application "Step Matron" was successful in increasing competitive employee pedometer based step counts within a UK hospital environment (Foster et al., 2010). Step Matron allowed for step entry only in the non-social cohort and in interactive mode allowed for step input, user ranking, user comments and update notifications of others updating their step activities or posting comments. Comparative to the control population, Step Matron recorded that nine out of ten nurses walked more as a result of participation in the socially enabled condition, by the end of the 21-day objectively measured research period. While limited in strength by sample size, the study was controlled for by having each participant interchange conditions at the half-way point of the intervention and still demonstrates positive associative qualities in using social media strategies to enhance step-based outcomes for those within more physical activity fostering work environments.

In adopting an approach using both globally enabled social media tools in association with online support communication strategies catering specifically for local users, a "glocal" adaptation of social media was found beneficial in catering for workplace PA participant communication needs. This concept in being simultaneously of both universality and local

specificity was popularised by Roland Robertson (Featherstone, Lash, & Robertson, 1995) and with application to workplace social media, may contribute to user experience in GCC like programs.

A systematic review and meta-analysis of social media usage for diet and exercise behavioural enhancement among age or health status targeted groups within the general population by Williams *et al.*, (2014), found that a limited significant benefit was reported by the social media enabled groups. The wide variation of communication mechanisms combined with low participation rates and poor reporting, are thought to have contributed to the comparative lack of measurable difference in key outcomes, including that of sustainable participant engagement. The majority of studies reviewed by Williams *et al.*, (2014) however, recognised the feasibility of social media interventions and 13 suggested continuing research in identifying optimal ways to direct interventions and enhance participation.

The following GCC centric study seeks to draw from employee experiences regarding the impact of participatory supportive social media entities, in order to enhance their use in association with workplace PA programs, particularly in those targeting sedentary workforces.

2. Methods

This ethnographic qualitative study employed three data collection strategies (pre-interview surveys, semi-structured interviews and a participant-observer method) to investigate the perceived employee value of social media in promotion and support for an office-based workplace PA program.

2a. Study setting and design

The study was conducted within the corporate environment of HBF Health Ltd (HBF), a large not-for-profit, Australian insurance organisation that provides health and other insurance services to its payment-based members. Throughout the study period, HBF was undergoing a business transformation, endeavouring to become more preventatively focussed as a “Health Partner” in its promotion of health and wellbeing messages to its members, its workforce and the population of its home state of Western Australia.

After the Human Research Ethics Committee of Edith Cowan University granted approval for this research (Approval #6634), HBF authorised researcher organisational engagement

which took place during and immediately after the workforce participation in the 2013 GCC, from 23 May to 11 September 2013. To foster workplace communication during the GCC, HBF introduced an organisational intranet social media “wall” enabling employees to post on a corporately open discussion board.

Figure 1 (after the methods) illustrates the integrated scheduling of HBF’s GCC program with the research activities.

2b. Pre-interview survey data collection

While some survey methodologists suggest the use of literature reviews and expert opinion to guide item generation, others such as Wackerbath *et al.*, (2002) advocate the use of preliminary data collection to develop relevant and appropriately worded items. As literature searches failed to identify any available survey instrument appropriate to the directives of the research and complimentary to the prior industry partner cohort findings, a customised survey instrument was developed. The findings of previously conducted focus group based research within the same organisation assisted in the development of a relevant and appropriate data collection instrument, collectively strengthening the reporting of data across survey and interview results by enabling triangulation during analysis.

The ten question survey instrument covered key areas of employee work environment (department), GCC participation level and experience, perceptions of social media as well as actual social media usage, and awareness of sedentary behaviour health risks. Survey pre-testing conducted with adult test participants from the general public (n=8) entirely unrelated to the study, resulted in minor survey amendments. The modified instrument was then tested on further (n=3) adult survey testers.

Research recruitment was restricted to the 455 employees (full-time, part-time, casual or contracted) of the total HBF employee base (n=900+), who participated in the 2013 GCC. With the assistance of the Manager of Safety, Health and Wellbeing, an internal company email was sent to these employees inviting them to take part in the research. All employee email respondents (n=41) were then emailed an information sheet and sequentially allocated to an interview timeslot based upon preferred employee time availability. A survey invitation email containing a unique user survey hyperlink was sent to each research participant approximately one week prior to their scheduled interview. To reduce potential

for interviewer bias, the results of the completed pre-interview surveys were not viewed or analysed until after the completion of all interviews.

2c. Interview data collection

A custom series of semi-structured interview questions were likewise developed to enable GCC research participant interviewees to comment privately on their workplace PA program experiences and whether and how they felt it could be enhanced in the future. The 20-question interview instrument covered key discussion areas relating to employee engagement and experiences with a PA program, use of mainstream social media and HBF's provided social media wall, perceptions of a workplace endorsed team-based social media system for providing peer support and raising awareness of the health risks associated with sedentary behaviour. The interview instrument was verbally tested with seven unrelated test participants (n=7) from the general public acting as hypothetical GCC participants, enabling reiterative refinement for clarity. All 41 survey respondents were privately interviewed in the two weeks immediately following the 2013 GCC program on-site at the workplace, where each interview session was digitally audio recorded and later transcribed.

2d. Participant-observer data collection

An ethnographic methodology was used to identify and document the key cultural aspects of HBF's workplace environment influencing employee participation in this PA program. During the 11 months from the commencement of the GCC in May 2013 through to April 2014, the researcher collected a diverse mix of ethnographically valuable resources including field notes of interactions, events and observations, corporately authorised documents and relevant organisational policies and administrative communications. These resources added depth to the survey and interview research findings concerning employee perceptions of the role social media could and did play in enhancing the experience of their workplace PA program.

2e. Analysis of pre-interview survey, interview and ethnographic data

After the completion of all interviews, the survey data was exported from the Qualtrics survey system and basic numerical total values were determined. Several pre-interview survey questions were also cross-matched to present sample representative response values enabling simple correlative associations between survey questions to be made. It was hoped that in identifying these survey response values, later analysis of interview and ethnographic findings would bring further understanding of the workforce.

All 41 interview transcripts were rechecked against the audio source for accuracy before being read sequentially. Thematic analysis began with initial use of broad codes followed by a repeated process of reading, coding, sorting, theorising and reflecting in an emergent type of coding process. This constant comparative method of analysis adapted from the Glaser and Strauss' (2012) 'grounded theory' approach allowed for constantly evolving data-based themes. To enhance data result validity, an independent researcher reviewed an early coded sample for inter-rater coding reliability. Data analysis was concluded upon reaching saturation of analysis, where no further themes could be formed from any additional viable codes. All comments by the interview participants cited in this study are labelled by interview ID number.

Ethnographic data was analysed using the same iterative thematic analysis approach as described for the qualitative interview transcripts above. QSR NVivo 10 software was used for interview transcript and ethnographic field note coding.

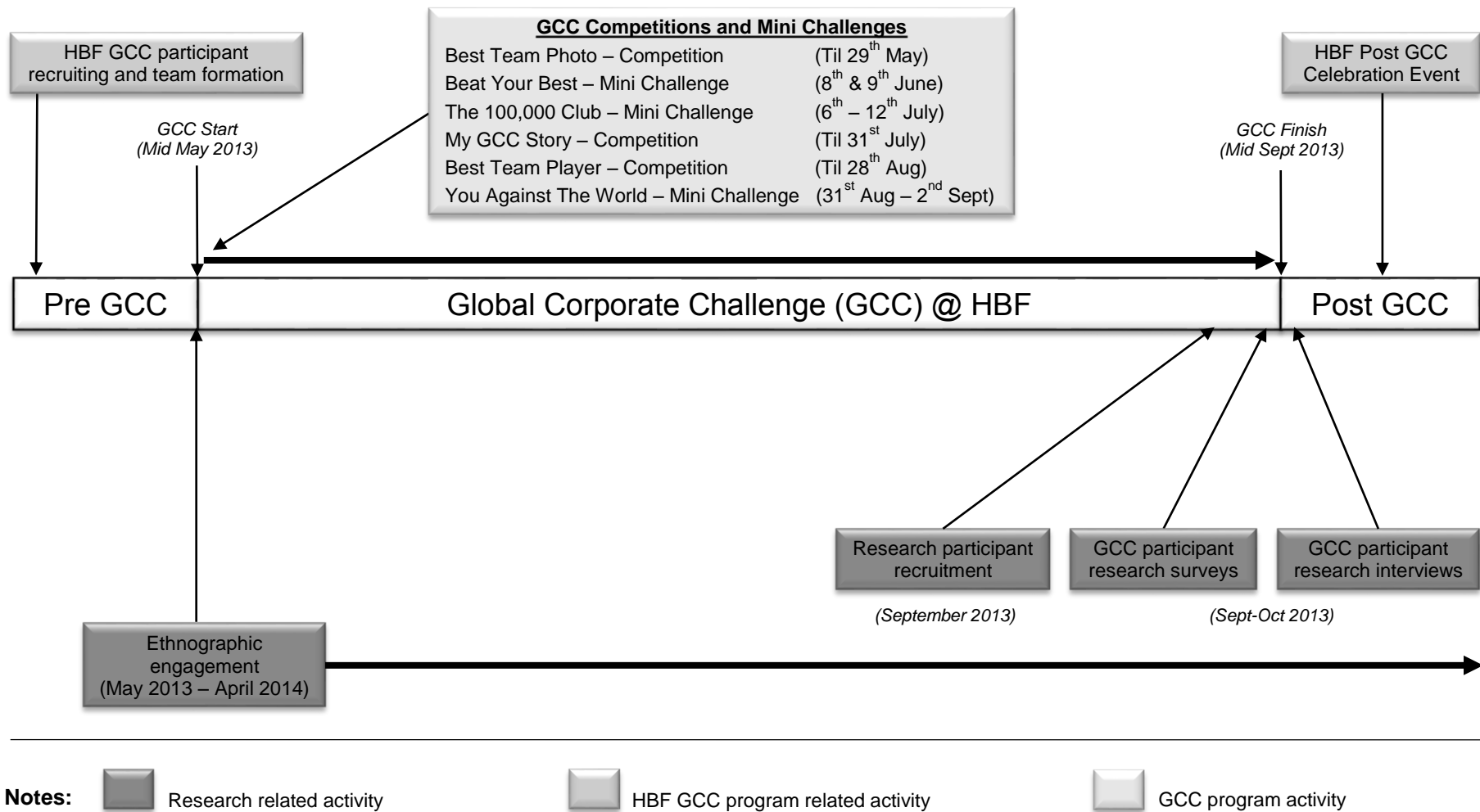


Figure 1: HBF's GCC program & research activity diagram

3. Results

Forty one (9%) of the eligible 455 GCC participants were recruited to take part in the research from a diverse range of business departments, these being: 14 from People and Performance (Human Resources/Learning and Development), nine from Distribution, five from Information Technology Services, four from Communications, three from Projects and Systems, two from Benefits Management (Broader Health, Health Partnerships, Group Loss, Viability) and one each from Group Risk/Compliance, Health Promotion, Member Support, and Healthguard (HBF sub-brand).

Of these research participants, 39/41 (95.1%) were employed full-time (including two contractors), and the remaining two were employed in part-time roles. The pre-interview survey indicated that just over 20% (n=9) participated in the GCC as team captains, which indicated a disproportionate 53% increase of GCC team captains among the research participant sample compared to that of the organisational GCC participant population. A gender split of 18 males and 23 females took part and while age was not specifically measured as a demographic, all participants were of working age (18–65yrs).

The four key themes identified through thematic analysis of the transcribed interview data and ethnographic field notes were: awareness of sedentary behaviour health risk, GCC participatory experience (including social media usage), HBF's in-house GCC social media wall and proposed organisational social media support for workplace PA programs.

3a. *Awareness of sedentary behaviour health risks*

The pre-interview survey identified that prior to the commencement of the GCC, 31/41 (75.5%) of research participants, were aware that workplace sedentary behaviours posed a direct health risks to themselves. The remaining 10 participants (≈25%) appeared unaware of their sedentary health risks prior to PA program participation but were motivated to participate for other reasons. Subsequent interview comments showed that reasons for GCC participation were linked to purposeful mitigation of their sedentary daily risk: *“To make sure that I get off my backside and do a little more walking, rather than sitting at a desk.”* [I28-L5]. Several other participants mentioned that using a pedometer to track their step counts: *“showed me how little steps I’m doing in a day and really just made me think “okay, the little bits I do are just not enough.”* [I17-L194]. Similar comments included: *“I was really interested to see how many steps I did actually do, rather than just what I fantasised about.”* [I20-L23] and *“It really highlighted how inactive you are when you work in this kind of*

environment, it really made me question my work environment.” [I30-L32]. Another expanded on this realisation by saying: “it makes such a difference to exercise levels when you make an informed choice to do more exercise or just to think about mobility and activity.” [I20-L167]. At post program interview, another participant stated: “Even though I consider myself to be fairly active, there were days when I’d be struggling to get three thousand steps and I’d be like “what on earth is going on?” [I40-L288].

Walking was preferred over both cycling and swimming for achieving “GCC steps”. Several employees mentioned their GCC program commitment fostered their use of personally hired treadmills [I17-L194], personally owned treadmills [I20-L129], workplace treadmills [I32-L141], and gym treadmills [I38-L163] to increase their daily step totals.

Occupational role, most specifically work within the organisation’s Member Call Centre (MCC), was repeatedly recognised by interviewees as having an adverse impact upon employee health behaviour through the sedentary nature of desk-bound work tasks.

Interviewee [I25-L217]: That’s the nature of the job because you’re on the phone and that is your job. You can’t just get up and walk away from your desk when you choose to or as often as you might like to.

The same employee commented that behaviours reinforced by this sedentary work environment also posed further harmful habituation consequences for inactive employees.

Interviewee [I25-L225]: There’s quite a lot of people in the MCC and in any contact centre, who can definitely do with doing a bit more exercise, but the habits that are created by that environment are very hard to break - even down to getting the lift from the ground floor to the first floor.

GCC program promotional posters and other marketing paraphernalia was observed by the researcher as highly visible within the workplace throughout the GCC program’s duration, serving as a constant reminder for employees to increase their steps. An interviewee contributed insightful comments regarding employee movement within the office environment, stating their perceptions that only those employees sitting at their desks for longer periods of time were seen as efficient and effective employees: *“I definitely feel that there’s a perception that you have to stay at your desk to be efficient and effective in your job. If you’re away from your desk or you’re talking to someone – it makes you look like you’re not busy.” [I12-L196]. The same participant continued: “I feel that, for me, it would be much more beneficial to add a few breaks during the day and go for walks instead of just at lunchtime.” They also felt that employees: “should have a balance and shouldn’t be sitting at your desk for the whole day. No-one likes that. You get burned out and sick.” [I12-L201].*

A different employee mentioned the duality in being both mentally tired after a day's work yet recognisably highly physically inactive.

Interviewee [I34-L174]: You might be doing a lot of mental work, but you've only done like three thousand steps, but you still feel exhausted.

Employees saw the GCC as a workplace program that at least temporarily fostered positive health behaviour change for those who participated.

Interviewee [I25-L225]: So hopefully with some of them, this sort of thing [the GCC] goes a little way to breaking that habit, but by the same token probably once it's finished, a lot of people go back to their old habits.

Catching the lifts for single floor journeys was a commonly reported workplace "misdemeanour" during the GCC, with employees suggesting there were some potentially elevated step counts and witnessed others using the building's lifts rather than using the nearby stairs.

Interviewee [I31-L54]: They were hitting however many steps and yet they were catching a lift to the first floor, and it was kind of like "mm."

Long term employees brought knowledge of earlier organisational strategies to limit sedentary behaviours including the now-abandoned practice of staff-prompted stretch breaks.

Interviewee [I09-L261]: What used to happen was, probably about every hour, every hour-and-a-half, one of the guys in the claims area would stand up, blow the whistle, everybody would stand up. No matter what you were doing, you'd just stand up and the person with the whistle would actually start doing some stretching exercises. It would be very basic, easy stretching, like hands in the air, stretch, hands by the side – just very basic twisting, just so that they actually get up and do something.

Researcher: Right, and this was for how long at a go?

Interviewee: Just for five minutes... then they would all sit down again and carry on with work, and I suppose in a way that was also breaking them up from looking at the PC all the time.

3b. GCC participatory experience (including social media usage)

In total, HBF enrolled a total of 65 teams in the 2013 GCC. Primary reasons for employee participation included wanting to increase pre-GCC daily physical activity levels [I15-L54], and wanting to do something with friends/colleagues [I12-L5] (including not wanting to miss out). Participation convenience was also considered a factor in affecting engagement with workplace health programs, with one interviewee detailing, "*I find it hard to make time out of work, so having them within work is handy for me.*" [I13-L52]. An employee identifying themselves from the HBF's communications team, said that their department had some

responsibility for promoting internal morale and engagement, and hence active GCC participation was something they regarded as their employee responsibility [I10-L6].

Workforce awareness of business migration from that of a health insurance company to a more preventatively focussed “Health Partner” organisation for both payment-based members and employees, was also a notable factor affecting GCC participation. One employee sharing her understanding of this, stated: *We’re doing it because we want to be a health partner for our members, and if we’re going to be a health partner we need to be advocates for healthy living and happy lives ourselves, and this is a great way of doing it* [I36-L230].

Corporate endorsement through the payment of employee GCC registration costs as well as the managing director’s friendly-spirited intranet blog taunt, stating that he and his team were going to win the Rockpool (prestigious Perth-based restaurant) prize as the team with the highest GCC score [I26-L25] were likewise valued. Employees felt this enhanced team excitement and PA motivation, while creating a spirit of friendly competition within the workplace [I18-L16].

Another experience-driven perspective offered, included one of participation based “*anonymous camaraderie*” in being part of something bigger than themselves.

That was the most enjoyable aspect for me, was realising that in most cities in a lot of countries around the world, there were people with these little things [pedometers] doing the same thing, sticking their numbers in, walking in the rain and doing the extra bits at lunchtime. And that was it for me - it was that kind of anonymous camaraderie that was global, and it is global, it’s not like there are a few people in Australia and a couple of people in America doing it. You look at the list of the thirty thousand teams that emanate from hundreds of different countries. Its like, “yeah, this is a global kind of movement” and it felt good to be part of that [I06-L321].

Team formation was most commonly noted as being self-selected within employee populations, however other strategies such as department based employee names being drawn out of a hat and allocated as either team captains or team members also occurred [I34-L246]. Other employees not yet in teams, reported being grouped together with employees from different work locations to form GCC teams of seven, which sometimes resulted in team cohesion challenges.

Interviewee [I15-L8]: Yeah, we were split into teams, mixed up teams, so we didn’t even have to create our own teams – we were given a team.

Researcher: So did you think that was a good way to be set up into teams?

Interviewee: Well, it didn't work out as well as I would have hoped, because they just put us with random people in the business unit. I didn't have any real connection with the other people and I think that maybe it was supposed to generate that sort of connection. That didn't happen, so I just felt like I was doing it by myself basically.

Researcher: Was there much communication as far as the team...?

Interviewee: None. None from my team captain or anything like that.

Retaining the team configuration was another challenge, with others attributing employee resignations, holidays and team member personal unfamiliarity as adversely influential.

"Then one person left, one person is in New Zealand, so all of our team members are kind of all over the place" [I13-L31] ... "the other ones I don't even know who they are." [I13-L44].

Age difference was further mentioned as a barrier between this participant and others in their team [I13-L109], opposed to previous GCC involvement where "*Last year we were all more of a family rather than this year.*" [I13-L19].

Almost all respondents commented that they considered the 16 week GCC program duration as too long, thereby making "*it tough for the team captain to motivate the team.*" [I05-L288]. Only one employee stated that they would not participate in the GCC again [I26-L112], later qualifying the program duration as their least favourite aspect of the GCC. The same employee stated while their previous employment role required them to be on their feet all day, their relatively new employment role now within HBF required them to be desk-based and sedentary "*I'd say probably ninety percent of the day.*" [I26-L13].

The GCC employed a number of mainstream social media entities such as Facebook, Twitter, YouTube and LinkedIn, as well as the GCC website's globally visible social media community page, accessible to participants following registration. Catering for an international audience through which to share their own content, several HBF GCC participants noted the "noise" of the global GCC provided social media forum rendered it ineffective for functional peer communication.

Interviewee [I06-L333]: I think the social networking aspect didn't hit the mark for me, because of the noise levels, I think I could have got a lot more value out of it. I just couldn't find a way to... I think even if I put something in there it would just disappear into the noise and well, what's the point?"

Further to this, they added comment about the loss in not being able to "know what's going on?" to those within HBF's other teams through this medium.

Interviewee [I06-L343]: I couldn't communicate with them. I couldn't go "hey HBF people!" because it would go out to everybody and get lost in the noise. So that was a particular thing that didn't work for me in terms of being able to communicate and know what's going on.

Another commented on the value of a globalised workplace-focused social media platform:

Interviewee [I18-L87]: At the beginning I was reading other people's comments from around the world, how they found what's helping them.

Researcher: Did you find that motivating?

Interviewee: Not really.

Researcher: Did you find you were able to get any ideas from them about the way they were approaching things or not really?

Interviewee: No. There were lots and lots and lots and lots of comments coming up [on the GCC social media page] very quickly. I think if it was just internal and you knew the people it's a little bit different, but at first it's like "oh yeah, it's all around the world." If it's internal it probably would be better.

Other employees shared similar views, one, despite not having enjoyed their participation in the 2013 GCC, said while they wouldn't post to an open forum [I26-L164], like the GCC social media website, they would have utilised a closed team-based system: "*Yeah, then I would. I feel comfortable with just my team.*" [I26-L168].

The pre-interview survey indicated that 34 (82.9%) of the 41 research participants already used social media in everyday life, independently 9 of 41 (21.9%) answered that they use social media as a key part of their employment role. Levels of social media adoption ranged from team members promoting their GCC participation on their personal Facebook pages and receiving "likes" (approval responses) [I10-L136], while others established their own Facebook GCC group pages through which to communicate with fellow team members [I18-L147], and other more technically minded participants used social media mobile apps.

Interviewee [I41-L97]: We had a WhatsApp group so we did sort of use social media but we used our own social channel to coordinate most of our chit chat and banter."

Interviewee [I41-L109]: We tried to look for something that was unanimous across all devices as well as free and that was the only one that really came to mind, so that was the platform that we chose. We tried [other mobile apps] and WhatsApp was just the quickest and easiest one to do."

3c. HBF's GCC social media wall

As previously indicated, HBF provided all employees (GCC participants or not) workplace only access to an intranet-based social media "wall" allowing employees to view and post to an organisationally "open" forum webpage. The discussion board type forum was introduced specifically for GCC participant communication during the workplace PA program and was integrated via a hyperlink within the organisation's intranet "The Pulse", accessible from the browser homepage on all employee workplace computers. Promotion of the GCC program occurred through this usual workplace communication channel with text reference to the availability of the social media wall as an inaugural add-on to the workplace PA program.

At the completion of the GCC, employee use of HBF's GCC social media wall comprised only six online forum posts, two of which were contributed by the Manager of Health, Safety and Wellbeing and a final two by the researcher in the last weeks of the GCC in an attempt to promote forum communication.

Interviews identified that only just over half (n=22) of the research participants were aware of the HBF GCC social media wall when prompted. Others were entirely unaware of its existence on the organisational intranet [I34-L103], or were aware but reported that they didn't use it due to time limitations relating to their customer service roles [I02-L62].

Other reasons for limited HBF social media wall usage suggested by interviewees included:

- Hard to locate and access easily
- Lack of interaction / posted content
- Organisationally open forum
- Workplace culture that is still learning to embrace social media communication.

Citing an access barrier to usage, others suggested it *"Should have been more prominent."* [I13-L88], another mentioned: *"The HBF one was quite hard to find. I only really got to it through the emails that [the HBF GCC administrator] sent, even trying to go back to it and check things, like to check and see if my team had posted anything."*

Researcher: So it wasn't as upfront as much as it needed to be?

"No, and I was thinking that maybe that was a bit of a barrier to people posting on it." [I40-L174].

Several interviewees stated that a lack of visible HBF GCC wall communication, deterred them from posting, *"I did notice that there wasn't a lot of stuff going on. I suppose it was mainly for people to go to, to write stuff on, and I didn't notice a lot of that"* [I14-L92].

The open nature of HBF's social media wall, was also recognised as being a post restricting factor due to its adoption of the broadcast approach typically used for mass communication. Having mentioned their four month only employment period, an interviewee noted their resistance to posting to a forum that the managing director could also view:

Interviewee [I17-L89]: I think for me it was a matter of everyone being able to see it and such a big organisation, maybe I just felt I didn't want to stand out by posting, so that's why I didn't do it [post].

In contrast to this however, another employee discussed HBF's gradual introduction of various internal social media channels, such as the HBF GCC wall, for promoting open communication among all employees:

Interviewee [I14-L116]: We've only had Rob's Blog [managing director's social media intranet page] for a while as well. I think people are just getting used to the fact that we're now asking them to comment on stuff when we never did before. We have a lot of young people in the business who are used to writing their opinions on everything, but there would be an equal number of older people who aren't used to that. Plus it's a relatively new thing we're asking people to do. Before, the intranet was never this interactive, so I think people are just getting used to the fact that they're allowed to reply to Rob or write on the [HBF] GCC Wall.

One employee offered insightful recognition that HBF is *"still quite immature in the social strategy... So I think Rob's Blog is the start of that, where people have started to open up and I think it will just eventuate from there once it's culturalised in the company."* [I41-L63].

Other employees offered a variety of personal reasons for not engaging with HBF's in-house GCC social media wall by stating: *"I just didn't have anything to say... and I just don't have time at work"* [I20-L44], *"Didn't post to it – At work I always keep a fairly low profile."* [I21-L90], *"I probably try to separate my social media from work related things."* [I01-L62] and *"Everyone can see it, so people might be a little reluctant to write what they really think."* [I14-L112].

3d. Proposed organisational social media support for workplace PA programs

To a pre-interview survey question about the proposed use of a workplace-endorsed social media platform, allowing for team-based communication, 33 of 41 (80%) of respondents indicated that they would use it if others in their workplace PA program (GCC) team were also actively using it. Interviewees also reported overwhelming support for the proposed suggestion of using a glocalised workplace-focused social media system for team-oriented workplace PA program enhancement. One where employees could *"see other people's steps and send messages to encourage them, or those who were doing really well, you could say "well done" or maybe you could have like one of those emotive things where you could do a thumbs up or something like that."* [I19-L95], was considered of value for team communication. Others put forward that the scope of the online audience would influence their likelihood for posting: *"Yeah, I'd probably be more inclined to use something that where I'm communicating with my team rather than with the wider community."* [I15-L125]. A GCC team captain also noted social media's potential to reduce the workload they faced in

reminding team members to update their daily step totals contributing to the team score: *“it would’ve been handy when I was trying to rally the troops to get their steps in.”* [I14-L128].

Compared to the use of the entrenched office environment communication mechanism, email was considered by many as poor for communicating workplace health messages. Numerous interviewees mentioned that generic GCC originating emails or even internal team captain emails *“Just get deleted.”* [I14-L139] or they were deleted *“because it fills up my inbox”* [I22-L201]. In responding to interview questioning about completing GCC mini challenges, one HBF GCC participant admitted, *“No, I didn’t. A bit busy at work so when I got the emails it was all to my work email [address] so I just deleted them. I was too busy.”* [I13-L10]. Employees pointed out that GCC related emails took a contextually lower priority due to the daily volume of incoming emails: *“Yeah, I get up to sixty emails a day and you reach saturation point... sometimes it’s like “I don’t really have time for this.” So it does take a lower priority.”* [I21-L233].

An opposing viewpoint suggested that HBF already had the appropriate tools in place: *“We were using email for that anyway, so the team captain would send something out saying “this is what we’re doing” and look, it does get a bit messy with “reply all” and you end up with a significant thread, but because we weren’t emailing that much I don’t think we would’ve written on a thread that much either, or in a personal forum.”* [I23-L88]. Another employee proposed real-world reasons for their team captain’s role in using email, *“because I know they would check their emails every day, but you wouldn’t necessarily get people using a forum, and not everyone is computer savvy.”* [I40-L184].

In raising some workplace social media enablement considerations, one interviewee suggested: *“I think that kind of thing [team-based workplace social media] would be useful as long as everybody uses it. It would have to be promoted and easily accessed, and to be made a little bit more part of the program.”* [comparative to HBF’s existing GCC social media wall] [I40-L201].

4. Discussion

It was not surprising to find a high level of sedentary behavioural health risk awareness among those surveyed and interviewed as research participants, given the nature of their engagement with the GCC PA program. Pedometer usage was verbally reported as an effective way to quantify participant PA levels, similarly reported by To *et al.*, (2013), and

assisted employees in identifying whether they were meeting the GCC's recommended daily guideline of 10,000 steps, or personally defined targets. Occupational role was recognised as influencing employee movement capability, as were other barriers including a lack of time to participate in workplace PA programs, particularly in relation to call centre time restriction pressures, comparable to those previously studied in call centre roles (Edmunds et al., 2013).

In recognition of the current organisational business transitioning from health insurer to health partner, employees saw HBF's participation in the GCC as demonstrating both to HBF employees and members that HBF was acting in accordance with its advocacy for healthy living. Team formation occurred through a variety of strategies with mixed results. Despite the introduction of a HBF social media "add-on" for its employee intranet, the workplace discussion board was underutilised as a result of several factors that disincentivised employee posting and return visitation. A number of teams introduced custom GCC communication pathways using existing or specifically created team-based Facebook (group) pages and smartphone mobile apps like WhatsApp.

This study reinforces the fact that social media-led interventions are not to be regarded as the "silver-bullet" for corporate health program outcomes and employee adherence, (Williams et al., 2014), but that caution must be used in identifying that social media with its limited adoption by businesses, forms only part of the solution.

This study highlights office-based employee's recognition of glocalised social media for team communication and peer support to assist workplace PA programs to realise workforce health objectives.

5. Limitations and future research

Limitations that reduce the generalisability of this study include self-selection of participants which increased the likelihood of recruiting employees who were more motivated or willing to offer perspectives. Further, the increased overrepresentation of team captains within the research cohort, may be attributable to either captain self-selection or team encouragement for attendance as the team's "spokesperson".

In addition, conducting the study during health-oriented business migration to becoming a "health partner" with a pro-health workforce introduced potential for reporting bias. As HBF's

intranet-based social media wall was planned in isolation of the researcher, the research undertaken on it was opportunistic and observational rather than pre-planned and structured.

Scope exists for future investigations regarding use of popular social media to encourage healthy employee behaviours, particularly in sedentary office environments. Such investigations need to consider the context defined by organisational social media policy, evolving technology platform capabilities (personal monitoring devices / smartphones) and management and employee awareness of sedentary health risks. Given the identified poor performance of workplace email, perhaps workplace customised social media tools (catering for popularity trends in mainstream health tracking smart devices), may incorporate year round occupational health and wellbeing services, in the form of a “workplace health and wellbeing nexus”.

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About the author

Darren Webb is a PhD Candidate at Edith Cowan University, where his multi-disciplinary research focus is on preventative workplace health and the utilisation of computing technologies that enable it. Darren holds a Master's degree in Computer Science, a Bachelor of Science in Human Biology, a Graduate Certificate in Research Commercialisation and is a Certified Professional of the Australian Computer Society. He has developed industry-partnered wellbeing programs to reduce sedentary behaviours in office-based workplaces.

CHAPTER 6: Research Translation (inc Publication 4)

6.1 Introduction

Research translation is the capacity for using knowledge gained through scientific investigation for applicable and meaningful benefit. Research translation is thus concerned with how problems are translated from theoretical understanding to workable solutions and therefore represents benefits for a range of science disciplines, especially medical, behavioural and social sciences. Although the creation of research driven knowledge often doesn't contribute directly to positive health impact in populations, it can inform policy development to promote better practice (National Health and Medical Research Council, 2014).

This chapter addressing both the topic of research translation and the broader topic of knowledge translation has two distinct sections. Section one is an introduction highlighting how the PhD candidate's research objectives and innovative outputs align with the strategic priorities of research host organisation Edith Cowan University. Section two is a journal article, already submitted to the Journal of Participatory Medicine, outlining the rationale for development and piloting of an innovative software output created by the researcher and colleagues that assists office workers to reduce the extent of their sedentary behaviours in their desk-based work environments.

6.1.1 Research objectives

The overarching research objective for this study was to gain insight into desk-based (predominantly sedentary) employees perceptions relating to the use of social media to enhance engagement in workplace physical activity programs. The three more specific sub-objectives contained with the overarching objective were:

- *Sub-objective A*
To explore employee perspectives of the value of workplace endorsed social media for enhancing participation in a workplace physical activity (PA) program such as the GCC.
- *Sub-objective B*
To examine the organisational culture of participants engaged in the GCC and identify which aspects contributed to their positive and negative experiences.
- *Sub-objective C*

To increase industry partner's management knowledge about the experience of participating in the GCC and their capacity to enhance the engagement and outcomes for future employee participation in GCCs.

6.1.2 ECU's strategic priorities

As outlined in the document, "Engaging Minds, Engaging Communities: Towards 2020", (Edith Cowan University, n.d.), the strategic priorities of Edith Cowan University are to:

- create positive outcomes in our communities through mutually beneficial engagement,
- deliver accessible world-class education and an enriching student experience,
- enhance the personal and professional outcomes of graduates,
- strengthen research capability, capacity, translation and impact, and
- enhance organisational resilience, sustainability and reputation.

6.1.3 Alignment of ECU's strategic priorities with research objectives and outcomes

This section shows how research objectives and sub-objectives align with the five strategic priorities of Edith Cowan University documented in "Engaging Minds, Engaging Communities: Towards 2020".

ECU strategic priority 1: *Create positive outcomes in our communities through mutually beneficial engagement.*

The PhD candidate's establishment of a formalised industry partnership between ECU and HBF Health Ltd was a critical step in developing collaborative research enabling engagement with a real-world office-based employee workforce and increasing organisational awareness of how sedentary behaviour impacted staff health. The HBF workforce contributed knowledge and insights to the research into culturally viable approaches for using social media to support future efforts to both minimise the workplace's harmful sedentary behaviours and enhance the wellbeing of the workforce.

ECU strategic priority 2: *Delivering accessible world-class education and an enriching student experience.*

The industry partnership gave the researcher unique access to the employees and resources of HBF, an evolving organisation seeking to enhance the health outcomes for its members, employees and the wider WA community. Having the highly supportive mentorship of HBF's Manager of Health, Safety and Wellbeing, Mr Jon Haines and direct access to his 20+ years of experience-based knowledge proved invaluable. It assisted the

PhD candidate researcher to gain world-class, student enriching experiences that exemplified authenticity in the effective communication of a healthy workplace culture.

ECU strategic priority 3: *Enhancing the personal and professional outcomes of graduates.*

The culturally-oriented ethnographic methodology used in this research facilitated the PhD candidate's personal and professional growth throughout the period of industry partner engagement. The participant-observation undertaken as an embedded "employee" within HBF also allowed the researcher to interact directly with the HBF workforce and management. As a well-respected representative of the university, the researcher was also able to contribute to implementation of HBF's organisational directives through his own research objectives.

ECU strategic priority 4: *Strengthening research capability, capacity, translation and impact.*

Through a four year industry partnership built upon a shared objective to identify potential ways to reduce occupational physical inactivity risk and enhance the health outcomes of desk-based office workers, this research project benefitted greatly from a common interest in harnessing social media to empower employees to support each other while becoming more physically active within their workplace.

To this end, the PhD candidate and three other health and technology professional colleagues developed a unique software application that features a social media system for the workplace and regularly prompts sedentary desk-based employees to perform basic PA tasks. The collaborative design and development of this software, has and continues to foster ongoing translation of knowledge gained from industry partner workforce engagement into a generalisable tool for promoting healthier workplace behaviours.

As reported in the following publication, this translation process has been found to afford benefits to both the employee and the industry organisation. In accordance with the previously mentioned ECU strategic priority for engaging with communities in mutually beneficial ways through research, it enabled the PhD candidate researcher to develop unique skills and options for future research.

ECU strategic priority 5: *Enhancing organisational resilience, sustainability and reputation.*

The research undertaken for thesis centred on HBF employee perceptions regarding the use of workplace-endorsed social media to enhance participant experiences of workplace physical activity programs. As employees form the human resource backbone for any business, catalysts like social media enablers, that enhance employee health and wellbeing programs through fostering less sedentary work-styles, can synergistically enhance organisational resilience, sustainability and ultimately reputation.

6.2 Innovative software and intervention

*The following publication is currently under review at the
Journal of Participatory Medicine (JoPM)
<http://www.jopm.org/>*

Office innovation helps employees “Find 30 in 9 to 5” to counteract sedentary health risks

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Abstract

Summary: Webble Move!™ (WM) is an innovative software-based workplace wellness tool that seeks to promote increased physical activity (PA) within populations of sedentary, office-based workplaces. WM integrates user prompting, exercise activity demonstration, workplace focussed social media, a PA competition, and management tools to encourage more frequent and regular occupational physical activity (OPA). An early trial introduced into an office-based workforce as the “Finding 30 in 9 to 5” program, proved beneficial to users and further product development is continuing.

Keywords: Workplace health and wellness, physical activity, sedentary behaviour, social media, Webble Move!, participatory medicine.

Citation: Webb DL. (2014). Office innovation helps employees “Find 30 in 9 to 5” to counteract sedentary health risks. J Participat Med.

Competing interests: The author is a final semester PhD Candidate researcher at Edith Cowan University and co-founder of Webble Guys Pty Ltd, an enterprise created to support the ongoing development of “Webble Move!” as a commercial research output resulting from his work on reducing sedentary behaviours among desk-bound populations. Darren

continues to conduct university and industry partner approved research and has lodged appropriate organisational conflict of interest declarations.

The problem

Sedentary behaviour is now entrenched within most of the developed world's office-based workplace environments (Prodaniuk et al., 2004), and sitting for employment-related tasks consumes a significant portion of employee time at work.

A 7-day, office-based, cross-sectional study of 50 employees conducted in 2008–09, objectively identified that over 81% of their work-time was sedentary and a further 15% was considered as light activity (Parry & Straker, 2013). Another objectively measured study of office employee (n=83) sitting patterns at work (Ryan, Grant, Dall, & Granat, 2011), identified that no research participants met the trial recommended 20 or 30 minute work bout, and only 8% met the 55 minute trial recommendation, across a 7-day test period. The study concluded that 25–67% of employee time spent sitting was accrued in periods exceeding minimum recommendations. With an increasing percentage of employees now occupying physically inactive work roles (Kirk & Rhodes, 2011), mechanisms to mitigate these effects through enhancing patterns of occupational physical activity (OPA) have become of critical value to research and industry approaches.

Current research approaches in mitigation of sedentary office employee health risks have focussed on the introduction of activity-permissive workstations, such as sit-stand desks, which have proven beneficial. A small sample randomised controlled trial of such office furniture usage found pairing with organisational and individual level support elements, reduced daily employee sitting by almost three times (89:33 minutes) in the supported cohort (Neuhaus et al., 2014). These differences between intervention cohorts demonstrate great value in fostering support elements in addition to the sit-stand desks themselves, within the workforce.

A systematic review of worksite health promotion programs (Robroek et al., 2009), found employee PA programs had median participation rate of only 33%. Based upon recognisable need to promote regular workplace PA as well as engage with greater numbers of sedentary employees, the approach taken in developing a new workplace program, was one that “took the program to the employee”. Given the computer-based nature of many sedentary employee work tasks, workstation desktop software that prompts employees to

engage in regular brief bouts of physical activity, has potential to increase an employee's engagement in workplace PA. Currently available products promoting desktop computer users to undertake workplace PA remain focused on reducing the risk of acquiring occupational overuse syndrome (formerly known as RSI), rather than integrating employee health benefitting physical activity in the office environment.

In February 2014, University of New South Wales' Centre for Health Informatics director, Professor Enrico Coiera stated that despite a number of consumer services such as banking and shopping now being online, there was no analogous engagement in terms of healthcare (Foresheew, 2014). *"The tools that consumers need to be more effective managers of their own healthcare will come soon,"* he predicted. Although not specifically talking about work environment health risk mitigation, he did remark that social media could also have a role in changing socially mediated diseases and health problems.

The innovation

Webble Move! is a workplace wellness tool resulting from PhD research into reducing sedentary workplace practices and a shared industry partner interest for enhancing the capacity of desk-based employees to improve their health by changing their own workplace behaviours. Key features of the Webble Move! prototype included:

- Regular and customisable movement prompts,
- Demonstration of a wide variety of low-level physical activity tasks, stretches and cardiovascular health-based tasks such as walking or stairs,
- Friendly workplace-based PA competition for both individual and team levels,
- Peer support via integration with workplace-based social media.

The workday of a WM-using employee is as follows:

- Normal commencement of workday (employees log onto workplace computer).
- At a pre-scheduled time, employees are prompted to perform physical activity.



Figure 1: Desktop prompting for exercise (Test example only)

When prompted, the user then has three options:

- Start – This initiates a timer that counts down from five minutes during which exercises are demonstrated, at the end of this time, a “completion” is recorded to the user’s profile, which can be seen by others in their team.
 - Delay 5 Mins – This lets the user complete their current work task (such as a phone call) by rescheduling the prompt for 5 minutes after the current time.
 - Do Nothing – This cancels the exercise prompt for that hour, but records a missed completion on the user’s profile, which is visible to their team mates.
- Employees are prompted to complete physical activities up to six times a day to promote both regular movement and reduce sedentary behavioural risk exposure.

As table 1 shows, WM’s default setting of 6 prompts of 5-minute PA sessions is designed to assist employees to achieve a total of thirty minutes of PA over their typical workday. WM can be customised to offer different activity types as well as prompting schedules.

Table 1: Example of a typical Webble Move! prompting schedule

Start Time	Finish Time	Activity	Duration (Minutes)	Daily Total (Minutes)
9.55am	10am	Resistance Exercise 1	5	5
10.55am	11am	Walk	5	10
11.55am	12pm	Resistance Exercise 2	5	15
Lunch				
1.55pm	2pm	General Stretch	5	20
2.55pm	3pm	Stair Climb	5	25
3.55pm	4pm	Resistance Exercise 3	5	30

All WM workplace physical activities can be performed safely within the typical office work environment. The range of tasks include variable resistance activities based upon the Thera-Band Academy’s recognised safe instruction, cardiovascular fitness tasks such as walking and stair climbing, as well as basic static stretches, all of which were reviewed by qualified exercise physiologists. The following image shows an exercise demonstration with an on-screen countdown timer indicating the remaining time to continue the PA.

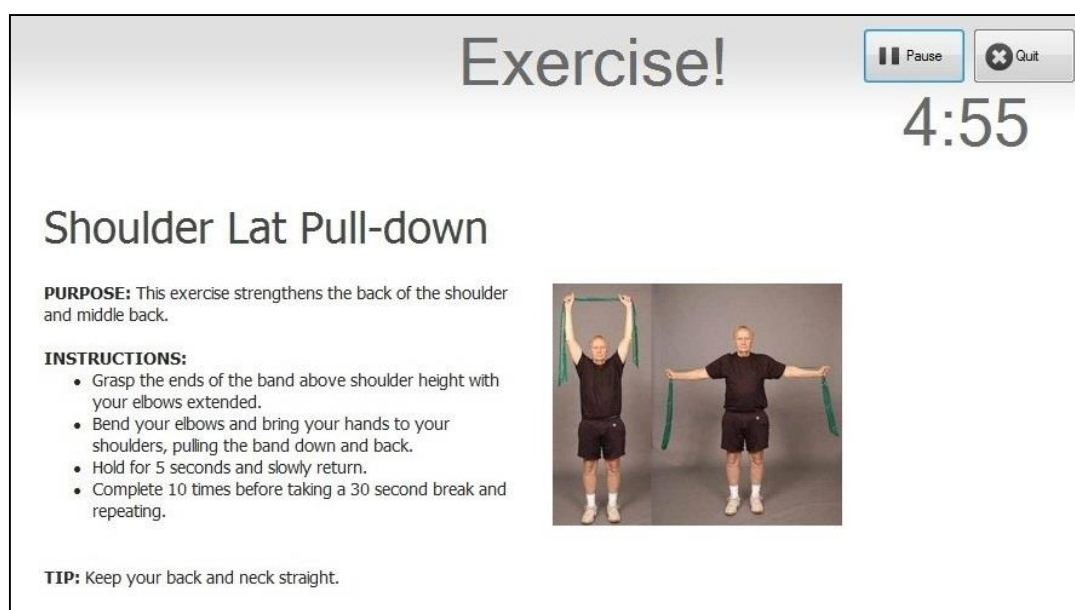


Figure 2: Webble Move! on-screen exercise demonstration using Thera-Band®

Prior to installation, users are required to acknowledge their safe workplace exercise participation, as well as adherence to organisational policies for which the employee organisation is responsible for communicating to their employees.

The WM desktop application icon (circled in red) allows status notification and easy access to program functions including those for workplace social media profile type communication and competition features as shown:

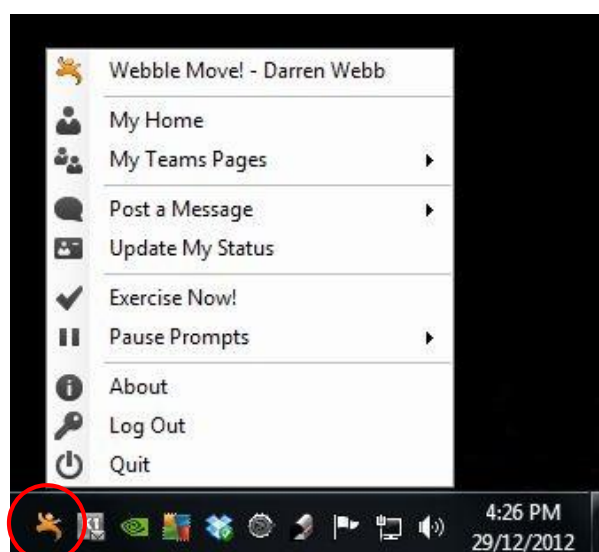


Figure 3: Webble Move!'s desktop application menu

- My Home – Opens to a user's profile page, enabling them to see exercise completion progress, link to their team mates and post social media comments.
- My Team Pages – Takes a user to a team page allowing them to view how their team mates are progressing in the competition and post social media comments.
- Post a Message – This link was unavailable during the initial trial.
- Update My Status – This link was unavailable during the initial trial.

- Exercise Now – Allows users to complete an exercise immediately without waiting for a scheduled prompt. Several people may choose to do this as a group activity.
- Pause Prompts – Users can “pause” their exercise prompts for set time periods such as 5 minutes, 15 minutes, 1hr or defer the remainder of prompts for that day.

Barriers to development

Limited financial resources have been the primary barrier to the ongoing development of Webble Move! in 2012–14, which has both slowed development and limited capability for product refinement. Fortunately however, the synergistic skillsets and passions of the four health and technology specialists involved, has led to the formalisation of a company, offering longer term project commitment.

Workplace trial

Webble Move! was first trialled for a 2-week period within the office-based environment of HBF Health Ltd, a health industry organisation based in Perth, Western Australia, following Human Research Ethics Committee of Edith Cowan University approval (Approval #6634). A total of thirty seven (n=37) working age (18-65yrs) employees were recruited following workplace presentations and shown a three minute introductory video outlining sedentary work-style health risks and how the program integrated within their workday.

The WM software was installed on participant’s computers in January 2013, and the program launched as the “Finding 30 in 9 to 5” program, encouraging desk-based employees to participate in six bouts of five minutes of screen demonstrated exercise throughout their workday. Limited to basic prompting, exercise demonstration and profile update functions only, the initial trial was restricted to those within the organisation’s Human Resources and Membership Relations Departments.

Preliminary findings

Twenty six employees involved in the workplace trials also took part in post-program feedback sessions that were held during workday lunch times with both the researcher and the organisational Manager for Health, Safety and Wellbeing in attendance. Feedback was predominantly positive and three participants with unique perspectives were asked to provide emailed responses of their feedback session comments which are as follows:

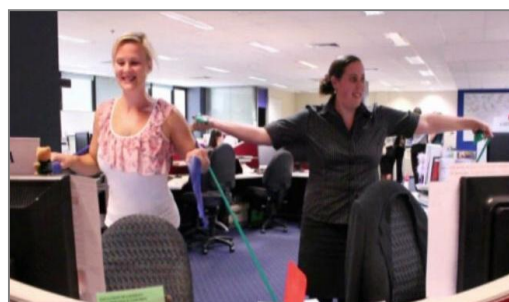


Figure 4: HBF employees performing WM exercises

Member Service Advisor – Member Call Centre

Just confirming how much of a difference your programme made to my chronic back pain. For a number of years now I have had back pain most days and for many years in the call centre have noticed how stiff and sore I feel when getting out of my chair. After a week I suddenly realised I got up from my chair without the usual stiffness and my back pain was noticeably better. If I had to put a figure on it I would say 90% better.

Thanks for the last 2 weeks, it has made a big difference with managing my pain, I'm happier at work and even my sleep has improved which I can link to the reduction in pain.

Workplace Trainer

Working in learning and development as a workplace trainer, I ran a training course at the same time as the pilot program. I was responsible for 7 people in the training group and asked them if they would like to participate in the program with me. Everyone agreed and was excited to be involved, I however was unsure as to whether they would keep their focus after completing the exercises. What I found was quite the opposite. During the exercise, because we were all doing it together they had fun and laughed which was a great energizer and after the exercise, it kept the learners keen to get straight back into the learning again. It even helped in avoiding the typical 3:30pm slump, and when we had to skip a 5 minute exercise, they were disappointed.

In summary, the 30 minute exercise worked well in the training environment and kept learners engaged in their learning, and therefore they performed well in all of their assessments that were conducted. Thanks for the opportunity to be involved, I am definitely going to use this as an energizer in my next lot of training.

Business Analyst

Just a short note to let you know how much I benefitted from your project.

Prior to participating in this program I tended to feel sluggish during the day, particularly after lunch. However, I can confirm that due to the short breaks every hour:-

- I now have renewed energy, focus and concentration,*
- I have reconnected with muscles long forgotten due to inactivity,*
- The breaks helped me realise how much time I tend to spend in a sedentary position with fingers on the keyboard staring into the monitor.*

I have also been procrastinating as far as getting exercise into my routine is concerned. I would be so tired after work that once I had dinner, I was too tired to think of exercise.

However I'm now walking every afternoon when I get home and have even encouraged my husband who has lost weight as a result! As a clear indicator of leading by example, our kids have also begun walking together at least three times a week, which was a real breakthrough because they usually just sit around and watch television or are on their computers.

In my opinion, employees exposed to this project, and who take up the initiative, could only benefit in a positive manner, if not only for themselves but for those around them.

Thank you for the opportunity to participate in the pilot and I look forward to it being introduced company-wide.

Anticipated effect of innovation

Based upon participants' feedback, the author believes there is great potential for organisations to foster employee wellbeing and social engagement by deploying health-focused software offering integrated social media tools. Webble Move! as a workplace-customisable tool gives employers an opportunity to engage with their employees via workplace PA programs incorporating popular modern communication mediums addressing organisational objectives and employee behavioural policies. As such, innovation affords participating employees the opportunity to develop and participate in their own positive workplace health cultures with potential to deliver health benefits to employees and their families.

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CHAPTER 7: General discussion and conclusion

7.1 Introduction

This research investigated employee perceptions of the value in using workplace-endorsed social media to enhance employee workplace physical activity and decrease health risks associated with desk-bound sedentary behaviour. Completed in conjunction with industry partner HBF who offered their workforce as a real-world research environment, the research comprised two studies of employee perceptions of social media usage for enhancing experiences of workplace-based physical activity programs, aimed at reducing health risks associated with sedentary behaviour. The thesis comprises four (4) publications covering:

- the influences of organisational culture,
- workplace communication,
- employee engagement with a global corporate physical activity program (GCC) incorporating social media and,
- the piloting of a custom software application incorporating a social media platform.

In clarification of the margins of this research, the definition of HBF employees' expectations of the feature set and capability that comprises a "social media" platform, while not discussed, was considered to be that of Facebook, a platform that all had some familiarity with even if they did not use it.

The conceptualisation of this research drew upon previously published literature highlighting the risks that prolonged sitting poses to the health of people engaged in desk-based work. Further research direction predicated upon the widely accepted knowledge that exercise is beneficial for human health, utilised workplace physical activity programs in active opposition to sedentary behaviour as a foundational principle for reducing associated employee health risks. Irrespective of PA program configuration, capacity to foster increased employee participation within the otherwise sedentary office workforce, offers both employees and employers obvious health risk averting returns.

The Theory of Planned Behaviour (TPB), a refinement of Azjen and Fishbein's Theory of Reasoned Action (TRA), provided the theoretical framework for this qualitative research. The TPB was selected for its capability to incorporate factors that relate and pose influence upon human health behaviours. While the TRA accounts for attitudes based upon beliefs,

the TPB adds the individual's perceived behavioural control or understanding of their own capability to act (Conner & Armitage, 1998).

Increasing PA is about predictive modelling of health behaviours and in this case, considering social media as a catalyst for participatory enhancement, justified use of a theoretical framework previously used in exercise-based interventions seeking to optimise PA programs based on population and behaviour (Rhodes & Courneya, 2003). Other studies associating PA with social-cognitive models, including a 15-year longitudinal test of the TPB to predict PA in a randomised national sample of Canadian adults, found that its long-term PA behavioural predictive capability was defined as modest (Plotnikoff, Lubans, Trinh, & Craig, 2012). Another study of 252 adults at risk of Type 2 diabetes, found that a cognitive TPB intervention consistently predicted intention to walk, but failed to predict actual PA levels or change, therefore showing the TPB as not always effective (Hardeman, Kinmonth, Michie, & Sutton, 2011). Such results therefore highlight that even the most rigorously tested and widely adopted theoretical frameworks have contextual and predictive limitations.

While a complex array of variances exist in the analysed usage of social media for health promotion among the general public, patients and health professionals, Moorhead *et al's* (2013) systematic review highlighted a research gap relating to the impact of social media on effort to promote behavioural changes linked to healthy lifestyles. Given the acknowledged extensive impacts of sedentary behaviour on the health of desk-based employees, this research focused on gathering knowledge specific to a population of office workers employed by an emergent "health partner" firm committed to fostering better workplace health and more active lifestyles.

Social media has acknowledgeable capacity to promote social cohesion and act as a peer support mechanism for PA activity program engagement within work environments and a wide variety of other social endeavours. This chapter summarises how the discussions of the preceding chapters have served to answer the primary research question:

- What perceptions do desk-bound HBF employees have of using social media to enhance workplace physical activity program participant engagement?

Addressing this overarching research question involved addressing two distinct sub-questions, namely:

- What aspects (if any) of HBF's organisational culture influence employee physical

activity program engagement?

and

- How can social media usage contribute positively to an employee participant's physical activity program experience?

As outlined in chapter 1 and cumulatively presented through chapters 3–6, the PhD candidate's hypothesis was one that office workers would perceive benefits in using social media within their work environment to support participation in workplace-endorsed PA programs aimed at reducing the health risks linked to sedentary behaviour at work.

Data addressing the research questions was gathered ethnographically through 24-months of participant-observation of HBF employees and managers, as well as through more formalised employee engagement processes, such as focus groups, surveys, and semi-structured interviews. The observational aspect yielded valuable knowledge of current employee perceptions of using social media to enhance the experience of those participating in workplace PA programs. It thus addressed the knowledge gap that Owen *et al.* (2014) had identified in contributing observationally-based studies within the broader realm of workplace health and wellbeing research.

Finally, the research objectives have been achieved through outcomes that provide both new knowledge and capability for further attenuating health risks posed to employees engaged in prolonged sitting as a result of job related tasks. The principal research objective in being able to “gain insight into the perceptions of (predominantly sedentary) desk-based employees about the use of social media for workplace physical activity program engagement”, was enabled through live interaction with HBF employee GCC participants both during and immediately after workplace PA program involvement. This work made known the value employees recognised in the use of social media, helped identify the organisational cultural influences that contributed to participant experiences, and provided HBF management with knowledge to enhance future GCC employee engagement.

7.2 General Discussion

The following discussion provides a collective overview of thesis chapters 3–6 which independently formed the following (Table 7) submitted peer-reviewed journal publications.

Table 7: Thesis chapters submitted for publication as journal articles

Chapter	Article title	Publication status
3	Transitioning from health insurer to Health Partner	Currently under review at the Journal of Organisational Ethnography (JOE)
4	Corporate communications on workplace wellness: office worker perceptions	Currently under review at the International Journal of Workplace Health Management (IJWHM)
5	Glocalised online support for workplace physical activity	Currently under review at the International Journal of Workplace Health Management (IJWHM)
6 (Pt 2)	Office innovation helps employees “Find 30 in 9 to 5” to counteract sedentary health risks	Currently under review at the Journal for Participatory Medicine (JoPM)

These chapters/articles were developed as mutually supportive components addressing different aspects of the research questions within the organisational context of an employee base of sedentary desk-based employees. One key strength of this research was that enlisting HBF as an industry partner gave the PhD candidate researcher direct access to corporate documents as well as the opportunity to undertake 24 months of first hand participant-observation. This general discussion summarises the ethnographic findings outlined in chapters 3–6, which revealed a rich corporate organisational culture, where employees shared and supported the HBF vision of fostering healthier lifestyles.

7.2.1 The article comprising Chapter 3

This article introduced the workplace culture of the corporate organisation engaged in the initial stages of a five year (2012–17) migration from a long-held role as a health insurer to a preventatively focussed “Health Partner” organisation. It highlighted HBF’s organisational directives, profiled its key employee influencers and outlined activities for both internal employee and external community engagement. Many of the envisaged member and employee outcomes for initiatives listed in HBF’s health partner strategic plan relied on the rich and well-established organisational culture underpinning engagement with members, allied businesses and the community.

The article noted that as part of its transition process and efforts to foster healthier member and employee lifestyles, HBF was establishing new channels for communication of health

messages and delivery of preventative health opportunities and other health services to members. HBF's establishment of multiple social media communication channels recognised the great capacity of this technological medium to support their business products, engage with their members and positively influence the larger West Australian community. HBF has a team of employees dedicated to maintaining an active social media presence on internet-based platforms such as Facebook, Twitter, Instagram and YouTube by regularly updating relevant business content for members. The most popular of these social media platforms is HBF's Facebook page (HBF Health Ltd, 2014e) which hosts a Community Health Advocacy Group with discussion, photo and video posting capability and healthy living links and a page promoting events organised or sponsored by HBF.

By late 2014, the approximate halfway-point of its five year business direction migration, HBF has made significant progress towards aligning and enhancing external member and community engagement while fostering internal employee health and wellbeing culture. Social media and other contemporary, bi-directional (inward and outward focused) communication mechanisms enabled through HBF's information technology infrastructure has been introduced into the workplace and become enmeshed with the emerging workplace culture. The compulsory annual employee compliance training promoted awareness of HBF's social media policy, which provided clear guidelines on workplace use of social media, which tacitly includes use during the participation of workplace PA programs. Participant-observation of employees revealed an unspoken consensus that maintaining the professional conduct advocated by that policy, influenced employees' communication behaviours and perceptions of social media.

7.2.2 The article comprising Chapter 4

The second article titled, "Corporate communications on workplace wellness: office worker perceptions" addressed HBF employee's perceptions of the impact and effectiveness of workplace communications designed to reduce health hazards, such as those associated with sedentary desk-based behaviours. Focus groups of HBF employees revealed a clear understanding of the link between prolonged sitting and lifestyle-related diseases. Other themes mentioned as contributing to employee productivity and an enhanced motivational factor for attending work included alignment of personal values with organisational values as well as those of fellow co-workers. HBF's policy-driven corporate commitment to improving workplace health throughout the organisation was evident in the operation of HBF's organisational health and wellbeing program. As in the Australian workplace studies

by Bennie *et al.* (2010), the organisation's formal corporate commitment to employee health and wellbeing via a variety of wellbeing programs was identified as contributing significantly to individual PA activity engagement.

Focus group discussion highlighting the sedentary behaviours associated with specific job role-based reality included the memorable and repeatedly echoed comment that:

"There's a running joke, especially on the first floor, if you start work in the MCC [Member Call Centre], you put on five kilos in the first couple of weeks."

This comment highlights widespread organisational recognition that the prolonged sitting involved in the phone-related customer service roles within the member call centre tended to increase the body weight of those workers. Fortunately, both management and employees understood and acknowledged this problem. Encouraging employees to participate in workplace PA programs was viewed as one way to counter this slow, but harmful impact of such sedentary work roles.

The range of barriers that focus group participants identified as impacting upon employee participation in workplace-offered activities included a lack of time, workload pressures, the type of activity itself, the alignment of employee to program objectives and the financial costs of participation. Focus group attendees judged the use of company email as not particularly effective in successfully engaging employees in workplace wellbeing programs. This was found to be because employees accorded far greater priority to work tasks or work-related emails, and therefore they tended to ignore or delete other emails.

In direct relation to the research questions, although the concept of utilising social media in an office environment for workplace wellbeing was initially new to employees, particularly in association with PA programs, there was a strong perception that given its considerable popularity in the public domain, it could be a viable enabler for workplace-based wellbeing initiatives.

By combining the many months of participant-observation with more formalised data collection techniques, the PhD candidate researcher became convinced that a management-guided, employee-powered workplace health culture served as a motivating factor contributing to active employee engagement in organisational health and wellbeing directives.

The purpose of this article was to contribute to the debate on the role that social media can play in promoting and supporting employee health and wellness in an office environment. The findings from the Chapter 4 article provided a perceptions based view of workplace social media usage which influenced the development of the data collection tools for Chapter 5's expansion of employee social media usage and perceptions in association with a workplace PA program.

7.2.3 The article comprising Chapter 5

The Chapter 5 article titled "Glocalised online support for workplace physical activity" considered the experiences of 465 (approximately 52% of all employees) HBF employees who participated in the 16-week, workplace-endorsed Global Corporate Challenge or GCC in 2013. HBF's migration to a "Health Partner" organisation during the period of research engagement undeniably influenced employee perceptions of workplace wellness and willingness to engage with GCC.

Through pre-interview survey and thematic analysis of semi-structured interviews and ethnographic observation-based resources, this study showed that employee participation was influenced by their awareness of exercise as beneficial in countering the health risks associated with workplace-based sedentary behaviour. The pre-interview survey found that 31 of 41 (75.5%) GCC participants were aware of sedentary health risks and this contributed in part to their GCC involvement. Interviewed employees realised the program's benefits in at least temporarily promoting positive health behaviour change among its participants, but were less positive about the long-term impact of the GCC.

Interviewee [I25-L225]: So hopefully with some of them, this sort of thing [the GCC] goes a little way to breaking that habit, but by the same token probably once it's finished, a lot of people go back to their old habits.

One employee used the term "anonymous camaraderie" to describe the experience of being part of something bigger than themselves. This perspective was developed as a result of visiting global GCC social media sources that allowed individuals and organisations to broadcast their activities to a worldwide audience. Other HBF employees reported getting lost amongst the "noise" of thousands of posts by unfamiliar GCC participants. This did not reflect a lack of familiarity with social media as pre-interview survey results showed that 34 of 41 (82.9%) respondents used social media in everyday life, and 9 of 41 (21.9%) indicated independently that social media was a key part of their employment role.

Employees indicated a preference for a [glocal] social media resource offering access to global resources, but adapted for their local organisational culture. Yet, despite this preference, the GCC social media wall that HBF provided for its employees in association with the corporate PA program attracted little use. A number of factors that included the rather basic nature of this internal platform, as well as a lack of promotion may have contributed to its lack of popularity. One problematic feature of this HBF GCC social media wall was its total transparency, with all of its employee posts being visible to every HBF employee. The researcher strongly suspects this both contributed to employee reluctance to use this company-provided system as a team communication mechanism during the GCC and fostered use of alternative self-resourced and more private platforms for team messaging.

Where the use of in-house social media promoted and provided by HBF in association with the GCC failed to meet specific employee communication needs, particularly across GCC teams, HBF employees acted autonomously to address those unmet needs. They used social media platforms such as team-based Facebook (group) pages and smartphone mobile apps like WhatsApp to establish alternative avenues for interpersonal messaging within their GCC teams.

In addressing the second sub-question, it was evident that employees valued participation and peer employee support through social media particularly in team-based situations. Eighty percent (33 of 41) of the surveyed HBF employees indicated their willingness to use a workplace-endorsed social media platform actively used by other HBF employees in their GCC team.

Part of HBF's move to becoming a proactive "Health Partner" has led to the establishment of new intranet-based communication platforms such as "Rob's Blog" [the managing director's own social media intranet page] and the "Idea's Patch" [an ideas contribution forum for HBF employees]. Both channels enable less formal communication between senior management and employees and vice versa, than previously entrenched pathways such as global corporate emails. One employee comment on the introduction of this more informal broadcast form of workplace communication was that HBF is *"still quite immature in the social strategy... So I think Rob's Blog is the start of that, where people have started to open up and I think it will just eventuate from there once it's culturalised in the company."* The published literature (Williams et al., 2014) likewise holds that use of technologies

fostering social network to deliver sociocultural interventions that promote and sustainably support workplace health is still in its infancy.

As with the earlier focus group study, HBF's GCC participants regarded email as a poor medium for health promotion and participant program engagement. Numerous interviewees reported that their daily volume of incoming emails invariably led them to delete any emails not of immediate importance to keep their work on track. One interviewee referred to an unspoken health-impacting belief that only those sitting at their desks for prolonged periods of time were seen by others as efficient and effective employees. This employee stated, *"If you're away from your desk or you're talking to someone – it makes you look like you're not busy."* The same participant offered a personal preference for a healthier work culture that encouraged and integrated breaks from sedentary activity throughout the workday, believing it would offer more health benefits: *"I feel that, for me, it would be much more beneficial to add a few breaks during the day and go for walks instead of just at lunchtime."*

Participant-observation revealed that both HBF as an organisation and its employees were becoming more comfortable with using social media for business communication (external usage) and employee engagement (internal usage) during the course of this research project. This study highlighted the value HBF employees placed on having access to "glocalised" social media for team communication and peer support that assisted workplace PA programs to achieve workforce health objectives.

7.2.4 The article comprising Part 2 of Chapter 6

The first section of chapter six highlighted the congruence between the research objectives and innovative trial outputs with the strategic priorities of research host organisation, Edith Cowan University. The fourth paper titled, "Office innovation helps employees "Find 30 in 9 to 5" to counteract sedentary health risks" reported on the introduction and trialling of Webble Move!" an innovative software product designed to promote physical activity within a desk-based office population. Software developed collaboratively by the PhD candidate researcher as part of this research project represented a practical implementation of knowledge gathered during the project. This innovation based paper focussed on the association of the research in fostering social cohesion (participatory experience) within adversely health impacting environments such as office workplaces through the emergent advocacy of participatory medicine. Participatory medicine is a model of cooperative care that involves the direct involvement of both patients and professionals to impact upon an

individual's health (Society of Participatory Medicine, 2014). Though predominantly applied to the patient-doctor paradigm, the central tenet of participatory medicine is a networked effect that may assist 'at risk' and passive employees to take more active and responsible roles in caring for their health while at work.

From a social epidemiological perspective, concepts of 'lifestyle' and 'risk' impose health impacts, influenced by the choices available to individuals and the daily behaviours those individuals make, or adversely don't make (Lupton, 2013). As outlined in the literature review, the lifestyle-related and risk-related health hazards of sedentary behaviour in office workplaces impacts on both the employees and their employers. A narrow focus on business priorities can so easily lead both employers and their employees to overlook options for increasing PA in the workplace, so much so that workplaces need integrated systematic approaches to remind people that they can choose to break up their sedentary time.

Development of the Webble Move! software was thus triggered by the need to find engaging and convenient ways to prompt greater numbers of desk-bound employees to break up their habitual sedentary behaviour by engaging in brief bouts of PA while in their workplace. The paper covered the rationale, development and initial sedentary workforce trial of this unique software application.

Management approval for the trialling of Webble Move! within HBF led employees to perceive their organisation's management as willing to understand and address the health issue concerns of employees who support their business. Employees using Webble Move! increased their capacity to take an active role in reducing their own health risk exposure linked to sedentary behaviour and reported positive preliminary outcomes with numerous collateral-health benefits. From a physical and social perspective, they also improved their workplace wellbeing. New workplace behaviours triggered by the use of Webble Move! were well tolerated in the short-term.

While the initial workplace trial of 37 sedentary employees did not involve use of social media, feedback gathered at three feedback sessions indicated that employees were interested in engaging in workplace physical activities as a group. Some employees regarded the ability to "sync up with your neighbour" as beneficial especially for new

employees undergoing workplace skills training. There were also reports of self-introduced group exercises being led by a workplace trainer, who was also a research participant.

7.3 Limitations

Where appropriate, limitations have been indicated within each publication, however certain limitations common to several of those articles merit further discussion.

- **Industry partner organisational migration**

As previously noted, the engagement with the industry partner HBF was a strength of this research project. That organisation's transition from a health insurer to health partner role must, however, be acknowledged as a unique influence on the reported research findings. While HBF's engagement with this project began in April 2010, the impacts of organisational migration began in 2012 at the time of research participant engagement. The planned research did not therefore occur within a "business as usual" environment, but within the more pro-health emergent corporate organisation documented in the first journal article. The accompanying increased awareness of organisational health focussed directives including those on sedentary workplace behaviour proved a definite boon for the research project.

- **Social media definition and HBF's GCC wall**

One limitation not mentioned previously is the definition of what technology solution constitutes a "social media" entity. Initial research regarding the employees' perception of this concluded that Facebook's current pervasive popularity meant it had in effect, become the benchmark social media entity. As Internet users accustomed to having 24/7 access to their social media service, HBF employees expected HBF's social media channels to offer comparable accessibility. The HBF GCC social media wall used in association with the workplace GCC PA program could not however meet these benchmarks and expectations. Being part of HBF's intranet system meant the GCC social wall had limited functionality, lacked the visual appeal of Facebook or similar contemporary platforms, and was accessible only from within the workplace. These limitations clearly made HBF's workplace less than ideal for a study of modern social media integration with an office-based population. Other factors that may have contributed to the poor in-house uptake of HBF's intranet-based social media forum include:

- Familiar established email and mobile sms practices gave employee little need or incentive to use the GCC wall
- In-house promotion of the social forum was poor
- Open nature of the platform that meant everyone's posts were visible to everyone else

- Poor forum usage discouraged potential posters which self-reinforced the disincentive to check back to see if new content had been added
- Short duration of the GCC meant its social media community had insufficient time to evolve, and
- The wall lacked instantaneous communication features such as a notification system or mobile app.

As HBF's intranet-based social media wall for the GCC was planned in isolation of the researcher, the research undertaken on it was opportunistic and observational rather than pre-planned and structured.

7.4 Recommendations for future research

Technology-enabled social media is a rapidly evolving communication medium limited only by the engagement of its peer driven users. Facebook's continuing popularity and over 1.35 billion monthly active users (Facebook.com, 2014), indicates demand for social media shows no sign of abating. As adoption of social media platforms for external business-related tasks such as the marketing of products and services, customer communication, employee recruitment and organisational representation grow ever wider, opportunities for researching with "inwardly facing" employee social capital enhancing mechanisms now also exist.

Evolved forms of social media including corporately targeted "enterprise social software" platforms such as Yammer, which was strategically purchased by leading technology firm Microsoft in 2012 (Yammer, 2014), have been designed around the concept of facilitating workplace collaboration that promotes employee social inclusion and workplace wellbeing, may be of future investigative interest. Despite the limitations acknowledged earlier, this research points to increasing opportunities, scope and benefits for research on "inwardly facing" mechanisms for enhancing employee social capital and workplace health.

The entry into the workforce of younger employees who grew up with digital technology, understand its value and often place technology at the heart of their lives, adds to the growing demand for socially engaging workplaces. These young "digital natives" seek out ways to autonomously integrate social media with existing workplace practices, and tend to value social connections and employer flexibility of work/life balance over monetary compensation (Hewlett, Sherbin, & Sumberg, 2009). It is, therefore, highly likely that these younger workers will embrace and support employer-facilitated initiatives to promote

workplace health and wellness via programs that integrate social media technologies for workplace wellness.

Emerging scope to engage with newer technologies will ensure employee wellbeing programs remain a dynamic area of research for the foreseeable future. Some of these wellbeing programs already integrate emergent “smart device” technologies, such as mobile apps, and others program specific social media platforms. Vast scope remains for greater use of personal health tracking devices including those embedded in smartphones and wearable devices to capture and report objectively-measured health based parameters, including those for physical activity during the workday. The third article, which included interview based results, revealed employees had enthusiastically adopted the GCC smartphone app as a convenient means of logging daily step counts. Bort-Roig *et al's* (2014) systematic review of measurement and influence of physical activity by smartphone technology assessed social support networking as one of the most useful strategies to encourage and enhance PA.

In the “internet of things” forecast in 2010 by the highly respected and business oriented McKinsey Quarterly, sensors embedded within everyday objects were discussed as being capable to communicate among themselves to improve both business processes and performance tracking to reduce costs and risks (Chui, Löffler, & Roberts, 2010). Even in the four years since this research project began, the development and availability of wearable health-related self-monitoring hardware products integrated with dedicated social media engagement platforms, has exponentially increased. It seems only a matter of time before such wearable sensors become standardised and accepted elements of offices and other workplaces.

Despite the previously mentioned systematic reviews of workplace PA program outcomes, more detailed program evaluation studies using objective measures remains fertile territory for research. There is also great opportunity for more methodologically-diverse investigations of social media usage within sedentary office-based populations. Such studies could for instance, include comparative organisation studies of an ethnographic or netnographic nature, explore the influences of organisational social media policies and the impact of workplace roles on the extent and nature of social media use by sedentary office-based populations.

7.5 **Conclusion**

This final chapter has drawn together the findings from this investigation with industry partner, HBF Health in identifying the value that desk-bound employees perceive in strategic use of social media to decrease harmful sedentary behaviour by enhancing the experience of those participating in workplace PA programs.

As occupational custodians of their staff, employers need to be aware that sedentary behaviour linked to desk-based tasks and other passive workplace influences can insidiously damage employee health and wellbeing. The published literature on promoting health in workplaces continues to support Chu *et al's* (1997) conclusion that ultimately, *“the most compelling reason to promote health in the workplace is that work and the work environment can harm workers”*.

The February 2014 introduction of the Australian Government's sedentary behaviour guidelines (Department of Health, 2014b) complimenting the existing National Physical Activity Guidelines have increased public awareness of the population-based impacts of sedentary lifestyles. Despite the new guidelines, too many Australians continue to risk their health by engaging in prolonged sedentary behaviour within and outside their workplaces.

Workplace PA programs have been shown to improve the health of office workers and others with predominantly sedentary jobs, however such programs alone can't always provide sufficient encouragement to engage the most sedentary employees. Those employees with poor general health working in predominantly sedentary jobs are often reported to lack self-motivation to perform regular PA (M. L. Booth et al., 1997). In this researcher's opinion, such issues can best be addressed by finding some convenient, appealing and cost-effective means to fostering positive health behaviours of active individual participatory action in peer-supported healthcare within a workplace.

As well as presenting unique employee health challenges, office-based workplaces offer tremendous opportunities for using social media to enhance workforce health and business performance. Social media platforms possess vast potential for strengthening personal relationships, facilitating knowledge sharing among their users, and for shaping human behaviours through peer encouragement. Amid the current health sector focus on using social media to support clinical practice and consumer engagement, there is enormous,

rarely addressed opportunities to use social media in the battle against the increasing prevalence of lifestyle-related diseases (Coiera, 2013).

This research project therefore investigated the efficacy of social networks in reinforcing health-promoting behavioural change among sedentary, desk-based employees. The hands-on qualitative approach was intentional in gaining a self-evident longer-term employee's insight that strengthened the reporting of true-to-life workplace associations between the PhD candidate and HBF's employees, many of whom have since become and continue to be fond friends.

This study found that a considerable number of HBF employees not only recognised the risks associated with prolonged workplace sitting, but also the popularity and power of social media to influence others, however what they lacked while participating in the GCC was a means to regularly promote physical activity during their work time. This was the purpose of the final paper's innovation and it is hoped that this research will provide further fuel for ongoing debate regarding the value and use of social media in promoting workplace wellness, and reducing the employee health risk incurred by sedentary behaviour.

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Appendices

Appendix 01: Focus group participant consent form



Focus group participant consent form

Project Title: Investigating the value of workplace-endorsed social media for improving deskbound employee physical activity program engagement and reducing sedentary behaviour health risks.

What will you be asked to do?

- Attend a focus group during office hours to offer your perceptions and experiences about workplace health.

Your rights

As a research participant you have the right to withdraw from the research project at any time. If you choose not to participate in this voluntary research, your decision will not disadvantage you in any way.

Participant's Declaration

I hereby signify that I understand the nature of the workplace focus group and am willing to participate on a voluntary basis acknowledging that I can withdraw at any time. All questions pertaining to my involvement in the research have been answered to my satisfaction.

Signature: _____ Date: _____

Printed Name: _____

Further Information

If you seek further information regarding the project, please contact Mr Darren Webb. This project has been approved by the Edith Cowan University Human Research Ethics Committee. For independent and unbiased information regarding the project or your participation, you can contact our Research Ethics Officer – Ms Kim Gifkins at research.ethics@ecu.edu.au – at any time throughout the project.

We look forward to your participation in this unique joint HBF-ECU research project.



Darren Webb

PhD Candidate

School of Exercise and Health Sciences

Faculty of Health, Engineering and Science

Edith Cowan University, Perth, Western Australia

Email: d.webb@ecu.edu.au



Focus group questions

Introduction

- Welcome and thankyou for agreeing to be part of the focus group.
- Focus group to be recorded for accuracy and later analysis.
- Confidentiality, De-identification, Data Storage.
- Explain informal discussion focus group.
Freedom to pursue responses, different perspectives and opinions appreciated.
- Member Rights – Don't have to answer any questions you are not comfortable answering and show respect for those commenting. Single person responding at any one time.
- Estimated run time = 1 hour

Questions

- 1). How important is a healthy workplace to you personally?
(Not just the physical environment, but the tasks assigned by employment role and the long term consequences of doing those tasks).
- 2). What factors affect your participation in health / wellness oriented workplace programs?
- 3). What are some of the obstacles that prevent you from leading a healthier life (both inside and outside of work)?
- 4). If you were to take up a new healthy activity (i.e. Sport), what factors would you think are most likely to prevent you from sustaining the practice in the longer term?
- 5). In an office setting, what options do you think are available to employees and employers for improving their health?
- 6). Do you think employers consider factors that impact the wholistic health of employees both immediately and in an ongoing manner?
- 7). What kind of health risks do you think are associated with your current job?
- 8). What do you think about sitting for long periods of time and does this pose a risk for you?
- 9). Do you think employers are aware of the risks of sedentary behaviour or about sitting for too long?
- 10). How do you think social media (ie, Facebook, Twitter, etc) might be able to help you in your work?

Appendix 03: HBF's GCC program – Workplace promotion



(Wall mounted HBF Run for a Reason and the Global Corporate Challenge Posters)

Appendix 04: HBF's The Pulse (Intranet) – GCC promotion on the homepage

The screenshot shows the HBF's The Pulse intranet homepage in Microsoft Internet Explorer. The browser window title is "Home - Microsoft Internet Explorer provided by HBF Limited" and the address bar shows "http://thepulse/Pages/default.aspx". The page features a navigation bar with "Quicklinks" and "My Links" tabs. The "Quicklinks" tab is active, displaying a list of links: HBF Directory, The Idea Patch, Employee Self Service, Gold Ribbon Award, HBF Website, Outlook, and Learning Window. Below the navigation bar, the main content area is divided into several sections. The "News & Features" section has a sub-header "Let the stepping begin!" and a date "23 May 2013". It contains a paragraph about the Global Corporate Challenge (GCC) and a "READ FULL ARTICLE" button. The "Announcements" section has a sub-header "Idea Patch" and a paragraph about the Idea Patch. The "My News" section has a sub-header "The West" and a list of news items. The "Rob's Corner" section has a sub-header "Rob's Corner" and a quote from Rob. The "Follow our journey to health partner" section has a sub-header "Follow our journey to health partner" and a "Feedback" button. The "HBF Events" section has a sub-header "HBF Events" and a list of events. The "Social" section has a sub-header "Social" and a list of social media links. The "Training" section has a sub-header "Training" and a list of training links. The "AMP" section has a sub-header "AMP" and a list of AMP links. The "Local intranet" section has a sub-header "Local intranet" and a list of local intranet links. The taskbar at the bottom shows the start button, several open applications (Home - Microsoft Int..., Log-in - Microsoft Int..., Microsoft Lync, PHD Thesis, DW's PHD Thesis - GC...), and the system clock (4:19 PM).

Home - Microsoft Internet Explorer provided by HBF Limited
http://thepulse/Pages/default.aspx

File Edit View Favorites Tools Help

Quicklinks My Links

Quicklinks

- HBF Directory
- The Idea Patch
- Employee Self Service
- Gold Ribbon Award
- HBF Website
- Outlook
- Learning Window

What's new on The Pulse

Welcome back Darren Webb.
The Pulse is your personal doorway into working at HBF.

- 28-05-2013 New-look HBF Powerpoint Template has been added
- 27-05-2013 New forms - motor vehicle mileage claims and reimbursement of expenses claims
- 20-05-2013 HBF Organisational Chart has been updated
- 20-05-2013 HBF Run for a Reason volunteer webinars

My News

The West

- Lifejackets 'should have prompted search' (The West Australian)
- Daughters want to show support for wife killer (The West Australian)

News & Features

Let the stepping begin!

23 May 2013

The Global Corporate Challenge has begun! So make sure you have your pulse pedometer strapped on. Today is a GCC Informat Dress Day and all participants can wear their HBF GCC t-shirts to work.

We'll have lots of mini challenges over the next 16 weeks - our first is 'Best Team Photo'. Visit our new GCC Page and add your team photo by 31 May for a chance to win!

The GCC Page is under 'Working at HBF' or click on the GCC walking man above!

You can find out who's in which team and motivate your own team with a wall post - but no sledging! Our 'Hot Legged Oldies' won a prize for becoming internationally famous! Read more about them on our GCC Wall. Let's strap on our pulses and show the world we are a leading health partner!

READ FULL ARTICLE

Announcements

- Bits and Pieces - motorcycle, car, moped for sale

Show More

Idea Patch

Got a great idea and the passion to make it happen?

Then you've come to the right place. The Idea Patch is your place to bring to life your great ideas that will change HBF for the better

HBF Events

23-11-2013 HBF Gala Dinner

Show More

Rob's Corner

THE DAY HBF TRULY OWNED OUR TOWN.

What a privilege it was to officially start the 2013 Run For A Reason, never have I been so proud to be part of our organisation. To stand on the starting line and see a sea of blue with signage everywhere and most importantly 29517 Western Australians...

Read more 2 Comments

Follow our journey to health partner.

Feedback

HBF Rob Transperth Main Roads

HBF Health HBF_WA

HBF_WA A great shot of @RBransby @LisaScaPerthLM & @AngelaTsun at the Start stage of @hbfrun on Sunday! http://t.co/lbCsyOwKld 2 hours ago - retweet

HBF_WA Have you checked out the @hbfrun official event photos? Come on, relive the morning with us! https://t.co/jj60Ucnc5z 2 hours ago - retweet

HBF_WA Did you see Ted bust a move yesterday with the flash mob @hbfrun? #perth #tweetperth http://t.co/OSDcwBAkib 22 hours ago - retweet


Join the conversation

Local intranet

start Home - Microsoft Int... Log-in - Microsoft Int... Microsoft Lync PHD Thesis DW's PHD Thesis - GC... EN 4:19 PM

Appendix 05: HBF's The Pulse (Intranet) – GCC program information page

The screenshot shows a Microsoft Internet Explorer browser window displaying the HBF The Pulse intranet. The page title is "Let the stepping begin! - Microsoft Internet Explorer provided by HBF Limited". The address bar shows the URL: <http://thepulse/news-and-events/Pages/GCC-2013-begins.aspx>. The browser's menu bar includes File, Edit, View, Favorites, Tools, and Help. The toolbar shows various icons for site navigation and tools. The page content is as follows:

the pulse 

Manage My Alerts | Forms & Templates | Report a Breach | Service Desk

All Sites

Working at HBF | Our Organisation | **News and Events** | Social | How do I

Let the stepping begin!

The Pulse > News and Events > Let the stepping begin!

23/05/2013


The Global Corporate Challenge has begun! So make sure you have your pulse pedometer strapped on. Today is a GCC Informal Dress Day and all participants can wear their HBF GCC t-shirts to work.

We'll have lots of mini challenges over the next 16 weeks - our first is 'Best Team Photo'. Visit our new **GCC Page** and add your team photo by 31 May for a chance to win!

The **GCC Page** is under "Working at HBF" or click on the GCC walking man above!

You can find out who's in which team and motivate your own team with a wall post - but no sledging! Our 'Hot Legged Oldies' won a prize for becoming internationally famous! Read more about them on our GCC Wall. Let's strap on our pulses and show the world we are a leading health partner!

About This Page Last Updated: 23-05-2013

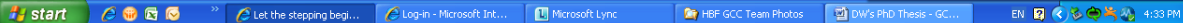
 **Page Owner**
Lian-Siew Ti
COMMS - Public Affairs

test | **Working at HBF** | **Tools & Resources**

- Default Link 2
- Default Link 3
-


- AMP@Work
- Careers
- Database Search

- Finance Wiki
- Funnel News
- Health & Technology


start |  | **Let the stepping begi...** | **Login - Microsoft Int...** | **Microsoft Lync** | **HBF GCC Team Photos** | **DW's PhD Thesis - GC...** | **DW's PhD Thesis - GCC & 9305.doc [Compatibility Mode] - Microsoft Word** | **EN** | **4:33 PM**



Appendix 06: GCC website – Community (social media) page



[COMMUNITY](#) [COMPETITIONS](#) [GCC TRAILBLAZER](#)



**VOTE NOW**



VOTING CLOSSES JUNE 6 (10AM AEST)
We've had 3,000 entries and have shortlisted to 27!
[Support your favourites here](#)




ADD A STORY



**First time swimming in 20 yrs**
on 2 Jun by [Pamela](#) of [Unsupervised Chickens](#), 
As opposed to paddling around the edges with my little people I actually clambered into a...
85 comments | 72 people like this [read more >](#)

**keep moving**
on 31 May by [Julie](#) of [7 Wonders Of The World](#), [ALCOA](#), 
As of this morning im sitting at a weight loss of 80 lbs. I started this journey on dec.22. I...
87 comments | 49 people like this [read more >](#)

**Week 2**
2 minutes ago by [Paul](#) of [On the Loose](#), [UGL](#), 
Well week to started off well but now I,m stuck in a very muddy Pilbara my step average is...
0 comment | 0 person likes this [read more >](#)

**Day 13**
2 minutes ago by [Jacek](#) of [The OverCounters](#), [Novartis](#), 
Yesterday I went to the next level of swimming. I made 100 lenthgs of swimming...
0 comment | 0 person likes this [read more >](#)

**Dont give up!**
4 minutes ago by [Tamara](#) of [Reggae Walkers](#), [ALCOA](#), 
Its not an easy road.many see the glamour and the glitter so they think its a bed a rose...
0 comment | 0 person likes this [read more >](#)


**no activity**
7 minutes ago by [Scottie](#) of [Happy Feet](#), [Damco New](#), 
don't know if you have noticed, upon entering our daily steps, there is an option says, No...
1 comment | 0 person likes this [read more >](#)

Appendix 07: GCC website – Competitions page

COMMUNITY

COMPETITIONS

GCC TRAILBLAZER



BEST TEAM PHOTO


VOTE NOW

VOTING OPEN

Voting is now open for Best Team Photo Competition. We've shortlisted the top 27 (and boy was it hard!) now it's up to you to decide which teams take home the GoPro cameras and GCC merchandise.

It's just like voting for your favourite 'idol/housemate/dancer/voice' except you don't need to send an expensive SMS, you just click 'vote' for the ones you like below.


VOTING CLOSES JUNE 6 (10am AEST)



Our Pedometer is Bigger

1849


☒ Vote



Red Hot Chilli Steppers

3662

☒ Vote



Gangnam Walkers

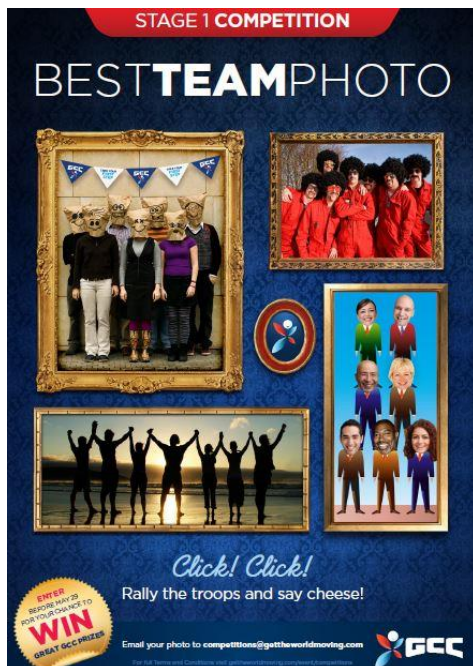
3733

☒ Vote

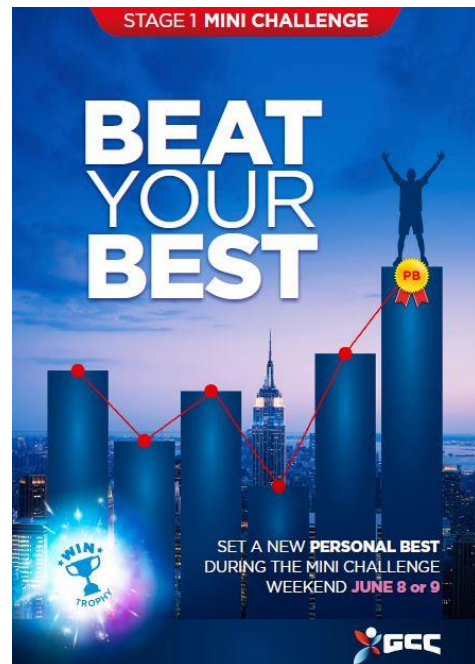
Appendix 08: GCC Competitions and mini challenges overview

STAGE 1		... AND WE'RE OFF!	(MAY 23 – JUNE 19)
BEST TEAM PHOTO COMPETITION	BEAT YOUR BEST MINI CHALLENGE		
<p>Entries close May 29 (Public vote from shortlist)</p> <p>Click! Click! Rally the troops and say Cheese CCI Be creative and have fun (maybe even get a GCC Pulse in there!).</p> <p>GCC HQ will shortlist our faves then it's over to you to vote for the winner. Don't forget... we love smiles!</p>	<p>June 8 & 9</p> <p>Set a new Personal Best step total during the Mini Challenge weekend.</p>		
STAGE 2		GETTING ON WITH IT	(JUNE 20 – JULY 17)
WHERE IN THE WORLD COMPETITION	THE 100,000 CLUB MINI CHALLENGE		
<p>Entries close July 3 (Public vote from shortlist)</p> <p>What's it like in your part of the world? Is it snowing, hot, flat, or so hilly the goats get vertigo? Send us a photo of you (and your GCC Pulse) getting active (holiday snaps count too!). GCC HQ will short list finalists for you to vote on.</p>	<p>July 6 – 12</p> <p>Clock up 100,000 steps in 7 days and you're in the Club!</p>		
STAGE 3		HALFWAY THERE	(JULY 18 – AUG 14)
MY GCC STORY COMPETITION	PERFECT 10 MINI CHALLENGE		
<p>Entries close July 31 (Public vote from shortlist)</p> <p>Tell us how the GCC has made a difference in your life. We know your GCC story is special to you, and it's also special to us. GCC HQ will share them on the Community Page and award prizes along the way.</p>	<p>August 3 – 9</p> <p>Take over 10,000 steps for 7 days straight to achieve a Perfect 10.</p>		
STAGE 4		THE FINISH LINE IS IN SIGHT	(AUG 15 – SEP 12)
BEST TEAM PLAYER COMPETITION	YOU AGAINST THE WORLD MINI CHALLENGE		
<p>Entries close August 28 (Public vote from shortlist)</p> <p>No need to wear a cape or save kittens from burning buildings to win Best Team Player, we just want to hear about a teammate who was a great motivator, supporter or perhaps just outright inspiring? Tell us about them and they could be our 2013 winner.</p>	<p>August 31 - September 2</p> <p>Beat GCC's Global average step count for three days in a row.</p>		
<p>GETTHEWORLDMOVING.COM</p> <p>* For Full Terms and Conditions visit gettheworldmoving.com/event/competitions</p> <p></p>			

Appendix 09: GCC Stage 1 Competition and mini challenge



Stage 1 Competition
Best Team Photo
(Closed 29th May 2013)



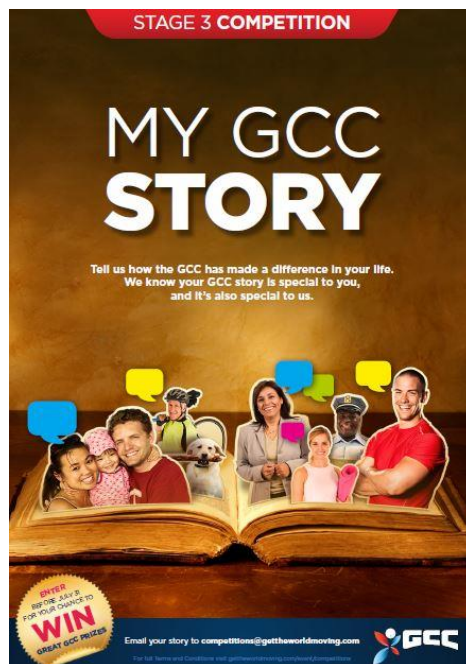
Stage 1 Mini Challenge
Beat Your Best
(8-9th June 2013)

Appendix 10: GCC Stage 2 Mini challenge



Stage 2 Mini Challenge
The 100,000 Club
(6-12th July 2013)

Appendix 11: GCC Stage 3 Competition

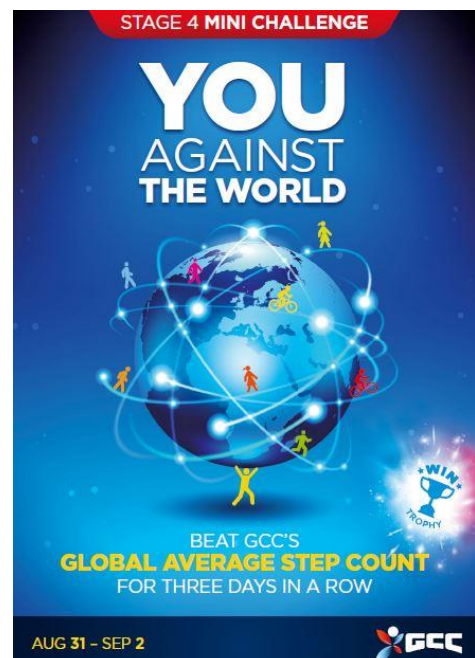


Stage 3 Competition
My GCC Story
(Closed 31st July 2013)

Appendix 12: GCC Stage 4 Competition and mini challenge



Stage 4 Competition
Best Team Player
(Closed 28th August 2013)



Stage 4 Mini Challenge
You Against The World
(31st August - 2nd September 2013)

Appendix 13: HBF's The Pulse (Intranet) - Best HBF team photo competition photos



17 New Messages



Beauties and the Beast



Dragan's Angels



Fit Az Bro



Good Soles



Happy Being Frenzied



Holy Walkamolies



Hot Legged Oldies (HLOs)



No Mean Feet



Pugwash's Pirates



Pumped Up Kids



Red Hot Chili Steppers



Rockpool Rockers



The Dirty Seven



The Oddballs



The Usual Suspects



Transformers

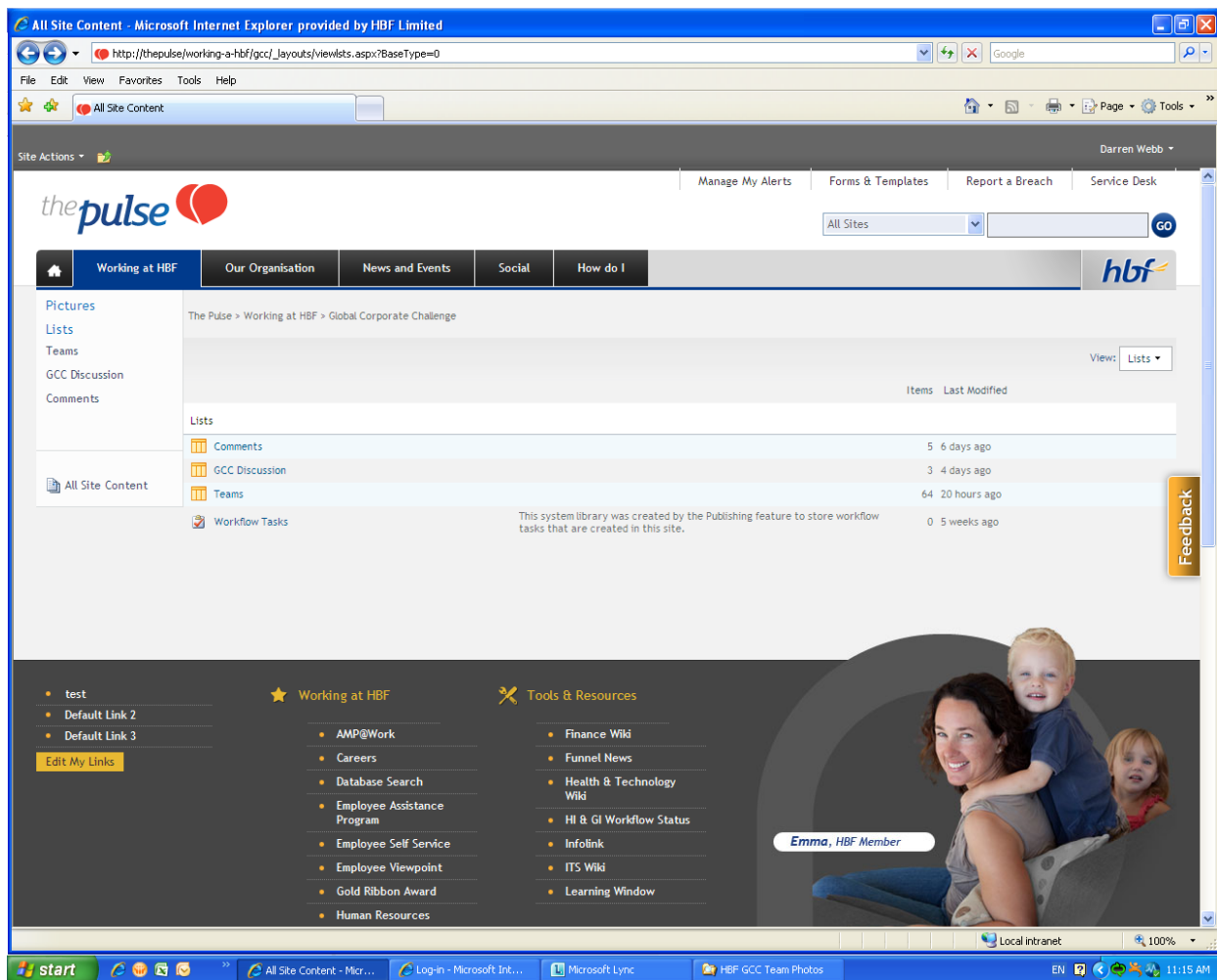


Walkie Talkies



Without LimITS

Appendix 14: HBF's The Pulse (Intranet) – GCC (social media) wall and posts



HBF's The Pulse – GCC (social media) wall page

GCC Wall

<input type="checkbox"/> Post	<input type="checkbox"/> Created By	Created
"Local" corporate challenge	Darren Webb	31/07/2013 4:57 PM
GCC Stories - Prize awarded	Darren Webb	30/07/2013 5:15 PM
My GCC life		13/07/2013 9:50 AM
Pugwash's Pirates - Who's the best looking pirate?		24/05/2013 10:48 AM
Sure to be Sure		22/05/2013 12:21 PM
Our Hot Legged Oldies, internationally famous!		16/05/2013 1:07 PM

HBF's The Pulse – GCC (social media) wall posts (n=6)
(Two posts by researcher)



Research participant recruitment email

Subject: HBF-ECU Research participants required

Hi Everyone.

As the Global Corporate Challenge (GCC) comes to a close on the 11th of September, we would like to find out about your experiences in order to make it even better in future years. Hence we would really appreciate your feedback to help us in some research being conducted by HBF and Edith Cowan University.

If you would like to contribute you will be asked to complete a simple 10 question online survey (it should only take 3 minutes) and to attend a one-on-one interview with ECU researcher Darren Webb. Following the interview, participants will each be given a coffee voucher to redeem at the new HBF Café.

The pre-scheduled interviews, lasting around 40 minutes, will be conducted at HBF House between Monday September 16th and Friday the 27th.

All information gathered through this research will be de-identified and kept strictly confidential.

If you would like to participate, please email Darren at d.webb@ecu.edu.au with “HBF GCC Research Participant” in the subject line and he will email you a survey and schedule an available interview time.

Your feedback contribution is extremely important to our organisational involvement in the GCC and we appreciate your support for this research.

Jon Haines

**Manager –
Safety, Health and Wellbeing
HBF Health Limited
125 Murray Street
Perth, WA, 6000
Email: Jon.Haines@hbf.com.au**

Darren Webb

**PhD Candidate
School of Exercise and Health Sciences
Faculty of Health, Engineering and Science
Edith Cowan University, Perth, WA.
Joondalup, WA, 6027.
Email: d.webb@ecu.edu.au**



Participant survey completion request email

Hi all,

Just a quick reminder to request your completion of the HBF GCC Research Survey which was emailed through recently.

The survey only takes 3 minutes and it would be greatly appreciated if you would complete that as a component of the HBF-ECU collaborative research.

Kind regards,

Jon Haines

**Manager –
Safety, Health & Wellbeing
HBF Health Limited
125 Murray Street
Perth, WA, 6000
Email: Jon.Haines@hbf.com.au**

Darren Webb

**PhD Candidate
School of Exercise and Health Sciences
Faculty of Health, Engineering and Science
Edith Cowan University, Perth, WA.
Joondalup, WA, 6027.
Email: d.webb@ecu.edu.au**



Research participant information sheet

Purpose of this study

The purpose of this research initiative between HBF and Edith Cowan University is to investigate the potential for social media to enhance participation in workplace physical activity programs (such as the Global Corporate Challenge / GCC) and reduce harmful desk-based sedentary (extended sitting) behaviours among desk-bound employees.

What will you be asked to do?

You are being asked to volunteer as a participant for this research. This will involve you completing a short survey and attending an interview with the researcher so that individual experiences and perspectives can be recorded and understood.

What will happen to the information you provide?

All data generated from the surveys and interviews will be de-identified and kept in the strictest confidence. Following collection, de-identified data will be analysed and potentially used in the development of research publications. All data will then be securely retained for the required five (5) years in accordance with the Australian Code for the Responsible Conduct of Research.

Your rights

As a research participant you have the right to withdraw from the research project at any time. If you choose not to participate in this voluntary research, your decision will not disadvantage you in any way, however we request you contact us prior to discontinuation.

Further Information

If you seek further information regarding this research project, please contact either Jon Haines (HBF) or Darren Webb (ECU). This project has been approved by HBF management and the Edith Cowan University Human Research Ethics Committee. For independent and unbiased information regarding the project or your participation, you can contact ECU's Research Ethics Officer – Ms Kim Gifkins at research.ethics@ecu.edu.au – at any time.

We look forward to your participation in this joint HBF-ECU research project.

Jon Haines

Manager –

Safety, Health & Wellbeing

HBF Health Limited

125 Murray Street

Perth, WA, 6000

Email: Jon.Haines@hbf.com.au

Darren Webb

PhD Candidate

School of Exercise and Health Sciences

Faculty of Health, Engineering and Science

Edith Cowan University, Perth, WA.

Joondalup, WA, 6027.

Email: d.webb@ecu.edu.au



Research participant consent form

Project Title: Investigating the potential for social media to enhance participation in workplace physical activity programs and reduce harmful desk-based sedentary behaviours in the Australian office environment.

What will you be asked to do?

- Suitable HBF employees will be asked to complete a short survey and attend a private interview during office hours with the researcher so that individual experiences and outcomes of GCC/social media participation and non-participation can be assessed.

Your rights

As a research participant you have the right to withdraw from the research project at any time. If you choose not to participate in this voluntary research, your decision will not disadvantage you in any way.

Participant's Declaration

I hereby signify that I have read and understood the information contained in the Participant Information Sheet and its requirements upon me and am willing to participate on a voluntary basis acknowledging that I can withdraw at any time. All questions pertaining to my involvement in the research have been answered to my satisfaction.

Signature: _____ Date: _____

Printed Name: _____

Further Information

If you seek further information regarding the project, please contact Mr Darren Webb. This project has been approved by the Edith Cowan University Human Research Ethics Committee. For independent and unbiased information regarding the project or your participation, you can contact our Research Ethics Officer – Ms Kim Gifkins at research.ethics@ecu.edu.au – at any time throughout the project.

We look forward to your participation in this unique joint HBF-ECU research project.



Darren Webb

PhD Candidate

School of Exercise and Health Sciences

Faculty of Health, Engineering and Science

Edith Cowan University, Perth, Western Australia

Email: d.webb@ecu.edu.au



Pre-interview survey questions

Project Title: Investigating the potential for social media to enhance participation in workplace physical activity programs and reduce harmful desk-based sedentary behaviours in the Australian office environment.

Current employment status

1). In reference to the last 7 days, which best describes your current employment status:

- ☐ Full-time Employed
- ☐ Part-time Employed
- ☐ Casually Employed
- ☐ Voluntary
- ☐ Other, please specify _____

2). What department / division do you work within ? _____

Global Corporate Challenge

3). Did you participate in the 2013 Global Corporate Challenge as a HBF employee/contractor?

Yes ☐ No ☐

4). Were you a GCC Team Captain?

Yes ☐ No ☐

5). Did you find the competition enjoyable?

Yes ☐ No ☐

6). Do you think a workplace endorsed social media mechanism would be something you could use to boost your participation in the GCC if others in your team were using it actively?

Yes ☐ No ☐

Social Media usage

7). Do you use social networking sites/services in everyday life?

Yes ☐ No ☐

For what purposes? _____

8). Do you use social networking sites/services as a part of your work role?

Yes ☐ No ☐

9). Did you look at the HBF GCC Wall on the Pulse (social network) at anytime during the GCC?

Yes ☐ No ☐

Participant effect

10). Were you aware of sedentary behaviour health risks before you started the GCC?

Yes ☐ No ☐



Participant interview questions

Project Title: Investigating the potential for social media to enhance participation in workplace physical activity programs and reduce harmful desk-based sedentary behaviours in the Australian office environment.

Introduction

- Welcome and thankyou for agreeing to be interviewed.
- Interview to be recorded for accuracy and later analysis.
- Confidentiality, De-identification and Data Storage.
- Interviewee Rights – Answering not compulsory.
- Explain Semi-structured Interview (Freedom to pursue responses).

Participant Questions

Global Corporate Challenge

- 1). Tell me a little about your reason/s for participating in the Global Corporate Challenge?
- 2). Did you complete any of the 4 possible GCC mini challenges (i.e, The 100,000 step club) ?
- 3). Did you find that being part of a team enhanced your motivation and promoted accountability in maintaining your physical activity levels?
- 4). How much of a motivator is having an element of fun or enjoyment (such as a competition) to encourage participation in the GCC?
- 5). What factors affect your participation in workplace health / wellness programs?

Online resources

- 6). Did you view any of the GCC provided online support services during the Global Corporate Challenge? (Social Pages, Nutrition tools).
- 7). Did you post to the GCC provided online social pages during the Global Corporate Challenge?

Social Media usage

- 8). Were you aware of the HBF GCC Wall on the Pulse with which to post internal company messages to?
- 9). If you did try to post to the HBF GCC Wall on the Pulse, did you have any trouble in doing this? What were some reasons for this?

- 10). Did your knowledge of HBF's social media policy have an influence on your decision to post or not post a message on the HBF GCC Wall on the Pulse or GCC Social pages?
- 11). Did the fact that HBF GCC Wall posts were visible to the whole organisation, deter you from posting?
- 12). Would you have been more likely to have used a more private messaging system, such as person to person or person to own team viewable only?
- 13). Besides the GCC provided social media pages and the HBF GCC Wall, did you use any other social media (i.e.. Facebook, Twitter) to communicate about your GCC participation? For what purposes?

Relationship "Quality" (Online Vs Offline)

- 14). When thinking of your online (social media) versus your offline (in person) communication with family / friends / work colleagues, do you feel there is a difference in relationship "quality" between the two?

Participant effect

- 15). What benefits (if any) can you identify as an outcome of your involvement in the Global Corporate Challenge?

Examples: Improved health, increased energy levels, reduction of disease risk factors (medical test result), improved mental wellbeing, stress reduction, improved self-productivity, relationships.

- 16). Did you take part in any workplace coordinated events to increase your physical activity during the GCC such as team based walks/bike rides/swims?
- 17). Do you think the GCC encourages you to move more frequently throughout your worktime, move more in total or no difference?
- 18). Do you think using a pedometer to record your physical activity was an effective way to measure your participation?
- 19). What are your favourite and least favourite aspects of the Global Corporate Challenge?

Participant observed Workplace Benefits

- 20). From your personal observations, how effective has the GCC been at increasing employee physical activity within your workplace?

Closing Question - Are there any questions you would like to ask me about the research?

Appendix 21: Interview research participant thank you voucher



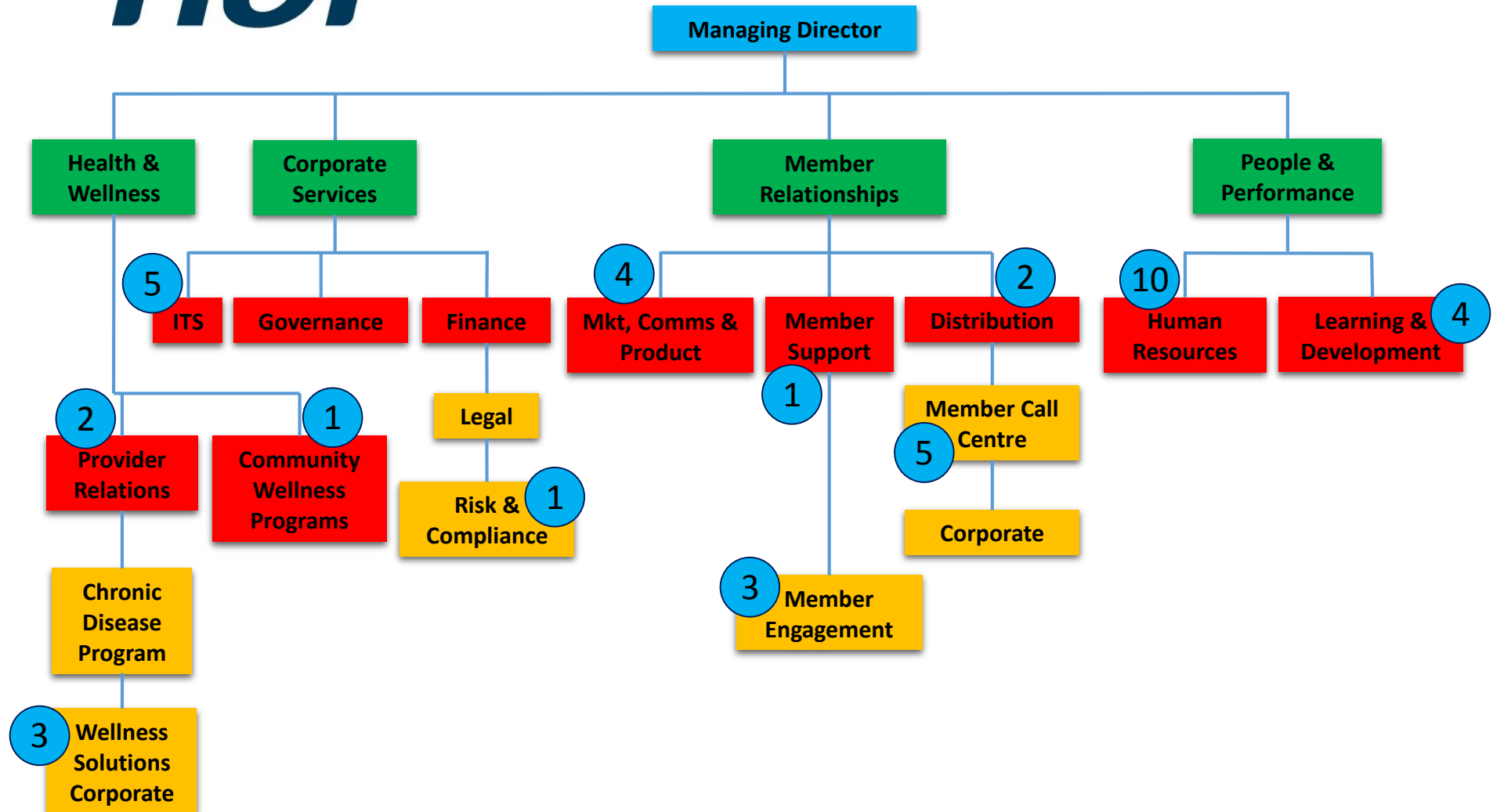
Appendix 22: Study two research participant workplace demographics (role & department)

<u>Job Title</u>	<u>Div/Branch/Agency</u>
Manager - Product Development	Product Development
Personal Welcoming Coordinator	Hospital Liason
Personal Welcoming Coordinator	Hospital Liason
Project Resource - Business Analyst	Business Analysis
Product Developer	Product Development
Enterprise Architect	Architecture
Employee and Workplace Relations Advisor	Employee and Workplace Relations
Corporate Wellness Coordinator	Corporate Wellness
Facilitator	Learning & Development Delivery
Group Public Affairs Manager	Public Relations
HRIS Project - Business Analyst	HRIS Project
HR Officer	Employee and Workplace Relations
Member Service Advisor	MCC Team 14
HR Officer	Employee and Workplace Relations
Facilitator	Learning & Development Delivery
Member Service Advisor	MCC Team 16
Project Officer	Employee and Workplace Relations
Business System Test Leader	Systems Testing
Facilitator	Learning & Development Delivery
Manager - Employee & Workplace Relations	Employee and Workplace Relations
Product Developer	Product Development
Resource Operations Manager (MCC)	MCC Management
Senior Facilitator	Learning & Development Delivery
Project Manager - HRIS	Human Resources - Projects
Member Support Team Leader	Member Support Processing Team Leaders
Change Management Lead	ITS
Project Resource - Senior Project Manager	Project Delivery and Res
Manager - People and Performance	People and Performance
Branch Manager - Success	Branch - Success
Health and Safety Advisor	Safety, Health and Wellbeing
Compliance Specialist	Risk and Compliance
Health Guard Business Manager	Health Guard Business
Clinical Claims Specialist	Group Loss Prevention
Lead Facilitator	Learning & Development Delivery
Senior Project Manager	Project Delivery and Research
Snr Business Partner - Safety, Health & Wellbeing	Safety, Health and Wellbeing
Health Support and Coaching Coordinator	Home Support and Health Coaching
Branch Manager - Whitfords	Branch - Whitfords
Acquisition & Retention Manager	MCC Management
Forecasting & Scheduling Analyst	MCC Resource Planning
Digital Workplace Team Lead	ITS Digital Workplace



HBF Organisational Structure Diagram

(Paraphrased functional representation only)



Appendix 24: HBF GCC award morning tea



HBF GCC Award Morning Tea
9:30am Thursday 24th October 2013

Room G1, Ground Floor, HBF House, 125 Murray St, Perth



8:50 – Complete set up of Room G1 (AV equipment, posters, food for morning tea) – **Jon Haines (HBF)**

9:10 – Arrival at HBF – GCC Senior Account Manager

9:20 – Arrival of employees into G1

9:34 – Hello and Welcome to all – Jon Haines

- Welcome GCC Senior Account Manager and HBF Employees.
- Link to HBF's Vision and objectives – health partner, engaging us in and improving our health
- Some overall stats 2012 vs 2013 – 65 teams, 455 participants, step average 11,672

9:36 – Congratulations ! – GCC Senior Account Manager

Great to see HBF people supporting the GCC, Present PowerPoint Presentation, Congratulations HBF, Video, HBF Achievements
Teams 3rd, 2nd, 1st.

Present award to: GCC Award - 1st Team

HBF Certificate - Top Branch Team

HBF Certificate - Top Motivational Captain

9:50 – Organisational Award

- Present Plaque for HBF's Organisation Award (to Rob Bransby)
- Upcoming events

9:58 – Wrap Up – Jon Haines

- Look on the walls for what you achieved during our 16 week challenge
- Link back to HBF Vision and objectives
- Thank you, well done and enjoy morning tea

10:00 – Eat remaining morning tea!

Appendix 25: HBF's winning 2013 GCC team @ GCC award morning tea



HBF Managing Director Mr Rob Bransby (Left)
HBF Manager – Safety, Health and Wellbeing Mr Jon Haines (Right)

Appendix 26: Study 1 focus group and ethnographic field note analysis – Coding schedule

While QSR NVivo 10 software was used for the purposes of Study 1's focus group and ethnographic field note data management, a simplified table of qualitative culturally descriptive codes (primary, secondary and tertiary nodes) from both data sources is presented below.

Primary	Secondary	Tertiary
Risk awareness	<ul style="list-style-type: none"> • Sedentary behaviour (extended sitting) • MCC related • Safety related • Employee behaviour related 	<ul style="list-style-type: none"> • Personally driven behaviours and workplace impacts • Task oriented issues • OSH compliance • Employee code of conduct
Personal values	<ul style="list-style-type: none"> • Shared values • Employee enablement • Workplace culture enhancement 	<ul style="list-style-type: none"> • Employee value (healthy and happy) • Work flexibility and benefits • Encouragement to be your best (health & performance) • Employee transference • Policy driven
Corporate commitment to workplace health	<ul style="list-style-type: none"> • Health Partner migration • Workforce consultation • Management led • Facilities (infrastructure) • Programs • Employee / Employer issue ownership 	<ul style="list-style-type: none"> • Five-year (2012–2017) business migration plan • Employee engagement and surveys • Managing Director's example and communication • Murray Street (current workplace provisions) • Kings Square (future workplace provisions) • GCC (& others) • Education / Knowledge • Workforce social inclusion (inductees and ongoing)
Wellness barriers & enablers	<ul style="list-style-type: none"> • Time • Work pressures • Miscellaneous barriers • Activity type / participant alignment • Employer endorsement 	<ul style="list-style-type: none"> • Deadlines • Task / Priorities • Infrastructure, peers, value recognition, Stages of Change • Perceived benefit Vs perceived effort / cost • Employer participation allowance
Role of social support, email & social media	<ul style="list-style-type: none"> • Corporate communication • Communication mechanisms • Social media 	<ul style="list-style-type: none"> • Message • Generic Vs Targeted (employee relevance) • Email (internal & external), Social media (external only) • Social media (individual's personal usage) • Social media (work task related) • Social media (purpose, capability, value, authority, user age)

Appendix 27: Study 1 focus group and ethnographic field note analysis – Coding instructions

Following focus group transcription accuracy check:

- 1) Read each transcript (and ethnographic field note) from beginning to end (no interruptions),
- 2) Review research objectives, questions and sub-questions,
- 3) Re-read each transcript sequentially while documenting initial “broad” codes within a single data repository,
- 4) Re-read each transcript and identify new codes with increasingly fine granularity, Sort by association as sub-categories of existing codes,
- 5) Theorise and reflect on emergent themes (factoring sub-themes and reinforced data), re-organise codes according to contextualisation where necessary,
- 6) Once data source viable codes are exhausted – Saturation reached.

Appendix 28: Study 2 interview and ethnographic field note analysis – Coding schedule

While QSR NVivo 10 software was used for the purposes of Study 2's interview and ethnographic field note data management, a simplified table of qualitative culturally descriptive codes (primary, secondary and tertiary nodes) from both data sources is presented below.

Primary	Secondary	Tertiary
Sedentary health risk awareness	<ul style="list-style-type: none"> • Pedometer measured sedentary level ➡ • Workplace tasks & health impacts ➡ 	<ul style="list-style-type: none"> • Self-realisation of variance (based on activities) • Self-efficacy to enhance offset
GCC participatory experience	<ul style="list-style-type: none"> • Employee value perception ➡ • Health & fitness ➡ • Workplace / GCC team cohesion ➡ • GCC team creation ➡ • Workplace culture enhancement ➡ • GCC Resources ➡ • Fostering of movement ➡ • Positive aspects of GCC program ➡ • Negative aspects of GCC program ➡ 	<ul style="list-style-type: none"> • Health Partner migration value • Corporate endorsement • Employee transference (health) • Employee transference (social) • Self-formation Vs Allocation • Policy and management driven • GCC Website & Maps / Social media / Mobile App • Regularity Vs Total • Team, results, GCC program start hype • Duration (too long), Discontinuation
Social media (individual personal usage)	<ul style="list-style-type: none"> • Social connectedness (family & friends) ➡ • Engagement level ➡ • Usage level ➡ • Association quality • Home & work usage crossover 	<ul style="list-style-type: none"> • Contact origin & selection • Association quality • Usage purpose (posting/non-posting)
HBF's GCC social media wall (on organisational intranet)	<ul style="list-style-type: none"> • Usage ➡ • Social media platform (tool) ➡ • Employer endorsement ➡ 	<ul style="list-style-type: none"> • Employee awareness & access • Employee value recognition • Posting/Non-posting • Employer endorsement & promotion of HBF's GCC SM wall • Functionality & Aesthetics • Unstated perceptions of use while at work
Workplace-endorsed team-based social media	<ul style="list-style-type: none"> • Existing (current) usage ➡ • Proposed in association with PA prog ➡ • Team communication ➡ 	<ul style="list-style-type: none"> • Managing Director's blog example and corp communication • Social media (employment task related) • Physical activity support • Purpose, capability, value, authority, user age

Appendix 29: Study 2 interview and ethnographic field note analysis – Coding instructions

Following interview transcription accuracy check:

- 1) Read each transcript (and ethnographic field note) from beginning to end (no interruptions),
- 2) Review research objectives, questions and sub-questions,
- 3) Re-read each transcript sequentially while documenting initial “broad” codes within a single data repository,
- 4) Re-read each transcript and identify new codes with increasingly fine granularity, Sort by association as sub-categories of existing codes,
- 5) Theorise and reflect on emergent themes (factoring sub-themes and reinforced data), re-organise codes according to contextualisation where necessary,
- 6) Once data source viable codes are exhausted – Saturation reached.

Appendix 30: Industry partner thank you letter



Friday 24th October 2014

Dear Mr Bransby,

I'm writing to thank you and your inspiring organisation for enabling me to undertake my doctoral studies in collaboration with HBF.

As a researcher, engaged with HBF since 2010, I have found the experience of working with an industry partner for research into reducing sedentary behaviours within office based populations, hugely rewarding.

I would like to make special note of HBF's Manager – Safety, Health and Wellbeing, Mr Jon Haines who has facilitated my research and employee based integration within HBF's workforce. Jon has indeed served as a mentor to me through his passionate representation of HBF's hallmark values, extensive organisational knowledge and consistent friendship which I truly treasure.

I wish to acknowledge the valued contribution of the many HBF employee research participants and departmental managers (including the Executive Management team) who have assisted me in conducting research within your organisation.

Finally I would like to commend HBF's organisational migration to Health Partner in fostering disease mitigating and quality of life enhancing preventative health strategies for members, employees and the wider WA community. These visions align exceptionally well with my own research and innate passions and I very much look forward to continuing to be part of HBF's journey.

Kind regards,

Darren Webb

*Project Manager – ECU
HBF Health Limited
125 Murray Street
Perth, WA, 6000.*

Email: darren.webb@hbf.com.au

Darren Webb

*PhD Candidate (Sedentary Behaviour Reduction)
School of Exercise and Health Sciences
Faculty of Health, Engineering and Science
Edith Cowan University, Joondalup Campus,
Perth, WA, 6027.*

Email: d.webb@ecu.edu.au

Appendix 31: Letter of industry partner publishing approval

31st October 2014



125 Murray Street, Perth WA 6000
GPO Box C101, Perth WA 6839
T 133 423 W hbf.com.au

Letter of Industry Partner Publishing Approval (ECU Ethics Project Code: 6634 WEBB)

To whom it may concern,

This document outlines HBF Health Limited (HBF)'s approval to publish content based upon collaborative research done by PhD Candidate Mr Darren Webb from Edith Cowan University (ECU). As a requirement for journal publication and as an authorised representative of HBF, I have reviewed the following pre-published manuscripts and approve of their future journal and thesis (inclusion) publication.

- Webb, D.L. (2014). "Transitioning from health insurer to Health Partner."
- Webb, D.L. (2014). "Corporate communications on workplace wellness: office worker perceptions."
- Webb, D.L. (2014). "Glocalised online support for workplace physical activity."
- Webb, D.L. (2014). "Office innovation helps employees "Find 30 in 9 to 5" to counteract sedentary health risks."

HBF also understands that an embargoed period of six (6) months, allowing Emerald Publishing and the Journal of Participatory Medicine to have exclusive initial publication of the journal articles has been requested of ECU, following which the articles will be available as part of the thesis titled:

Webb, D.L. (2014). "Investigating the value of workplace-endorsed social media for improving deskbound employee physical activity program engagement and reducing sedentary health behaviour risks." *PhD Thesis*, Edith Cowan University, Perth, Western Australia.

An electronic version will be available within the ECU Institutional Repository "Research Online". (<http://ro.ecu.edu.au/theses/>)

Yours sincerely,

Mr Jon Haines
Manager – Safety, Health and Wellbeing
HBF Health Limited
125 Murray Street
PERTH WA 6000

Appendix 32: Journal article thesis usage approval (Emerald approval email)

Date: 5th August 2014

Dear Darren,

Thank you for your email.

Please allow me to introduce myself, my name is Chris Tutill and I am the Rights Assistant here at Emerald.

In answer to your question, Emerald allows its authors to include a published version of their article/chapter within their printed written thesis/dissertation.

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