An intervention study aimed at the management of burnout and engagement of university staff

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Hons. BComm Industrial Psychology

Mini-dissertation submitted in partial fulfilment of the requirements for the degree *Magister Commercii* in Industrial Psychology at the Potchefstroom Campus of the North-West University

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September 2014

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LIST OF ABBREVIATIONS

APA:	American Psychological Association
PA:	Physical Activity
SBP:	Systolic Blood Pressure
DBP:	Diastolic Blood Pressure
TC	Total Cholesterol
FBG:	Fasting Blood Glucose
LDL:	Low Density Lipoprotein
HDL:	High Density Lipoprotein
TG:	Triglycerides
BMI:	Body Mass Index
WC:	Waist Circumference
LBM:	Lean Body Mass
%BF	Percentage Body Fat

DECLARATION OF AUTHENTICITY OF RESEARCH

With this, I, Petrie van Zittert, solemnly declare that *An intervention study aimed at the management of burnout and engagement of university staff* is my own work. The outlooks, views and opinions articulated in this research are those of the author and of the relevant literature references as shown in the reference list. The content of this study will not be submitted for any other qualification at any other tertiary institution.

JP van Zittert

April 2014

COMMENTS

The reader is reminded of the following:

- The editorial style as well as the references referred to in this mini-dissertation follows the format prescribed by the Publication manual (6th edition) of the American Psychological Association (APA). This practice adheres to the policy of the Programme in Industrial Psychology of the North-West University (Potchefstroom) to use the APA style in all scientific documents as from January 1999.
- This mini-dissertation is submitted in the form of a research article. The editorial style specified by the South African Journal of Industrial Psychology (which agrees largely with the APA style) is used. The APA guidelines were used in constructing the tables.
- The revised research proposal forms the first chapter of the thesis. Therefore, this chapter is presented in a different voice when compared to subsequent chapters that report on actual results *post facto*.

ACKNOWLEDGEMENTS

I wish to thank the following people for their assistance in this research project:

- God who made the words of Galatians 6:14 “May I never boast except in the cross of our Lord Jesus Christ”, that gave me the opportunity to be able to grow my knowledge and better myself.
- A word of gratitude to Caslyn Venter for all the love, support, encouragement and cups of coffee.
- All my family members - thank you for your support through the good times as well as the difficult times. Without you I would not have been able to get to where I am today.
- My supervisor, Prof Jaco Pienaar, for his professional supervision, his knowledge of research methodologies as well as assisting me to get into contact with the right people to assist me and the statistical analysis.
- Thanks to Dr Mariette Swanepoel, who from PhASRec, the research focus area for Physical activity, Sport and Recreation at the Potchefstroom campus of NWU, helped me with the logistical organisation of the interventions as well as the physical activity measurements. Thanks for all the long hours and guidance concerning good practices in physical activity interventions.
- My friend, Wihan de Wet, for all the support, assisting with conceptualisation as well as guiding me when I needed it.
- All the participants in the research project for their hard work in participating in the psychological and physical activity interventions.

ABSTRACT

Title: An intervention study aimed at the management of burnout and engagement of university staff

KEYWORDS: Burnout, engagement, interventions, tertiary education, physical and psychological health

South African Tertiary Education Institutions (TEIs) are now faced with issues of globalisation, broadening access to higher education, changes in language policies, changes in government funding, an increased emphasis on technology, transformation, mergers, changing student profiles, high levels of student enrolment and increased competition (Wiese, van Heerden, & Jordaan, 2010; Higher Education South Africa, 2011). The increased workload necessitated by the increase of students within South African TEIs, in conjunction with the current financial situation of universities, is compounded by factors such as low staff morale, uncertainty among staff members and large-scale resignations (Maree, 2010).

These challenges can be seen as increasing the demands and decreasing the resources of university staff, and as explained by the Job Demands-Resource Model of organisational wellbeing (JD-R) (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001), could impact negatively on the wellbeing of the employees. These changes and the demands placed on the TEIs will inevitably have an impact on the levels of burnout as well as levels of engagement of employees (Coetzee, 2004). Stressful work situations (characterised by high job demands and lack of job resources), could lead to burnout, poor individual health and wellbeing of employees (Sonnentag, 2001). Burnout can lead to serious consequences, especially for university staff members, who form part of the human services industry (Adekola, 2010). The aim of this study was to establish the effectiveness of a physical activity and psychological intervention on burnout and engagement at a tertiary education institution.

A longitudinal design was utilised where self-report as well as physical measures were used to evaluate the effect of the intervention. The convenience sample consisted of staff at a tertiary education institution (n(Time 1)=50, n(Time 2)=26; n(Time 3)=19). Burnout and engagement were measured using *The South African Employee Health and Wellness Survey* and physical measurement focused on: blood pressure values, fasting blood glucose levels, lipid profile Body Mass Index (BMI), waist circumference (WC), percentage body fat (%BF)

and Lean Body Mass (LBM). The sample group was divided into two groups. In the first phase, the first group underwent a four-week physical activity intervention focusing on resistance training as well as cardiovascular fitness. The second group underwent a 4 week personal development plan focusing on increasing personal resources as well as social support. The groups were reassessed after the first four weeks and then switched interventions. After completion of both interventions, participants were once again assessed.

MANOVAs were used to determine whether group differences occurred for more than one dependable variable (Salkind, 2009). ANOVAs (a one-way analysis of variance) were used to determine which intervention groups had been affected most with regard to the various constructs measured. Crichton (2009) explains that the Wilks' Lambda test is used in MANOVA' to test whether there are differences between the means of identified groups of subjects on a combination of dependent variables.

Although there were no statistically significant movements observed for burnout and engagement scores, there are still indications of the effect the interventions showed. The psychological intervention increased engagement, and the scheduling of first a psychological intervention, and then a physical activity intervention, is suggested as more beneficial. None of the interventions were effective at alleviating burnout.

Recommendations were made for future research.

OPSOMMING

Titel: 'n Ingrypingstudie wat gemik is op die bestuur van uitbranding en werksbetrokkenheid by Universiteitspersoneel.

Sleutelwoorde: uitbranding, betrokkenheid, ingrypings, tersiêre opvoeding, fisieke en geestelike gesondheid

Suid-Afrikaanse tersiêre instellings (TEI's) word nou gekonfronteer met kwessies van globalisering, toegang tot hoër onderwys wat verbreed het, veranderinge in die taalbeleid, veranderings in regeringsbefondsing, 'n groter klem op tegnologie, transformasie, samesmeltings, die verandering van studenteprofiele, hoë vlakke van student-inskrywings en groter mededinging (Wiese, van Heerden , & Jordaan, 2010; Hoër Onderwys Suid-Afrika, 2011). Die verhoogde werklas genoodsaak deur die verhoging van die studentegetalle binne die Suid- Afrikaanse TEI's, in samehang met die huidige finansiële situasie van die universiteite, word vererger deur faktore soos lae moreel van die personeel, onsekerheid onder personeel en grootskaalse bedankings (Maree, 2010).

Hierdie uitdagings kan gesien word as gesetel binne die verhoging van die eise en die vermindering van die hulpbronne van die personeel van die Universiteit, en soos verduidelik deur die vereistes vir jou werk - Hulpbronne Model van organisatoriese welstand (JD -R) (Demerouti, Bakker, Nachreiner, & Schaufeli 2001), kan dit 'n impak hê op die welstand van die werknemers. Hierdie veranderinge en die eise gestel aan die TEI's sal onvermydelik 'n impak hê op die vlakke van uitbranding sowel as werksbetrokkenheid van werknemers (Coetzee, 2004). Stresvolle werksomstandighede (wat gekenmerk word deur hoë werkseise en 'n gebrek aan werkhulpbronne), kan lei tot uitbranding, swak gesondheid van individue en welsyn van werknemers (Sonnentag, 2001). Uitbranding kan lei tot ernstige gevolge, veral vir personeel van die Universiteit, wat deel vorm van die menslike dienstebedryf (Adekola, 2010). Die doel van hierdie studie was om aandag op die effektiwiteit van 'n fisieke en sielkundige ingryping op uitbranding en werksbetrokkenheid by 'n tersiêre inrigting te vestig.

'n Longitudinale ontwerp is gebruik waar self-verslag, asook fisieke maatreëls gebruik is om die effek van die intervensie te evalueer. Die gerieflikheidsteekproef het uit die personeel by 'n tersiêre onderwys instelling gekom (n(Tyd 1)=50, n(Tyd 2)=26, n(Tyd 3)=19) . Uitbranding en betrokkenheid is gemeet deur die Suid-Afrikaanse Werknemer Gesondheid en Wellness

Opname. Die volgende veranderlikes is ook bepaal; bloeddrukwaardes, vastende bloedglukose, die lipiedprofiel, liggaamsmassa-indeks (LMI), middelomtrek (MO); persentasie liggaamsvet (%LV) en skraalliggaamsmassa (SKM). Die steekproefgroep is in twee groepe verdeel. In die eerste fase, het die eerste groep op 'n vier-week fisieke ingryping gefokus en op weerstandsoefening sowel as kardiovaskulêre fiksheid. Die tweede groep ondergaan 'n vier-week persoonlike ontwikkelingsplan, gefokus op toenemende persoonlike hulpbronne sowel as sosiale ondersteuning. Die groepe is weer gemeet ná die eerste vier weke en dan het hulle ingrypings geruil. Na voltooiing van beide intervensies is die deelnemers weer gemeet.

MANOVA's is gebruik om te bepaal of daar verskille plaasgevind het in die groep vir meer as een betroubare veranderlike (Salkind, 2009). ANOVA's ('n eenrigting-variansieanalise) is gebruik om te bepaal watter ingrypingsgroep die meeste geraak is in terme van die verskillende konstrukte wat gemeet is. Crichton (2009) verduidelik dat die Wilks' Lambda-toets gebruik word in MANOVA's om te toets of daar verskille tussen die gemiddeldes van die geïdentifiseerde groepe van werknemers voorgekom het in 'n kombinasie van afhanklike veranderlikes.

Hoewel daar geen statisties beduidende skuiwe waargeneem is vir uitbranding en werksbetrokkenheidtellings nie, is daar steeds tekens van die effek van die ingrypings. Die sielkundige ingryping het verhoogde werksbetrokkenheid tot gevolg gehad, en die skedulering van die eerste ingryping as die sielkundige intervensie, en dan 'n fisieke ingryping, word aanbeveel as meer voordelig. Nie een van die ingrypingsvorme was effektief vir die verligting van uitbranding nie.

Aanbevelings is gemaak vir toekomstige navorsing.

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

This mini-dissertation focuses on an intervention study aimed at the management of burnout and engagement of university staff. In the first chapter, the research objectives as well as specific objectives are discussed. Subsequently, the research design and research method are explained. Finally, the chapter summary and the division of chapters follow. The introduction will consist of a problem statement, literature review and research questions.

1.1.1 Problem statement

The tertiary education landscape in South Africa has gone through major changes in the past two decades, especially after the 1994 democratic elections. Since 1994, a plethora of initiatives have been launched to reshape tertiary education in South Africa (Sayed & Jansen, 2005). One of the major changes that the first democratic government implemented was to build a platform for a system of education where education and training were integrated (Sayed & Jansen, 2005). These changes were enforced by various White Papers, six Acts of Parliament and nineteen associated government notices (Sayed & Jansen, 2005). All of these have led to the restructuring of the higher education system in South Africa, which in turn had consequences for the governance of all tertiary institutions.

According to Coetzee (2004), the following management challenges surfaced in tertiary education institutions and their employees after this period: new organisational cultures and climates had to be introduced and established; values, cultural norms and organisational support systems were subjected to on-going changes; peer support within the organisation was challenged with issues like equity, diversity and resistance. The above mentioned challenges remain current and were compounded by increasing job demands, like the incredible growth of student numbers which has led to an increase in workload (Gilbert, 2000; Kistan, 1999; Kraak, 2000), life-long learning and adult learning (more students as they come back to further their studies) (Kraak, 2000), globalisation (international students) (Brown, 1999), changes in the market place (diversity) (Blackmore, 2001; Lomas, 1997; Rowley, 2000) and the new trends in teaching and learning (change of work) (Kistan, 1999; Kraak, 2000). These job demands, in accordance with the Job Demands-Resource model of organisational wellbeing (JD-R; Demerouti et al., 2001), could have an impact on the well-being of employees within these institutions. The changes and the demands placed on the

tertiary education institutions would inevitably have an impact on the levels of burnout and engagement of employees (Coetzee, 2004).

Within the field of organisational and industrial psychology there is broad empirical evidence that stressful working situations (which are those characterised by high job demands and a lack of job resources), could lead to burnout and poor individual health and wellbeing (Sonnentag, 2001). Burnout and engagement have been extensively researched (Adekola, 2010; Awe, Plaumann, & Walter, 2010; Coetzee, 2004; Coom, 2012) and can be seen as two highly correlated constructs. Furthermore, burnout has been established as being a serious problem in the personal, business and economic environment (Gonzalez-Roma, Schaufeli, Bakker, & Lloret, 2006; Schaufeli & Buunk, 2003; Toker, & Biron, 2012). The prevention and reduction of burnout, according to Awe, Plaumann and Walter (2009), are of great importance for the quality of life of the people affected by burnout as well as preventing economic costs that are associated with burnout (for example absenteeism and job turnover).

Burned-out employees become costly to the organisation from both an economic (financial) and time efficiency (Amount of work done/hour) standpoint (Ensle, 2005). Schaufeli (2003) stated that the consequences of burnout for the organisation can include absenteeism, job turnover of valuable employees who possess specialised knowledge and skills, poor quantitative and qualitative performance, and loss of productivity and efficiency. Carr and Li-Ping Tang (2005) further added that organisations with burned-out employees may experience low productivity and depressed morale. High rates of employee burnout may also increase the likelihood of workplace violence (Carr & Li-Ping Tang, 2005). Burnout can also have severe consequences for the individual, including sleep disturbance, inability to relax, irritability and tension headaches (Schaufeli, 2003).

The benefits of reducing burnout in organisations go beyond financial profits, as these benefits include gains in employee health and well-being and these actions can be perceived as a sign that the employees are valued by their organisation (Carr & Li-Ping Tang, 2005). Health promotion programmes may therefore work to improve the image of an organisation as an organisation that cares about the welfare of its employees, and this may attract talented employees (DiNubile & Sherman, 1999). The benefits of reducing burnout for the employee are improved health and well-being, more resilience and adaptability, increased vitality and energy, less tiredness, clear thinking, decisiveness and liveliness (Heartmath, 2012).

Engagement is also seen to be negatively related to burnout (Hakanen, Bakker & Schaufeli, 2006). Thus, by focusing on decreasing burnout, engagement could increase.

The sum of the benefits of having engaged employees, according to the employee engagement network's top ten, are that engaged employees create a warm organisational climate (Buckingham, 2007). Engaged employees become authentic, and are more effective if they can be themselves (Buckingham, 2007; Bakker, 2008) Engaged employees are more receptive, which means that engaged employees listen actively and offer support and challenge each other, largely because they care about the outcomes (Buckingham, 2007; Bakker, 2008). Buckingham (2007) further states that engaged employees are also proactive, their primary focus is on adding value to the organisation rather than obsessing about what the organisation can offer them. They are also achievers, which that they have enhanced levels of understanding, clear goals and boundaries, an appropriate mix of support and challenge and they tend to be focused and more productive (Buckingham, 2007; Bakker, 2008). Although burnout is evident in most organisations, there are industries that are more prone to burnout than others.

Workers most at risk for burnout, according to Le Blanc, Hox and Schaufeli (2007), are workers who work in human services such as health care, social services and education, where contact with other people plays an important part in their work. Above the normal stressors experienced by workers in other sectors (workload and lack of autonomy), employees in human services are confronted with emotional stressors, such as the requirement to display or suppress emotions on the job and to be emotionally empathetic (Zapf, Seifert, Schmutte, & Mertini, 2001), that are inherent to the interaction with humans (Le Blanc et al., 2007). Administrators, members of faculty and support staff comprise the human capital dimension of an education institution and as such it is important to care for all these groups (Sackney, Noonan & Miller, 2000).

Interventions

Psychological interventions are aimed at improving or increasing individuals' psychological capital to better handle burnout and improve engagement (Bakker, Albrecht & Leiter, 2011). Psychological capital has been defined as ‘‘an individual's positive psychological state of development" (Luthans, Youssef & Avolio, 2007, p. 3). Psychological capital is characterised by Luthans et al. (2007) as an individual having confidence to put in the necessary effort to

succeed at stimulating tasks; the individual being optimistic about succeeding in the present and in the future; the individual being determined toward set goals, individuals having hope and when unable to reach goals, redirecting paths to reach goals; and lastly the individual is able to sustain performance and bouncing back illustrating resilience to attain success. The psychological interventions for the different areas will be discussed further.

There is a significant body of research concerning available psychological interventions for treating and managing burnout (Awe, Plaumann, & Walter, 2010; Cohan & Gagin, 2008; Sharom, Toker, Berliner, Sharpira, & Melamed, 2008). Intervention programmes are predominantly cognitive-behavioural and aimed at enhancing job competence, personal coping skills and social support (Awe et al., 2009). Psychological intervention programmes for burnout can either be person-directed (tertiary intervention), organisation-directed (primary intervention) or a combination of both person- and organisation-directed aspects (secondary intervention) (Awe et al., 2009; Nowack, 2000). These measures empower individuals and reduce their experience of stressors (Nowack, 2000). In the absence of effective burnout prevention, employees are likely to suffer poor work-related mental health (Awe et al., 2009). Awe et al. (2009) conducted a meta-analysis of all available interventions studies that were conducted between 1995 and 2007. They found 25 intervention studies that all indicated that psychological interventions both had short term and long term positive effects on the treatment of mental illness and the promotion of psychological well-being.

Within organisational directed interventions it was originally the viewpoint that the cause of burnout was the individual (Maslach and Goldberg, 1998). Maslach and Goldberg (1998) state that this is contradictory, as the majority of scientific research has found that social and organisational factors play a larger role in the development of burnout than individual factors (Maslach et al., 2001; Schaufeli & Buunk, 2003). Thus, organisational interventions are also needed to counter burnout. Organisation-directed interventions usually are changes in work procedures including, but not limited to, task restructuring, work evaluation and supervision aimed at decreasing job demand, increasing job control or the level of participation in decision making (Awe et al., 2009; Nowack, 2000). These interventions are, for example, management skills training, enhancing employee's participation in decision making, job redesign, participatory action research, autonomous work teams, team building and 360 degree feedback (Awe et al., 2009; Nowack, 2000).

Within person-orientated interventions, most companies believe that it is the individual's fault that they have burnout and that it is easier and cheaper to change individuals than organisations (Maslach & Goldberg, 1998). Person-directed interventions and programmes are usually cognitive-behavioural measures aimed at enhancing job competence and personal coping skills, social support or different kinds of relaxation exercises (Awe et al., 2009). These interventions can be of a psychological or a physical nature. These interventions as identified in an intervention review by Awa et al. (2010) are, for example, professional skills training, clinical supervision; cognitive-behavioural training, counselling; relaxation using brain machines; adaptive coping; and recreational music making.

Within the organisation-person orientated interventions, organisations work together with the employee's participation to alleviate burnout (Awe et al., 2009). Examples of these interventions are assertiveness training, conflict management training, communication skills training and leadership development (Nowack, 2000). In organisations that offer health promotion activities, employee exercise programmes have been shown to be used extensively. These programmes have been offered in the workplace for some time now, especially in the United States (Shephard, 1996), and their implementation has mostly been based on increasing the physical fitness of employees (Dishman, Oldenburg, O'Neal, & Shephard, 1998). The review of the literature by Awe, Plaumann, and Walter, (2010) shows that all the interventions examined were psychological interventions and physical relaxation exercises. However, very little empirical research has paid attention to the possible role that physical activity as an intervention may play in managing and possibly alleviating burnout.

- Hypothesis 1(a): A psychological intervention is effective in alleviating burnout of staff members at a tertiary education institution.

There is research evidence that supports the efficacy of physical activity (PA) in both the treatment of mental illness (Craft & Landers, 1998) and the promotion of psychological well-being (Biddle, Fox, & Boutcher, 2000). Physical activity is defined as activity that increases the heart rate and brings on a sweat (U.S. Department of Health and Human Services, 2008). Health-related physical activity has been variously conceptualized to refer to objective measures of aerobic fitness or to subjective measures of one's ability to perform physical activities (Barnes, Yaffe, Satariano, & Tager, 2003). It includes activities such as walking, dancing, jogging, biking, cycling, and aerobic exercise classes (Sallis & Owen, 1999).

According to The National Heart, Lung, and Blood Institute (2007), physical activity is normally grouped into three forms, depending on the overall effect they have on the human body. Firstly, flexibility exercises like stretching (O'Connor, Crowe & Spinks, 2005); secondly, aerobic exercises like cycling, swimming or walking (Wilmore, & Knuttgen, 2003); and lastly, anaerobic exercises like weight training, functional training, or sprinting (De Vos et al., 2005). All these forms of exercise have an effect on the individual's mental health.

The World Health Organization (2010) (WHO) as well as ACSM (2006) recommends the following guidelines to improve cardiorespiratory and muscular fitness, bone health and reduce the risk of mental illness. These guidelines are for individuals between the ages of 18–64 years. Adults should either participate in at least 150 minutes of moderate-intensity aerobic physical activity per week, or do at least 75 minutes of vigorous-intensity aerobic physical activity per week (World Health Organization, 2010; ACSM, 2006). WHO further state that aerobic activity should be performed in sessions of a minimum of 10 minutes. World Health Organization (2010) and ACSM (2006) also recommend that adults could increase their moderate-intensity aerobic physical activity to 300 minutes per week, or participates in 150 minutes of vigorous-intensity aerobic physical activity per week. Lastly, the World Health Organization (2010) and ACSM (2006) recommends that muscle-strengthening activities should be done, focusing on major muscle groups on 2 or more days a week. These guidelines were used in the design of the physical activity intervention.

The beneficial effect of PA on physiological reactivity to stress, known as the *cross-stressor adaptation theory* (Forcier et al., 2006), implies that interventions aimed at enhancing PA have the potential to break the downward spiral not only by attenuating stress-induced physiological responses, but also by promoting new energetic resources, as suggested by the conservation of resources (COR) theory. This would imply that the presence of higher levels of resources could lead to lower levels of burnout and higher levels of engagement.

Involvement in PA was also found to predict lower levels of future job burnout (Bernaards et al., 2006; Brown, Ford, Burton, Marshall, & Dobson, 2005; Sanchez-Villegas et al., 2008). A meta-analysis (Forcier et al., 2006) confirmed that physical activity (PA) attenuates physiological reactivity to psychological stress. Further, PA may be viewed as a behavioural distraction that takes people's minds off stressful situations and thus reduces the psychological impact of the situation (Altshuler & Ruble, 1989). PA improves personal abilities and develops valuable perceptions in employees such as mastery and self-efficacy

(Salmon, 2001), and it has the potential to instrumentally reduce sensitivity to negative stimuli. The effect of PA on job burnout may be attributed to physical mechanisms (e.g. increased body temperature, adrenaline infusion, improved sleep (Andersen et al., 2006; Haskell et al., 2007) as well as psychological mechanisms (e.g., improved mood states, physical self-perception and body image, Salmon, 2001; Yeung, 1996).

- Hypothesis 2(a): A physical activity intervention is effective in alleviating burnout of staff members at a tertiary education institution.

Research that examined well-being outcomes of exercise in the work setting suggests that employees 'feel better' as a result of PA participation (Shephard, 1996); however, the extent to which such feelings have broader implications for their mental well-being at work and in their lives in general is limited in published research. In a study conducted by Salmon (2001), it was found that with a physical activity and psychological intervention for burnout conducted independently, results respectively indicated that 31% and 39% of the participants returned to a normal level of functioning. Van Rhenen, Blonk, van der Klink, van Dijk and Schaufeli (2005) found no significant differential effect between the two interventions (physical activity and psychological) implemented for psychological complaints, burnout and fatigue. However, both interventions revealed a positive impact on psychological complaints, burnout and fatigue, in the short term and at 6-months' follow up (Van Rhenen et al., 2005). This could suggest that research looking at a combination of psychological and physical activity interventions might increase their effectiveness.

Research on the combination of physical exercise as intervention and psychological interventions is contradictory and limited within the literature. In studies conducted by Fossati et al. (2004) and Pendleton, Goodrick, Poston, Reeves, and Foreyt (2002) a significant incremental effect of exercise on cognitive behavioural therapy treatments for binge eating disorder was found. Quasi-experimental studies have shown that exercise in conjunction with in-patient alcohol rehabilitation treatment is associated with significantly lower alcohol cravings (Ermalinski, Hanson, Lubin, Thornby, & Nahormek, 1997) as well as lower levels of anxiety and depression (Palmer, Vacc, & Epstein, 1988).

- Hypothesis 3(a): A combination of both a physical activity and psychological intervention is more effective in alleviating burnout of staff members at a tertiary education institution than either intervention by itself.

The literature available on engagement interventions is limited and only a very few interventions to improve work engagement exist and have been tested (Schaufeli & Salanova, 2011). According to Schaufeli (2011), engagement interventions are based on three pillars, viz. sickness absence, lifestyle and engagement. In turn, psychological interventions for engagement are divided into three categories (Schaufeli, 2011). Individual-based interventions are, for example: behavioural (e.g. performing acts of kindness, showing gratitude, sharing positive news); cognitive (e.g. counting one's blessings, savouring, cultivating optimism); or motivational (e.g. setting and pursuing meaningful goals, finding flow). Team-based interventions involve, for example, following a participative, strengths-based action approach; fostering transformational leadership and increasing collective/team-efficacy. The final category is organisation-based interventions, for example, job (re)design: increasing job resources; leadership training, career development and keeping jobs challenging (Bakker et al., 2011). Schaufeli (2011) found that self-enhancement via a psychological intervention seems to increase engagement, but one also needs to look at the implication of a physical activity intervention at engagement levels.

- Hypothesis 1(b): A psychological intervention is effective in enhancing engagement of staff members at a tertiary education institution.

Peterson et al. (2008) found that engaged health-care workers reported fewer physical and psychological problems. Shirom (2010) also showed that a construct of engagement, namely vigour (physical strength, cognitive liveliness, and emotional energy), is positively related to mental and physical health. According to Bakker et al. (2011), future studies should try to illuminate the physiological processes that explain the relationship between engagement and health. They further state that what are needed are longitudinal studies on the relationship between engagement and health. Researchers and practitioners need to combine efforts in order to show that engagement interventions work. The combination of physical activity and psychological interventions should also be investigated to establish effectiveness.

- Hypothesis 2(b): A physical activity intervention is effective in enhancing engagement of staff members at a tertiary education institution.

The above information also shows that looking at a combination intervention may create better results than either of the interventions on their own, as the psychological intervention could give the individual psychological capital, and the physical activity intervention would give the individual resources as illustrated with the COR theory.

- Hypothesis 3(b): A combination of a physical activity and psychological intervention is more effective at enhancing engagement of staff members at a tertiary education institution than either intervention by itself.

Thus, the goal of this study is to establish the effectiveness of interventions, physical activity, psychological or in combination, on burnout and engagement at a tertiary education institution. This will confirm or contradict the existing literature on the effectiveness of the combination of a physical activity and psychological intervention and whether there is a significant difference in the effectiveness of the three possible treatment options on burnout and engagement levels.

1.1.2 Literature review

The literature review will discuss burnout, engagement and the theoretical linkages.

1.1.2.1 Burnout

Gonzalez-Roma et al. (2006, p. 166) define burnout as "a reaction to chronic occupational stress characterized by emotional exhaustion (i.e., the draining of emotional resources), cynicism (i.e., a negative, callous, and cynical attitude towards one's job) and lack of professional efficacy (i.e., the tendency to evaluate one's work negatively)". Maslach, Schaufeli and Leiter (2005) stated that exhaustion is not simply something that one experiences, rather, it calls for action to distance oneself emotionally and cognitively from one's work, presumably as a way to cope. Thus, exhaustion is believed to consist of both cognitive (weariness) and emotional exhaustion. Emotional exhaustion refers to a reduction in the emotional resources of an individual whereas cognitive exhaustion or weariness refers to difficulty in making decisions and concentrating (Rothmann, Mostert, & Pienaar, 2007). Cynicism refers to a negative or detached response to various aspects of the job and/or having cynical and insensitive attitudes towards colleagues, clients and/or patients (Maslach et al., 2005; Rothmann et al., 2007). Green, Walkey, and Taylor (1991) essentially considered

emotional exhaustion and cynicism as the core dimensions of burnout. The measurement of burnout with exhaustion and cynicism, as the core dimensions of burnout, is supported by various international (Maslach, Jackson, & Leiter, 1996; Schaufeli & Enzmann, 1998; Schaufeli, Salanova, Gonzalez-Roma & Bakker, 2002) and South African studies (Mostert, Peeters, & Rost, 2011). Therefore, the two-factor structure of burnout, which consists of exhaustion and cynicism, will be used in this study.

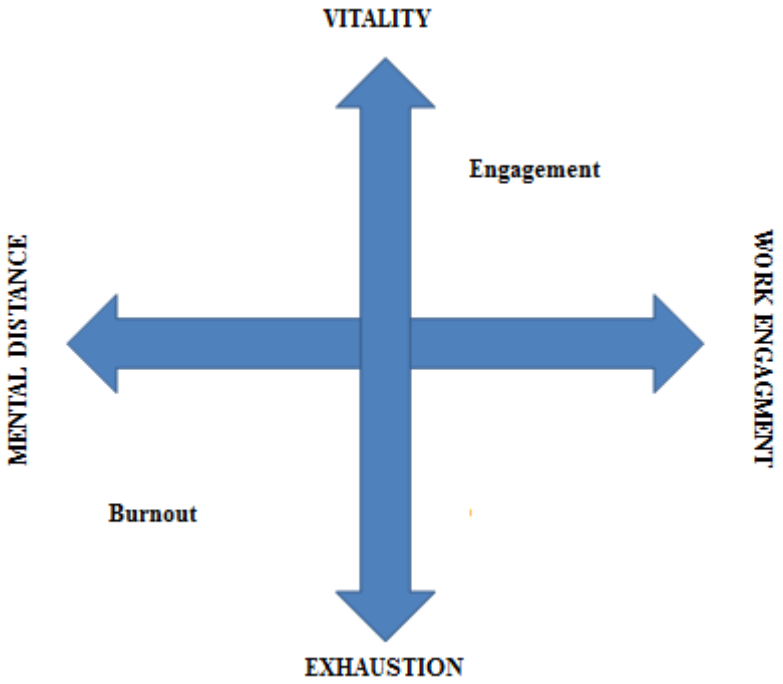
1.1.2.2 Engagement

According to Kahn (1990), employee engagement exists when an employee feels that his physical, intellectual and emotional dimensions are attached to their work. Robinson, Perryman and Hayday (2004, p. 9) later established engagement as "A positive attitude held by the employee towards the organisation and its values. Engaged employees are aware of business context, and they work with colleagues to improve performance within the job for the benefit of the organization". Work engagement was further conceptualised by Bakker (2008) as being a positive, fulfilling and emotional state of work-related well-being. The core constructs of engagement as identified by Schaufeli and Bakker (2001) are vigour and dedication.

1.1.2.3 Burnout and Engagement

Schaufeli et al. (2002) considered burnout and engagement to be opposite concepts. Vigour, according to Maslach and Leiter (1997), and Schaufeli, et al. (2002), is conceived to be the opposite pole of emotional exhaustion and dedication the opposite of cynicism. Schaufeli et al. (2002) further stated that vigour and emotional exhaustion items can thus be measured on a single underlying bipolar dimension. The same applies to dedication and cynicism items that should be scalable on a single, bipolar dimension. These underlying bipolar dimensions have been labelled energy and identification respectively see Figure 1 (Schaufeli & Bakker, 2001; Schaufeli et al., 2002). Confirmative factor analytic support for this view point was found in various Dutch and Spanish samples (Salanova, Schaufeli, Llorens, Peiro, & Grau, 2001; Schaufeli & Bakker, 2004; Schaufeli et al., 2002). In order to alleviate burnout and increase engagement, interventions will be needed at various levels.

Figure 1: Illustration of the poles of burnout and engagement (identification and energy).



1.1.2.4 Theoretical linkages between Burnout, Engagement and physical and psychological health

According to Sharom (2004), physical strength, emotional energy and cognitive liveliness are a set of interconnected affective experiences that relate to one's energetic resources. Physical strength refers to feelings of high levels of energy in carrying out daily tasks at work (Sharom, Toker, Berliner, Sharpira, & Melamed, 2008). Emotional energy, according to Sharom et al. (2008) is one's feeling of having the capability to emotionally invest in relationships with clients and co-workers. Cognitive energy refers to feelings of mental agility (Sharom, 2004). Any change in these resources would lead to a change in burnout levels (Forcier et al., 2006). From a Conservation of Resources perspective (Hobfoll, 2000), physical activity can be seen as a recovery mechanism that halts the downward spiral by allowing employees to be temporarily relieved of job burnout to refill the resources needed to once again face job demands (Siltaloppi, Kinnunen, & Feldt, 2009; Sluiter, van der Beek, & Frings-Dresen, 1999; Sonnentag & Zijlstra, 2006). Resources are not only necessary to deal with job demands, but they are also important in their own right (Demerouti & Bakker, 2008).

COR theory by Hobfoll (2001) states that the prime human motivation is directed towards the maintenance and accumulation of resources. Accordingly, resources are valued in their own right, because they are a means to achieve or protect other valued resources. COR theory places a strong emphasis on downward spirals, whereby resource loss in one domain may further worsen the reduction of resources in other domains (Hobfoll, 2001). The COR theory also explains that resources affect each other and that they exist as a resource pool. These resources, as restated by Sonnentag (2001), are objectives, characteristics of the individual and energies that are themselves valued for survival (directly or indirectly), or serve as a way to acquire resources. Together they represent a set of resources internal to the self that facilitates the development and use of resources. When high job demands and low job resources are present, an employee will experience distress or burnout (Rothmann et al., 2007).

Engaged employees with more resources are in a better position to invest these resources in a manner that leads to positive outcomes, according to the COR theory (Hyvonen, Feldt, Salmela-Aro, Kinnunen, & Makikangas, 2009). COR theory suggests that engaged employees are likely to invest these excess resources in both in-role and extra-role job performance (Halbesleben, Harvey, & Bolino, 2009; Macey & Schneider, 2008). Thus, physical activity could give them the resources needed in other domains, such as work. As the COR theory focuses on acquiring more resources it is also important to look at the Job Demands-Resources model of Demerouti et al. (2001) to get a better understanding of the impact of resources on burnout, engagement and organisational commitment.

The JD-R model of Demerouti et al. (2001) incorporates psychological and physical well-being and thus will be used as the theoretical background upon which this study will be based. The JD-R model integrates physical and psychological health through two processes, namely the energetic process and the motivation process (Rothmann et al., 2007). Within the JD-R model, job demands are initiators of the energetic process and job resources are initiators of the motivational process (Demerouti & Bakker, 2008). Within the JD-R model the motivational process consists of job resources that are linked with organisational commitment via engagement (Demerouti & Bakker, 2008; Rothmann et al., 2007). These Job resources refer to those physical, psychological, social, or organisational aspects of the job that are functional in achieving work goals (Rothmann et al., 2007). Job resources also reduce

job demands and the associated physiological and psychological costs, stimulates personal growth and learning and development (Demerouti & Bakker, 2008).

Within the JD-R model the energetic process consists of job demands and job resources that are linked with ill-health via burnout (Demerouti & Bakker, 2011). Job demands refer to those physical, psychological, social or organisational aspects of the job that require sustained physical and/or psychological (cognitive and emotional) effort or skills (Rothmann et al., 2007). Therefore it is associated with certain physiological and/or psychological costs (Schaufeli & Bakker, 2004). These costs will lead to ill health if nothing is done (Rothmann et al., 2007). Two types of ill health are measured by the JD-R model namely stress-related psychological (un)wellbeing and stress-related physical (ill) health (Rothmann et al., 2007). The study focused on assisting the employee on gaining more resources to offset the demands in the workplace.

1.1.3 Research questions

The research questions formulated for the purposes of the study are:

- How are burnout, engagement and interventions aimed at their management, physical and psychological employee health and work-related attitudes conceptualised according to the literature?
- How are the relationships between burnout, engagement, interventions aimed at their management, physical and psychological employee health and work-related attitudes conceptualised according to the literature?
- What are the relationships between burnout, engagement, interventions aimed at their management, physical and psychological employee health and work-related attitudes in a group of employees at a tertiary education institution?
- What is the effectiveness of a physical activity and psychological intervention, individually and combined, aimed at managing burnout and engagement and work-related attitudes of employees at a tertiary education institution?
- What recommendations regarding the management of employees' physical and psychological health at a tertiary education institution can be made?

1.2 RESEARCH OBJECTIVES

The research objectives are divided into a general objective and specific objectives.

1.2.1 General objective

To establish the effectiveness of interventions, physical and psychological, on burnout at a tertiary education institution.

1.2.2 Specific objectives

The specific objectives of this research are:

- To conceptualise burnout, engagement and interventions aimed at the management of physical and psychological employee health and work-related attitudes according to the literature.
- To establish the relationships between burnout, engagement and interventions aimed at the management of physical and psychological employee health, and work-related attitudes in a group of employees at a tertiary education institution.
- To establish the effectiveness of a physical activity and psychological intervention, individually and combined, aimed at managing burnout, engagement, physical and psychological employee health, and work-related attitudes of employees at a tertiary education institution.
- To make recommendations regarding the management of employees' burnout, engagement, physical and psychological health and work-related attitudes at a tertiary education institution.

1.3 RESEARCH METHOD

The research method will include two elements, namely a literature review as well as an empirical study. The results are presented in the form of a research article.

1.3.1 Literature review

In phase one a complete review regarding burnout, psychological and physical activity interventions will be done. The literature review will be done using books, papers, theses, dissertations and articles published between 1988 and 2012. The database sources that will be

consulted include: EbscoHost, Emerald, Science Direct, Scopus, ProQuest, Sabinet Online, SAE Publications, Lexis Nexis, Academic Search Premier, Business Source Premier, EconLit, ERIC, PsychArticles, PsycInfo, SocIndex.

Journals to be consulted include: Child development, Lancet, Patient Education and Counselling, Journal of the American Geriatric Society, Research on Aging, Statistics in Medicine, Educational Theory, Journal of Education and Work, American Journal of Preventative Medicine, Journal of Education for Business, Journal of Sport and Exercise Psychology, Journal of Clinical Nursing, The Journals of Gerontology, Journal of Applied Psychology, American Journal of Preventive Medicine, Journal of Extension, Journal of Psychosocial Nursing and Mental Health Services, Health Psychology, Eating & Weight Disorders, Journal of Vocational Behaviour, Medicine & Science in Sports & Exercise, Applied Psychology, Review of General Psychology, The academy of management journal, Education and Training, Applied and Preventive Psychology, Annual Review of Psychology, Stress and Health, Occupational medicine: State of the art review, Turin, Journal of Studies on Alcohol, International Journal of Eating Disorders, South African Journal of Economic and Management Sciences, The International Journal of Educational Management, International Journal of Leadership in Education, Journal of Work and Organizations Psychology, Clinical Psychology Review, Journal of organisational behaviour, South African Journal of Industrial Psychology, Behaviour & Organisation, Journal of Happiness Studies, American Journal of Health Promotion, Work & Stress: An International Journal of Work, Health & Organisations, Work & Stress: An International Journal of Work, Health & Organisations, International Archive of Occupational Environmental Health, The Physician and Sports medicine, Journal of Psychosomatic Research. Keywords to be used in the research process include: burnout; engagement; well-being; interventions, psychological health, physical health.

1.3.2 Empirical study

The empirical study consists of the research design, participants, measuring battery and statistical analysis.

1.3.2.1 Research design

Quantitative data collection will be used as there is a need for evidence-based burnout and engagement intervention studies. Creswell (2009) defines quantitative research as a means for testing objective theories by examining the relationships among variables. According to Creswell (2009), in a quantitative research study, variables are related to answer a research question. Quantitative data are usually analysed by statistical analysis and interpreted by means of statistical interpretations (Creswell, 2009). The rationale behind the use of a quantitative research design for this study is that a quantitative research design according to Beckett (2011) is faster, simpler, and less expensive than qualitative assessments. Beckett (2011) further states that the results are usually clearer, more objective, and provide frameworks for resolving conflicts while supporting rational decision-making. Quantitative research studies are generally experimental designs or non-experimental designs (Creswell, 2009).

Experimental designs are defined by Salkind (2009) as research that examines cause-and-effect relationships through the use of control and treatment groups. Non-experimental design is further defined by Salkind (2009) as research in which no manipulation of variables is involved and no cause-and-effect relationships are studied. Thus this study will make use of an experimental design. Furthermore, a quasi-experimental design will be used were groups will be pre-assigned into physical activity and psychological interventions. Quasi-experimental research is defined by Salkind (2009) as research that is done where participants are pre-assigned to groups, such as class, gender or neighbourhood. The rationale behind using a quasi-experimental design for this study is to enable the researcher to compare the two interventions with each other to determine the effectiveness of the interventions and the effectiveness of the combination of the interventions. The two intervention groups will include no more than ten participants in order to create a group format small enough to be perceived as safe for the biokineticists to observe the groups during training. Groups will be limited to one-hour training sessions to minimize exhaustion yet provide sufficient time for improvement of physical ability and to gain maximum effectiveness from training session in the limited time available for participants

A longitudinal method of research will be used for this study. Longitudinal data collection is defined by Salkind (2009) as a method of research that assess changes in behaviour in one group of subjects at more than one point in time. The rationale behind using a longitudinal

design for this study is that according to Salkind (2009) it gives the researcher the ability to study the development of a variable over an extended period of time. Salkind (2009) further states that as it is the same participants being studied over the time period, they act as their own control group, limiting intra-individual variability.

This study will be using primary data collection. Primary data collection, according to Salkind (2009), is when the researcher uses people or documentation which gives first-hand information. This will be useful as this study is aimed at discovering new information on the management of burnout interventions. As differences between groups will be determined, MANOVAs (Multivariate Analysis of Variance) and ANOVAs (A One-way Analysis of Variance) will be used in the data analysis.

1.3.2.2 Research participants

Staff members of a tertiary institution receive a daily e-mail message with events and news. This message was sent to every staff member who has access to the organisational network. Typically, secretarial and administrative staff, all academic staff and executive management members received this e-mail. The study was introduced via this e-mail, the objectives outlined, and staff members were invited to participate in the study.

Participants were randomly assigned to one of the two treatment interventions (i.e. the physical activity or psychological intervention). The groups were divided into approximately 20 individuals. A control group was not assigned because of the limited response rate. This approach may be termed convenience sampling, as interested participants comprised the final sample. Random assignment of groups to treatment conditions ensured that no systematic bias was introduced into participants who receive either treatment. There are approximately 3000 employees currently employed a Tertiary Education Institution in the North West Province. It was aimed that the groups' demography would be representative of as diverse a population as possible to ensure statistical accuracy and reliability.

1.3.2.3 Interventions

For the purposes of this study there were three forms of intervention that were applied to the sample group of employees. Before any intervention was implemented the sample group had to undergo medical history screening to ensure that they can participate in the study. The

employees also completed *The South African Employee Health and Wellness Survey (SAEHWS)* to assess their current burnout levels. Thereafter the first group underwent a physical activity intervention whereby half of the sample group was exposed to a physical training programme constructed by a registered biokineticists. The biokineticists was present with all the training programmes and ensured that the exercises are done correctly to eliminate the risk of possible injury.

The second group was exposed to a psychological intervention. This intervention was implemented simultaneously with the physical activity intervention, just on the other half of the sample group. The psychological intervention consisted of the employees being given a psychological 'training manual', aimed at self-development (Pienaar, 2001). This psychological training manual provided the learning process of techniques to better handle work demands and also better utilise job resources. This self-development programme has been successfully applied within corporate managers (Pienaar, Rothmann, & Rothmann, 2003).

1.3.2.4 Measuring instrument(s)

Physical parameters

Physical health

- *Demographic information*

  Name, age, date of birth, gender, address, contact information.

- *History of chronic disease*

  This section of the questionnaire determined whether the participant had a history of certain chronic diseases (cardiovascular, pulmonary and metabolic) and whether he/she required or was currently receiving treatment for the condition.

Resting blood pressure (BP)

BP was measured with a sphygmomanometer using the Riva-Rocci/Korotkoff method (Verrij, Van Montsfrans & Bos, 2008, 481) on the non-dominant arm using an appropriate cuff size for obese and normal persons. Participants rested for 10 minutes in the supine position before

the first measurement was taken. Two duplicate measures were taken with a 3-5 minute resting period between each measurement.

Blood glucose and total cholesterol measurement

The procedure was first explained to the client. Disposable gloves were used and an aseptic technique for blood collection was used. The clients were positioned in such a way that he/she was seated in a chair and with a hyperextended arm (during cold the finger was warmed by wrapping a warm cloth around it or by rubbing the finger). The finger prick site was cleaned with an alcohol swab and the alcohol was allowed to air-dry completely before making the prick. A sterile lancet (Lifescan Johnson & Johnson, One Touch lancets) was used. Full skin penetration was ensured by the tip of the lancet in order to obtain adequate blood flow for collection. A skin puncture was made just off the centre of the finger pad after which a dry and clean cotton-wool swab was used to wipe off the first drop of blood. The finger was then gently massaged to allow a drop to form at the punctured site. Sufficient quantities of blood for the technique were collected using the One Touch Select blood glucose and cholesterol meter. The patient was asked to hold a small ball of dry cotton-wool over the puncture site for a few minutes to stop the bleeding.

Anthropometry

The following basic anthropometric measurements were done in triplicate by biokinetic postgraduate students (Invicta Stadiometer, IP 1465, U.K.; Precision Health Scale, A & D Company, Japan; Holtain stretchable flexible 7 mm wide metal tape): Height, weight, waist circumference, and hip circumference.

Body composition

Body composition was measured by means of the Bod Pod (Life Measurement, Inc, 2014). A safe, reliable and non-invasive body composition measurement for pregnant women, the Bod Pod was used to measure body composition (fat vs. lean mass) at every measurement point. The Bod Pod used a dual-chamber plethysmograph that measured body volume by changes in air pressure within a closed two compartment chamber. Once body density had been determined the percentage body fat was calculated (Heyward & Wagner, 2004). Participants were requested to wear minimal clothing and empty their bladder before measurement. The

participant was then placed inside the chamber (Bod Pod) and asked to breathe normally. In order to estimate body fat, the thoracic gas volume using single anti-bacterial filters was measured. The estimated body fat mass, lean muscle mass and percentage body fat were determined.

Burnout and engagement will be measured using The South African Employee Health and Wellness Survey (SAEHWS). The SAEHWS is used to measure employees' health and wellness within various sectors (Schultz, 2010). The responses of the employee are related to the organisational climate and lastly compared to the South African norm for the specific variable (Rothmann & Rothmann, 2006). By comparing the employees' scores to the South African norms it becomes an objective and comparative measure (Schultz, 2010). The validity structure of the SAEHWS model has been found to be equal for different ethnic groups as well as organisations (Schultz, 2010). The SAEHWS is also sensitive to culture and is not bias to any cultural group (Schultz, 2010). The SAEHWS model is supported by a predictive model which allows the SAEHWS to predict human capital risks and to ensure proactive management of the identified risks and work-related well-being of employees as well as teams and areas of operation (Rothmann & Rothmann, 2006).

Burnout: According to Schultz (2010) the SAEHWS can be used to measure work-related well-being (i.e. Burnout). Burnout will thus be measured using the SAEHWS. The SAEHWS measures work-related well-being by using a seven-point Likert scale. The Likert scale is a statement with which respondents can indicate their level of agreement on a dimension of possible responses (Clark-Carter, 2010). The scale ranges from 0 (never) to 7 (always) and includes the following subscales: Exhaustion (five items, e.g. "I feel tired after a night's rest") and cynicism ("I feel negative when going to work"). According to Schulz (2010) the internal consistency is above the recommended Cronbach's alpha coefficient cut-off point of 0,70 (Nunally & Bernstein, 1994). More specifically the alphas for Exhaustion and Cynicism are above the recommended cut-off point.

Engagement: Engagement will also be measured using the SAEHWS measures. The structure of the SAEHWS measure has already been discussed above for burnout. Work engagement's measurement is done with two dimensions; which are vitality and work devotion. Vitality is measured using five items ($\alpha = 0.84$) (e.g. "I am full of energy within my work") and another

five items will be used to measure work devotion (α = 0.83) (e.g. "I feel I am passionate about my job")(Rothmann & Rothmann, 2006).

1.3.2.5 Research procedure

Discussions with campus management as well as biokineticists were conducted to ensure support and buy-in.

Pre intervention assessment and first contact session

After establishing the intervention groups, participants were contacted to confirm the first meeting time and location. In an effort to reduce confusion, requirements of the study were outlined during the first group contact session. Requirements for the study included: (a) participants was expected to participate in five weekly one-hour group fitness sessions during the physical activity intervention period and (b) participants was expected to complete the psychological training manual during the psychological intervention time period.

The first session began with introductions of the project leader and the individuals who were facilitating the interventions, followed by time were the participants completed the informed consent form and biographical questionnaire. To ensure confidentiality, only identification numbers of the participants were used on the assessment measures. Consent forms that linked names to numbers were stored separately and confidentially. Identification numbers was used to assign groups so that there would be no pattern to link numbers with participants. The participants underwent medical tests to ensure that they can participate in the study. The employees completed the SAEHWS to be able to illustrate their current burnout levels.

After forms and assessments had been completed, the project leader educated the participants on burnout, psychological and physical activity interventions. The goal of this first session was to educate participants on burnout and the interventions and in doing so gave the participants a framework from which to understand aspects of their own burnout and the intervention process.

Intervention period: The first intervention period will be four weeks long

For the purpose of this study there were two forms of intervention that had been applied to the sample group of participants. The first group underwent a physical activity intervention

whereby the sample group was exposed to a physical training programme constructed by a registered biokineticists. The biokineticists will be present at all the training programmes and ensured that the exercises were done correctly to minimize the risk of injury. They were participating in exercise groups put together by biokineticists and were exercising for one hour a day. The second Group was exposed to a psychological intervention. This intervention had been implemented simultaneously with the physical activity intervention on group two. The psychological intervention consisted of the employees being given a psychological training manual. This psychological training manual provided the learning process of techniques to better handle work demands and also better utilize job resources. These interventions were implemented for a period of four weeks after which the groups switched around.

Second session: Approximately four weeks after the pre-intervention contact session

After the initial four-week period the two groups were reassessed with the SAEHWS to determine their burnout levels and they underwent medical tests to ensure that they can participate further in the study. Group one then ended with their physical activity intervention programme and started with their psychological intervention. Group two ended with their psychological intervention and started with their physical activity intervention. This switching of the intervention is for the purpose of establishing whether a combination of the two forms of intervention was better than the interventions on their own. Also, it allowed for an estimation of the most effective scheduling of these interventions (i.e. what should come first). These interventions had been implemented for a period of four weeks.

Final session: Approximately eight weeks after the pre-intervention contact session

After the interventions, both groups were reassessed with the SAEHWS as well as medical tests to determine their burnout levels. All employees in the intervention groups retained their salaries. No additional personnel were employed and all departments were expected to deliver full services throughout the study period.

1.3.2.6 Statistical analysis

Statistical analysis had been carried out using the SPSS-programme (version 20). This programme gave the researcher an analysis and summary of the data collected (Pallant, 2005). The SPSS programme had been used to analyse descriptive statistics (mean, standard deviation, and inferential statistics). Cronbach alpha coefficients was used to assess the reliability of the instrument, where the guideline of Nunally and Bernstein (1994) of $\alpha > 0,70$ is known to be acceptable.

MANOVAs (Multivariate Analysis of Variance) were used to determine significant differences between the different intervention groups and demographical variables (i.e. gender and age groups, level of education, position within the company). MANOVAs had been used to determine whether group differences occur for more than one dependent variable (Salkind, 2009). ANOVAs (A One-way Analysis of Variance) were used to determine which intervention groups had been affected the most in regard to the interventions used. Crichton (2000) explains that the Wilks' Lambda test is used in MANOVAs to test whether there are differences between the means of identified groups of subjects on a combination of dependent variables.

The same groups were used across the study. The groups had been assessed after each intervention and by using the SPSS program, significant differences were assessed between and within the groups. If any significant differences were determined between the groups within the given time period it indicated a difference of effectiveness. If there is a difference at the end of the combination period it would have been possible to determine which combination of intervention was the most effective. The differences between the two groups were determined on the grounds of their burnout and engagement levels at the end of each intervention

1.3.2.7 Ethical considerations

Foxcroft and Roodt (2010) have identified the following as ethical considerations to be taken note of when administering the research. Confidentiality - Employees participating in the assessment was kept anonymous and their identities were not made available to the organisation and third parties. The results were kept confidential. Informed consent - Measures were taken to ensure that participants know what the test measures and procedure incorporates are, after which they were given an opportunity to give written permission. The informed consent acknowledges that participants' rights had been protected during the data-collection phase (Creswell, 2009). Standardised measures and conditions - There had been ensured that measuring instruments are standardised, valid and reliable, and all participants had been tested under the same conditions and environment. The written design of this study did not use language or words that are biased against the participants based on gender, sexual orientation, racial or ethnic group, disability or age (Creswell, 2009). Researchers showed the utmost respect for the participants (Creswell, 2009). Data, once analysed, was kept for a reasonable period of time (Creswell, 2009).

There are also medical ethics that needed to be taken into consideration when working with people's health. The Health Professions Council of South Africa (HPCSA, 2008) provided the following guidelines when doing research on human participants: (a) Respect for persons – Health-care practitioners should respect patients as persons, and acknowledge their intrinsic worth, dignity, and sense of value. (b) Best interests or well-being – Health-care practitioners should not harm or act against the best interests of patients, even when the interests of the latter conflict with their own self-interest. (c) Beneficence – Health-care practitioners should act in the best interests of patients even when the interests of the latter conflict with their own personal self-interest. (d) Human rights – Health-care practitioners should recognise the human rights of all individuals. (e) Integrity – Health-care practitioners should incorporate these core ethical values and standards as the foundation for their character and practice as responsible health care professionals. (f) Tolerance – Health-care practitioners should respect the rights of people to have different ethical beliefs as these may arise from deeply held personal, religious or cultural convictions. (g) Justice – Health-care practitioners should treat all individuals and groups in an impartial, fair and just manner.

Further ethical considerations as given by the South African Good Clinical Practice Guidelines (2006) had also been taken into consideration. (a) Before a trial is initiated,

foreseeable risk and inconveniences should be weighed against the anticipated benefit for the individual trial subject and society. A trial should be initiated and continued if the anticipated benefits justify the risk. (b) The rights, safety and well-being of the trial participants are the most important considerations and should prevail over interest of science and society. (c) Clinical trials should be scientifically sound, and described in a clear, detailed protocol. (d) A trial should be conducted in compliance with the protocol that has received prior independent ethics committee (IEC) approval. (e) The medical care given to, and medical decisions made on behalf of, participants should always be the responsibility of a qualified physician. (f) Each individual involved in conducting a trial should be qualified by education, training, and experience to perform his or her respective task(s). (g) All clinical trial information should be recorded, handled, and stored in a way that allows its accurate reporting, interpretation and verification. (h) Systems with procedures that assure the quality of every aspect of the trial should be implemented.

1.4 CHAPTER DIVISION

The chapters in this mini-dissertation are presented as follows:

Chapter 1: Introduction.

Chapter 2: Research article.

Chapter 3: Conclusions, limitations and recommendations.

1.5 CHAPTER SUMMARY

In Chapter 1 the focus fell on the conceptualisation of burnout, engagement, interventions aimed at their management, physical and psychological employee health and work-place attitudes in accordance with the literature. This chapter gives guidance to the rest of the study by stipulating the research questions, research objectives, hypotheses and research method and chapter division.

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CHAPTER 2

RESEARCH ARTICLE

AN INTERVENTION STUDY AIMED AT THE MANAGEMENT OF BURNOUT AND ENGAGEMENT OF UNIVERSITY STAFF

ABSTRACT

Orientation: Within South Africa there have been significant changes in tertiary education over the past ten years leading to high levels of burnout and low levels of engagement. Intervention management is important when trying to alleviate burnout and increase engagement.

Research purpose: The aim of this study was to establish the effectiveness of a physical activity and psychological intervention programme on burnout and engagement at a tertiary education institution.

Motivation for the study: To provide insight for organisations into the effectiveness of a physical activity, psychological or combination intervention programme within a tertiary institution as well as creating awareness among employees.

Research design, approach and method: A longitudinal design was utilised where self-reporting as well as physical parameters were used to measure the effect of the intervention. The convenience sample consisted of staff at a tertiary education institution suffering from light to severe symptoms of burnout (*n* (Time 1)=50, *n* (Time 2)=26; *n* (Time 3)=19). Burnout and engagement were measured using *The South African Employee Health and Wellness Survey* and Physical measurement focused on blood pressure values, fasting blood glucose levels, lipid profile, Body Mass index (BMI), Waist Circumference (WC), percentage body fat (%BF) and Lean Body Mass (LBM). The sample group was divided into two groups (Groups one & two). In the First phase, Group 1 underwent a four-week physical activity intervention focusing on resistance training as well as cardiovascular-fitness. Group two underwent a four-week personal development plan focusing on increasing personal resources as well as social support. The groups were reassessed after the first four weeks and then switched interventions. Group one did the psychological intervention and group two the physical activity intervention for four weeks (Phase two). Final measurements were taken after phase two had been completed.

Main findings: Although there was no significant movement observed for burnout and engagement, there were still indications of the effect the interventions showed. Psychological intervention increased engagement as well as the combinations of first the psychological interventions and then a physical activity intervention. Neither of the interventions was effective at alleviating burnout.

P**ractical/managerial implications:** Organisations and managers gained more awareness of the relationship between physical activity and personal development on burnout and engagement.

Contribution/value-add: This was the first study investigating the impact of intervention management on burnout and engagement levels of university staff, setting the scene for future research.

KEYWORDS: Burnout, engagement, interventions, tertiary education, physical and psychological health

INTRODUCTION

An academic revolution has taken place in tertiary education in the past half century, marked by transformations unprecedented in scope and diversity (Altbach, Reisberg, & Rumbley, 2009). South African Tertiary Education Institutions (TEIs) are now faced with issues of globalisation, broadening access to higher education, changes in language policies, changes in government funding, an increased emphasis on technology, transformation, mergers, changing student profiles and increased competition (Wiese, van Heerden, & Jordaan, 2010). Adding to these global factors there are also South African-specific factors that contribute to the academic revolution. According to Maree (2010), a school system in crisis, in which South African learners lag far behind their international counterparts in terms of language literacy, language skills and reading ability and inequality, unemployment and poverty complicate the local context. Within such a dynamic context, which places extraordinary demands on working individuals, it is important to monitor the health of employees.

RESEARCH PURPOSE

Altbach et al. (2009) stated that global, as well as Sub-Saharan African, tertiary education systems currently struggle just to cope with the rising demand, the need for expanded infrastructure, and a larger teaching corps. According to Higher Education South Africa (2011) out of all the Sub-Saharan countries, South Africa's tertiary education sector is the strongest and most diverse in Africa. Staff employed by these institutions numbered 127 969 in 2010, with 46 579 of those being academic staff. The Council of Higher Education (2012) reported that 893 024 students, of whom 762 882 were undergraduate and 130 142 postgraduate students, were enrolled in South Africa's public tertiary education institutions in 2010. This indicates a ratio of 1:10 for academic staff to students enrolled, and a ratio of 1:20 for support staff to students enrolled.

South Africa faces a massive and continuously growing population (Herrington, Kew, & Kew, 2009), and this has led to South Africa experiencing a significant increase in tertiary education student numbers. The table below indicates the high growth of more than 35% of student numbers within South African TEIs within the first ten (10) years of the new millennium (Higher Education South Africa, 2011).

Table 1

Student number growth in Tertiary Education in South Africa from 2000- 2010

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Student Numbers	578134	627277	667182	705255	744478	735073	741380	760889	799490	837779	893024

The increased workload necessitated by the increase of students within South African TEIs, in conjunction with the current financial situation of universities, is compounded by factors such as low staff morale, uncertainty among staff members and large-scale resignations (Maree, 2010). These conditions characterise many tertiary training institutions within South Africa (Coetzee, 2004). Forced mergers between various South African TEIs led to managerial challenges and to date still contribute to new organisational cultures and climates being introduced and established, and values, cultural norms and organisational support systems being exposed to continuous alterations (Coetzee, 2004). Collegial support within these organisations was and still is tested by problems like equity, diversity and resistance (Coetzee, 2004).

The above mentioned challenges can be seen as increasing the demands and decreasing the resources of university staff, and as explained by the Job Demands-Resource Model of organisational wellbeing (JD-R) (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001), could negatively impact the well-being of the employees. The changes and the demands placed on the TEIs will inevitably have an impact on the levels of burnout as well as engagement of employees (Coetzee, 2004). Stressful working situations (characterised by high job demands and lack of job resources), could lead to burnout, poor individual health and the decrease of well-being of employees (Sonnentag, 2001). Burnout can lead to serious consequences, especially for university staff, that forms part of the Human Services industry (Adekola, 2010).

Human services workers, such as health care, social services and education, where contact with other people is an important part of their work, are most at risk for burnout (Le Blanc, Hox, & Schaufeli, 2007). According to Zapf, Seifert, Schmutte, Mertini, and Holz (2001) above, the common stressors experienced by employees (such as workload and lack of autonomy), employees in human services are also challenged with emotional stressors. Human services employees need to be able to display or suppress emotions on the job and

also be emotionally empathetic in order to effectively work with and build relationships with other colleagues and clients (Le Blanc et al., 2007; Zapf et al., 2001). Administrators, members of faculty and support staff comprise the human capital dimension of an education institution and as such it is important to care for all these groups (Sackney, Noonan, & Miller, 2000). Burnout creates serious problems in the personal, business and economic environments (Gonzalez-Roma et al., 2005), and these problems are evidenced in effects on physical health, psychological well-being and work performance (Maslach, 2011).

Some of the severe consequences of burnout for South African university staff include sleep disturbances, inability to relax, irritability and tension headaches (Schaufeli, 2003). Furthermore, burnout also causes gastro-intestinal disorders, muscle tension, hypertension and prolonged cold and flu episodes (Maslach & Leiter, 2008). Other symptoms, according to Rakovec-Felser (2011), that could also be present include:

- *Mental manifestations*: For example, depressed mood, helplessness and meaninglessness, sense of failure, poor self-esteem, aggression and anxiety and over-sensitivity. Behavioural symptoms such as hostility and suspiciousness, not only towards recipients of services, but also towards colleagues and superiors could be present. Cognitive and sensory-motor symptoms could also be present, such as inability to concentrate, forgetfulness, difficulties in decision-making, nervous tics and restlessness.
- *Physical manifestations:* Some of the symptoms that an individual could experience include nausea and muscle pains, particularly lower back pain. Also, burned-out individuals could experience sexual problems, loss of appetite, shortness of breath and chronic fatigue.

All of the above-mentioned factors can have a persistent and far-reaching influence on university staff (Rakovec-Felser, 2011). Consequences for universities with employees suffering from burnout include absenteeism, job turnover of valuable employees with specialised knowledge and skills, poor quantitative and qualitative performance and loss of productivity and efficiency (Schaufeli, 2003). This is supported and elaborated on by van Beek, Hu, Schaufeli, Taris, and Schreurs (2012), who state that employees who experience a higher degree of burnout are more dissatisfied with their jobs, are less committed to the

organisation, more often plan to leave the organisation, are more often absent and perform more poorly than other employees.

Burnout in organisations can have drastic effects on the growing economy of South Africa. Employees with lower burnout levels have improved health and well-being, more resilience and adaptability in life, increased vitality and energy, less tiredness, clear thinking, decisiveness and liveliness (Institute of HeartMath, 2014). Maslach (2011) proved that people rarely work in total isolation from others – instead, they are embedded within a social network and thus improving working relationships plays an important role in alleviating burnout. More than just saving costs, there are also numerous benefits for the organisation as well as the individual in reducing burnout (Institute of HeartMath, 2014).

When it comes to the burnout within South African tertiary education environment, Viljoen and Rothmann (2009) state that cognitive appraisal of occupational stressors and the resultant effect it has on their levels of commitment as well as health is a reason for concern in South African higher education. Viljoen & Rothmann (2009) further state that different organisational stressors contributed significantly to physical (stress) and psychological (overload and job aspects) ill health and low organisational commitment (Stress about control and resources). Viljoen and Rothmann (2009) made the following recommended for interventions on Individual and institutional level:

Institutional level: Facilitating positive work relationships, job redesign to ensure that staff has equitable but manageable workloads, delegation of authority, providing adequate resources and communication as well as ensuring that the reward system is equitable and fair.

Individual level: Interventions should aim to assist employees to develop skills in dealing with stress more effectively, finding a balance between work and private life demands, and continuous development of staff in order to ensure that they remain competitive in an ever-hanging world of work.

Other interventions: Could include the development of coping strategies especially with regard to dealing with change and transformation, as well as encouraging individuals to engage in physical activity and healthy lifestyles

According to Carr and Li-Ping Tang (2005) the benefits of reducing burnout in the organisation go beyond financial benefits and include gains in employee health and well-being. Furthermore, investment in employees could be perceived as a sign that the employees are valued by the organisation (Carr & Li-Ping Tang, 2005). This could then improve the image of the organisation as one that cares about the welfare of its employees, and in doing so attract new talented employees (DiNubile & Sherman, 2014). Engagement is also seen to be negatively related to burnout, according to Hakanen, Bakker, and Schaufeli (2006). Furthermore, building engagement is the best approach to preventing burnout. People who are engaged with their work are able to cope better with the challenges they encounter, and thus are more likely to recover from stress (Maslach, 2011).

Engagement is defined as an employee being in a positive, fulfilling and positive emotional state of work related well-being (Bakker, 2008). Van Beek et al. (2012) state that engaged employees are more satisfied with their jobs, are more committed to the organisation, show more proactivity, exhibit more extra-role behaviour and perform better. Van Beek et al. (2012) further state that the benefits of engaged employees are that they experience high life satisfaction and good health. Caterpillar conducted an 11-year study on their employees aimed at increasing employee engagement and the impact thereof on the companies' bottom-line performance. They found that highly-engaged branches met or exceeded their quarterly financial targets by 40 percent or more, they had a 71 percent lower voluntary turnover rate, experienced higher technician productivity, and finally recorded three times fewer accidents (Kenexa, 2012).

Multiple studies from Gallup, the Hay Group and Towers Watson have shown that employee engagement has a quantifiable impact on business performance (Gartner, 2013). In 2006, Gallup examined 23,910 business units and compared top quartile and bottom quartile financial performance with engagement scores (Gartner, 2013). It found that the companies with engagement scores in the top quartile averaged 12% higher customer advocacy, furthermore they also had 18% higher productivity, and 12% higher (Gartner, 2013) than the companies with engagement in the bottom quartile. Gartner (2013) further states that a Towers Watson study conducted on 50 companies over a one-year period demonstrates that organisations with high employee engagement had a 19% increase in operating income and nearly 28% growth in Earnings Per Share. Lastly, Gartner (2013) concluded that organisations that were in the top quartile in engagement generate revenue growth that is 2.5

times higher, when compared to other companies in the study whose engagement scores fell in the bottom quartile.

As listed above, the benefits of managing burnout and engagement within companies to the individual, organisation and economy are numerous. Therefore, the management of interventions aimed at alleviating burnout and increasing engagement is the focus of this study.

Burnout and engagement's relation to individual and organisational outcomes

Interventions aimed at burnout and engagement are predominantly cognitive-behavioural and aim at enhancing job competence, personal coping skills and social support (Awe, Plaumann, & Walter, 2010). Psychological intervention programmes for burnout and engagement can be categorised as person-directed (tertiary interventions), organization-directed (primary interventions) or a combination of both person- and organisation-directed aspects (secondary interventions) (Institute of Health Economics, 2009). Richardson and Rothstein (2008) explain that primary prevention programmes include redesigning jobs to change workplace stressors, increasing workers' decision-making power, or supplying co-worker support groups, whereas secondary interventions attempt to decrease the intensity of stress symptoms before they lead to serious health problems (Institute of Health Economics, 2009). Lastly, tertiary interventions such as employee assistance programmes are aimed at treating the employee's health condition via free and confidential access to qualified mental and other health professionals (Richardson & Rothstein, 2008).

A meta-analysis conducted by Awe et al. (2010) investigated all the available intervention studies conducted between the years of 1995 and 2007. They identified 25 intervention studies that indicated that psychological interventions had short-term as well as long-term positive effects on the treatment of mental illness and the promotion of psychological well-being. According to van der Klink, Blonk, Schene, and van Dijk, (2001), current interventions focusing on engagement as well as burnout can be categorized as either (1) aiming to increase individual psychological resources and responses (psychological capital) or (2) from an organisational perspective, aiming to change the occupational context.

- Hypothesis 1(a): A psychological intervention is effective in alleviating burnout of staff members at a tertiary education institution.

Research done at Tel Aviv University has shown that physical activity (PA) is effective in both the treatment of mental illness and the promotion of psychological well-being (Wood, 2014). Physical activity is defined as an activity that increases the heart rate and brings on a sweat (U.S. Department of Health and Human Services, 2008). Physical activity includes activities such as walking, dancing, jogging, biking, cycling, and aerobic exercise classes (Sallis & Owen, 1999).

The World Health Organization (2010) (WHO) recommends the following guidelines to improve cardiorespiratory and muscular fitness, bone health and reduce the risk of mental illness. These guidelines are for individuals between the ages of 18–64 years. Adults should either participate in between 150 to 300 minutes of moderate-intensity aerobic physical activity per week, or do 75 to 150 minutes of vigorous-intensity aerobic physical activity per week (World Health Organization, 2010). Further the World Health Organization (2010) recommends that muscle-strengthening activities should be done, focusing on major muscle groups on 2 or more days a week. These guidelines were used in the design of the physical activity intervention.

Above the biological benefits concerning the changes to the body during physical activity, physical activity is also associated with improvements in life quality through, among others, improved mood states, self-esteem, physical self-perceptions and body image and cognitive function; all of which were also found to be inversely related to job burnout (Toker & Biron, 2012). PA has the potential to instrumentally reduce sensitivity to negative stimuli (Salmon, 2001). This captures the resilience to stress effect that is associated with physical activity. A meta-analysis confirmed that physical activity attenuates physiological reactivity to psychological stress (Forcier et al., 2006).

The Conservation of Resources (COR) perspective by Hobfall and Sharom (2000) states that physical activity may be viewed as a recovery mechanism, allowing employees to be temporarily relieved of job burnout in order to replenish the personal resources needed to once again face the demands of the job (Siltaloppia, Kinnunena, & Feldt, 2009; Sluiter, Van der Beek, & Frings-Dresen, 1999). As a result, fewer resources are exhausted, and indeed more resources (such as self-perception of control, mastery, self-efficacy, for example,

according to Salmon (2001), are to be gained that may well serve to protect such employees from developing job burnout.

- Hypothesis 2(a)*:* A physical activity intervention is effective in alleviating burnout of staff members at a tertiary education institution.

In a study conducted by Salmon (2001), it was found that with a physical activity and psychological intervention for burnout conducted independently, for both interventions more than one-third of the participants recovered a normal level of functioning. Van Rhenen, Van der Klink, van Dijk and Schaufeli (2005) found no significant difference in the effect between the two interventions (physical activity and psychological) implemented for burnout. This could suggest that research looking at a combination of psychological and physical activity interventions might increase their effectiveness.

Research results on the combination of physical exercise and psychological interventions are contradictory as well as limited within the literature. In studies conducted by Fossati et al. (2004) and Pendleton, Goodrick, Postn, Reeves and Foreyt (2002), a significant incremental effect of exercise on cognitive behavioural therapy treatments was found, albeit for the binge eating disorder. Quasi-experimental studies have shown that exercise in combination with alcohol rehabilitation treatment is connected with significantly lower alcohol cravings (Ermalinski, Hanson, Lubin, Thornby, & Nahormek, 1997) as well as lower levels of anxiety and depression (Palmer, Vacc, & Epstein, 1988).

- Hypothesis 3(a)*:* A combination of both physical activity and psychological interventions is more effective at alleviating burnout of staff members at a tertiary education institution than either intervention by itself.

Limited interventions studies have been done to prove the effectiveness of interventions in improving work engagement (Schaufeli & Salanova, 2011). According to Schaufeli (2011) and Bakker, Albrecht, and Leiter (2011), engagement interventions can be categorised in much the same way as burnout's interventions:

- **Individual-based interventions (Tertiary**): behavioural (e.g. performing acts of kindness, showing gratitude, sharing positive news); cognitive (e.g. counting one's

blessings, savouring, cultivating optimism); or motivational (e.g. setting and pursuing meaningful goals, finding flow).

- **Team-based (Secondary):** following a participative, strengths-based action approach; fostering transformational leadership; increasing collective/team-efficacy.
- **Organisation-based interventions (Tertiary):** job (re)design: increasing job resources; leadership training; career development and keeping jobs challenging.

Schaufeli (2011) states that self-enhancement through a psychological intervention could possibly increase engagement, but there needs to be more research done into the implication of a physical activity intervention at engagement levels.

Peterson et al. (2008) found that engaged health-care workers reported fewer physical and psychological problems. Shirom (2011) also showed that a dimension of engagement, namely vigour, is positively related to mental and physical health. According to Bakker and Leiter (2010), vigour refers to individuals' feelings that they possess physical strength, cognitive liveliness, and emotional energy – a set of interrelated affective states experienced at work. Sharom, Toker, Berliner, Sharpira and Melamed (2008) suggested that pathways link vigour with improved physical health. Other studies have shown that vigour is positively related to self-rated health (Bakker & Leiter, 2010). According to Bakker and Leiter (2010), the higher the physical fitness and perceived physical health, the more pronounced the effects of vigour, and the higher the employees' engagement.

Van Berkel, Boot, Proper, Bongers and van der Beek (2013) state that the benefits of moderate to vigorous physical activity (VPA) on mental disorders have been established in numerous studies. However, their study showed no indication of the beneficial effects of VPA on well-being (Van Berkel, et al., 2013). Van Berkel et al. (2013) further encourage research into the possible variances in how the physical activity-mental health relationship works for negative and positive sides. As shown in the literature above, looking at a combined intervention (i.e. both physical activity and psychological) may create better effects than either of the interventions by themselves, as the psychological intervention could provide the individual with psychological capital, and the physical activity intervention would provide the individual with much-needed transferable resources, according to COR theory.

Based on the literature review regarding engagement above, and assuming engagement to also be negatively related to burnout (Hakanen, Bakker, & Schaufeli, 2006), the following opposing hypotheses regarding the functioning of engagement are proposed:

- Hypothesis 1(b): A psychological intervention is effective in increasing engagement of staff members at a tertiary education institution.
- Hypothesis 2(b): A physical activity intervention is effective in increasing engagement of staff members at a tertiary education institution.
- Hypothesis 3(b): A combination of both a physical activity- and a psychological intervention is more effective at increasing engagement of staff members at a tertiary education institution than either intervention by itself.

In conclusion, it can be inferred from the above hypotheses that the purpose of this study is to establish the effectiveness of interventions; physical activity, psychological and in combination, on burnout and engagement at a tertiary education institution. This will provide the necessary data to confirm or contradict the existing literature and notions on the effectiveness of the combination of a physical activity and psychological intervention, and whether there is a significant difference in the effectiveness of the possible intervention options for burnout and engagement. The study focused on assisting the employee on gaining more resources to offset the demands in the workplace.

General objective

To establish the effectiveness of a physical activity- and psychological intervention on burnout and engagement at a tertiary education institution.

Specific objectives

The specific objectives of this research are:

- To conceptualise burnout, engagement and interventions aimed at the management of physical activity- and psychological employee health and work-related attitudes according to the literature.
- To establish the relationships between burnout, engagement and interventions aimed at the management of physical activity- and psychological employee health, and work-related attitudes in a group of employees at a tertiary education institution.

- To establish the effectiveness of a physical activity- and psychological intervention, individually and combined, aimed at managing burnout, engagement, physical and psychological employee health, and work-related attitudes of employees at a tertiary education institution.
- To make recommendations regarding the management of employees' burnout, engagement, physical and psychological health and work-related attitudes at a tertiary education institution.

The following hypotheses will be tested:

- Hypothesis 1(a): A psychological intervention is effective in alleviating burnout of staff members at a tertiary education institution.
- Hypothesis 1(b): A psychological intervention is effective in increasing engagement of staff members at a tertiary education institution.
- Hypothesis 2(a): A physical activity intervention is effective in alleviating burnout of staff members at a tertiary education institution.
- Hypothesis 2(b): A physical activity intervention is effective in increasing engagement of staff members at a tertiary education institution.
- Hypothesis 3(a): A combination of both a physical activity- and psychological intervention is more effective in alleviating burnout of staff members at a tertiary education institution than either intervention by itself.
- Hypothesis 3(b): A combination of both a physical activity- and psychological intervention is more effective in increasing engagement of staff members at a tertiary education institution than either intervention by itself.

LITERATURE REVIEW

The literature review addresses aspects of burnout, engagement, and the theoretical position of this research.

Burnout

Burnout is defined as a response to long-lasting work-related stress characterised by emotional exhaustion (i.e., the draining of emotional resources), cynicism (i.e., a negative and cynical approach towards one's job) and lack of professional efficacy (i.e., the inclination to

assess one's work negatively) (Gonzalez-Roma et al., 2005, 166). Emotional exhaustion and cynicism are considered the core dimensions of burnout (Green, Walkey, & Taylor, 1991). The conceptualisation of burnout, as consisting of these core dimensions, is reinforced by numerous international (Maslach, Jackson, & Leiter, 1996); (Schaufeli, Salanova, Gonzalez-Roma, & Bakker, 2002) and South African studies (Mostert, Peeters, & Rost, 2011). Therefore, for the purpose of this study the two-factor structure of burnout which entails exhaustion and cynicism will also be used.

Engagement

Work engagement has most recently been conceptualised as being a positive, fulfilling and emotional state of work related well-being (Bakker, 2008). Further, the core constructs of engagement are vigour and dedication (Schaufeli & Bakker, 2001). According to Coom (2012), there has been no apparent research into the direct effect of physical activity on engagement.

Theoretical positioning

Energy at work can be described as having a positive affective reaction to your exchanges with significant components in your job and work environment - these include the connected feelings of physical strength, emotional energy, and cognitive liveliness (Sharom, 2003). Physical strength thus refers to an individual's physical capabilities (Shirom, 2011). Emotional energy refers to the feeling of having the ability to emotionally invest in relationships with clients as well as with colleagues (Sharom et al., 2008). Finally, cognitive energy refers to an individual's thought processes and mental agility (Shirom, 2011). Changes in burnout levels could be caused by changes in these resources (Forcier et al., 2006).

COR theory by Hobfoll (2001) states that the main human motivation is maintenance and gathering of resources as they assist in the collection or protection of other valued resources. COR theory has a strong emphasis on downward spirals, thus the loss of resources in one domain may further worsen the decline of resources in other domains (Hobfoll, 2001). Based on COR theory of Hobfoll (2001), physical activity and psychological strength-building can be conceptualised as recovery mechanisms that stop the downward spiral by permitting employees to be momentarily relieved of job burnout, and allowing them to refill the resources required to once again face job demands (Sonnentag & Zijlstra, 2006). The COR

theory also explains that resources affect each other and they exist as a resource pool (Sonnentag, 2001). Together they represent a set of resources internal to the self that facilitates their development and use.

According to Hyvonen, Feldt, Salmela-Aro, Kinnunen, and Makikangas (2009), grounded in COR theory, engaged employees with more resources are better equipped to invest their resources, leading to positive outcomes. COR theory suggests that engaged employees are expected to invest these additional resources in both in-role and extra-role job performance (Halbesleben, Harvey, & Bolino, 2009; Mancey & Schneider, 2008). Thus, the resources gained during physical and psychologically recuperative activity could provide them with resources needed in other domains, such as work. As the COR theory focuses on acquiring more resources it is also important to look at the Job Demands-Resources model of Demerouti et al. (2001) to get a better understanding of the impact of resources on burnout, engagement and organisational commitment.

The JD-R model of Demerouti, Bakker, Nachreiner and Schaufeli (2001) incorporates psychological and physical well-being and underpins this study. The JD-R model incorporates physical and psychological health through two main processes, namely the energetic process and the motivational process (Rothman, Mostert & Pienaar, 2007). Within the JD-R model, job demands are initiators of the energetic process and job resources are initiators of the motivational process (Demerouti & Bakker, 2008)

The JD-R model links to burnout through the energetic process which consists of job demands and job resources that are linked with ill-health via burnout (Demerouti & Bakker, 2011). Job demands refer to those physical, psychological, social, or organisational aspects of the job that necessitate sustained physical and/or psychological (cognitive and emotional) effort or skills (Rothmann et al., 2007). Therefore it is linked with certain physiological and/or psychological costs (Schaufeli & Bakker, 2004). These costs will lead to ill-health if nothing is done (Rothmann et al., 2007). Physical- and psychological Ill health will be used as supporting constructs when examining the effect of the interventions.

The JD-R model links to engagement through the motivational process which entails job resources that are linked with organisational commitment through engagement (Demerouti & Bakker, 2008; Rothmann et al., 2007). Organisational Commitment can be defined as relative strength of individuals' identification with and involvement in a particular organisation

(Mowday, Porter, & Steers, 1982). Organisational commitment will be used as a supporting construct when examining the effect of the interventions. These job resources refer to those physical, psychological, social, or organisational parts of the job that are useful in achieving work goals (Rothmann et al., 2007). Job resources also decrease job demands and the related physiological and psychological costs, encourages personal growth and learning and development (Demerouti & Bakker, 2008).

Two types of ill-health are measured by the JD-R model, namely stress-related psychological (un)wellbeing and stress-related physical (ill) health (Rothmann et al., 2007). Thus, interventions aimed at providing employees with the necessary resources to counter these costs are needed at various levels.

RESEARCH DESIGN

The research design section consists of two sub-sections, viz. the research approach and the research method. The research method section describes the research participants, measuring instrument(s), research procedures, ethical considerations and statistical analysis.

Research approach

Quantitative data collection was used as there is currently a need for evidence-based burnout and engagement intervention studies. Creswell (2009) states that quantitative research is used as a means for testing objective theories by exploring the relationship among variables. According to Creswell (2009), in a quantitative research study, variables are connected to answer a research question. Quantitative data are usually analysed by statistical analysis and interpreted statistically (Creswell, 2009). The rationale behind the use of a quantitative research design for this study is that a quantitative research design is faster, simpler, and less expensive than qualitative assessments (Beckett, 2011). Beckett (2011) further states that the results are usually clearer and more objective. Quantitative research studies are generally experimental designs or non-experimental designs (Creswell, 2009).

This study made use of an experimental design. A quasi-experimental design was used where group members were pre-assigned to a physical activity or a psychological intervention. Quasi-experimental research is defined by Salkind (2009) as research that is done where participants are pre-assigned to groups, such as class, burnout level, or engagement level. By

using a quasi-experimental design for this study the researcher was able to compare the two interventions with each other to determine the effectiveness of both interventions.

A longitudinal method of research was used for this study. The longitudinal method of data collection is defined by Salkind (2009) as a method of research that assesses changes in behaviour in one group of subjects at more than one point in time. A longitudinal design was used for this study because it gives the researcher the ability to study the development of a variable over an extended period of time (Salkind, 2009). Salkind (2009) further states that as it is the same participants being studied over the time period, they act as their own control group, limiting intra-individual variability.

This study used primary data collection. Primary data collection is when the researcher uses people or documentation which gives first-hand information (Salkind, 2009). This was useful as this study is aimed at discovering new information on the effectiveness of burnout and engagement interventions.

METHOD

This section outlines the research participants, measuring instrument(s), research procedures, ethical considerations and statistical analysis.

Participants and procedure

The study was introduced via e-mail messages to staff members as well as a general electronic notice-board that is e-mailed to each employee. Staff members receive a daily e-mail message with events and news. This message is sent to every staff member who has access to a computer. Typically, secretarial and administrative staff, all academic staff and executive management members, will receive this e-mail. The objectives of the study were outlined in the e-mail, and staff members were invited to participate in the study.

Before any intervention was implemented the sample group underwent medical history screening conducted and sponsored by the biokineticist to ensure that they would be medically fit to participate in the study. They also completed the online questionnaire to establish a baseline of their psychological health. After the initial measurement all the candidates were invited to an introduction session where the following was discussed:

- The definitions of the constructs for the study (burnout and engagement).
- What the impact of these constructs is in our everyday lives.
- How the study will develop and what the responsibility of the candidates would be in the study.
- When, where and how measurements were to be taken.
- Descriptions of the psychological as well as physical activity interventions.

Participants were assigned to one of the two treatment interventions (i.e. the physical activity or psychological intervention) according to the pre-assessment of their burnout levels to ensure an even distribution of candidates. The groups contained 25 individuals each. A control group was not used because of the small number of potential candidates. This approach may be termed convenience sampling, as interested participants comprised the final sample. As far as possible random assignment to treatment conditions was used, and this should ensure that no systematic bias was introduced into participants who received either treatment.

There are approximately 3000 employees currently employed at a Tertiary Education Institution in the North West Province. Fifty (50) individuals participated in the introductory session, and first assessments (Time 1). This number decreased to 26 after the first intervention (Time 2), and 19 after the second intervention (Time 3). The candidates dropped out due to various personal and professional reasons. Table 2 provides details of these samples.

Table 2:

Characteristics of participants

Item		**Time 1 (*n* = 50)**		**Time 2 (*n* = 26)**		**Time 3 (*n* = 19)**	
	Category	Frequency	Percentage (%)	Frequency	Percentage (%)	Frequency	Percentage (%)
Gender	Male	6	12.00	1	03.84	0	00.00
	Female	44	88.00	25	96.16	19	100.00
Race	White	44	88.00	24	92.30	19	100.00
	African	4	08.00	2	07.70	0	00.00
	Coloured	1	02.00	0	00.00	0	00.00
	Indian	1	02.00	0	00.00	0	00.00
Home Language	Afrikaans	43	86.00	24	92.30	19	100.00

English	3	06.00	0	00.00	0	00.00
Sesotho	2	04.00	1	03.85	0	00.00
Setswana	2	04. 00	1	03.85	0	00. 00

According to Table 2, at Time 1 the majority of the participants were female (88, 00%) and white (88%). Regarding home language, the majority of the participants were Afrikaans (86%), with English (6%), Setswana (4%) and Sesotho (4%) making up the rest of the sample group.

At Time 2, the majority of the participants were female (95, 83%) and white (91,67%). Regarding home language, the majority of the participants were Afrikaans (91, 66%), with Sesotho (4, 17%) and Setswana (4, 17%) representing the rest of the sample group.

At Time 3, all of the participants were female (100%), white (100%). Regarding home language, all of the participants were Afrikaans (100%).

Interventions

For the purposes of this study there were two forms of intervention (Process shown in Figure 2). All participants took part in a physiological activity intervention as well as a psychological intervention.

The groups started with their allocated intervention for the first phase after which they were assessed to evaluate the effectiveness of the two interventions. After this assessment the candidates switched over to the other intervention for the second phase. This then exposed them to both interventions. The effectiveness of a combination of the interventions was assessed with a third and final assessment of their psychological and physical health.

Physical activity intervention

The first group participated in a physical activity intervention based on the guidelines of the World Health Organisation (2010) as well as the ACSM (2006), which consisted of a physical training programme, compiled by a registered biokineticist. The biokineticist presented all the training programmes and ensured that the exercises were done correctly to eliminate the possible risk of injury. Participants were allowed to indicate preferred training times and to train on their own time or within groups of 4-5 participants. This ensured that the group format was small enough to be perceived as safe for the biokineticist to observe the groups

during training. The groups had to complete four (4) sessions a week. Groups were limited to one-hour training session to minimize exhaustion, yet provide sufficient time for improvement of physical ability. This also gave the participants the opportunity to gain maximum effectiveness from the training session in the time available. The physiological intervention addressed both strength and cardio-vascular components.

The resistance training element, in line with the World Health Organisations (2010) Guidelines as well as the ACSM (2006) guidelines, of the physical activity intervention consisted of the following. The programme was divided into two days. There are 12 areas of the body that were trained. These areas consisted of chest, legs (anterior), upper body, legs (posterior), shoulders, legs and buttocks, arms (anterior), inner thighs, arms (posterior), lower back, legs (inferior) and abdominal. Each element was trained once a week. Each area had a specific exercise that remained the same for all candidates with only the weight/resistance changes to correspond to their individual muscular strength and endurance levels. Each exercise was done for three sets of 15 repetitions with 30-60 second rest intervals sets of repetitions. The candidate alternated between resistance training the one day and cardiovascular training the next. Each candidate's exercise intensity was determined individually and after 2 weeks there was an exercise program adjustment to ensure progression. After each session register was taken.

The cardiovascular training element of the physical activity intervention consisted of the following. The sessions started with a 2 minute warm up at Rate of Perceived Exhaustion (RPE) equal to 5. RPE is the scale which was used to measure each candidate's effort level. Each candidate's effort level was measured on the RPE scale, where 1 is no or little effort and 10 being maximum effort. Each section of the cardiovascular session was based on the candidate's heart rate (% of maximum HR) as well as RPE.

Psychological intervention

The second group started with a psychological intervention. This intervention was implemented simultaneously with the physical activity intervention, just on the other half of the sample group. The psychological intervention consisted of the employees being given a psychological 'training manual', aimed at self-development (Pienaar, 2001). This manual consisted of an educational part that focused on expanding the employees' knowledge and skills within their inter- and intra-personal functioning.

This psychological training manual provided the learning process of techniques to better handle work demands and also better utilise job resources. This self-development programme has been successfully applied with corporate managers (Pienaar, Rothmann, & Rothmann, 2003). Supporting the self-development manual, the group also had contact sessions once a week to engage in discussions (social support) surrounding the manual and the discussed positives, hurdles, challenges and success stories of the week's work.

The self-development manual of Pienaar (2001) was used and consisted of two main focus areas, namely Intra-personal and Inter-personal functioning. These two focus areas were discussed and conveyed to participants through knowledge acquisition and experiential learning (Pienaar et al., 2003). The personal development manual was divided into four sections namely: *psychological health* (Schaufeli & Greenglass, 2001; Awe, Plaumann, & Walter, 2010), *management of conflict* (Rodriguez & Small, 2006; Parsotam, 2009), *understanding your personal preferences* (Ahmadi, Feizi, & Alipour, 2013; Coetzee, Jansen, & Muller, 2009) and *creative problem solving* (Zani & Pietrantoni, 2001; Spicuzza & De Voe, 1982). These four areas were selected because of the research proven effect on burnout and engagement

These four areas each had their own sub-sections and focused on key elements of the main section they were grouped in. The first section within the self-development manual was psychological health (Pienaar, 2001). Here the participants were informed of the areas in which an individual needs to be healthy in order to be considered psychologically healthy. These areas are personality characteristics, physical characteristics, the individual's contact with reality, awareness of and expressing of emotions, self-concept and self-esteem, locus of control, coping and sense of coherence. All these sub-sections had an informative section giving relevant information on the topic as well as exercises in improving understanding of the element and improving the proficiency in it.

The second section of the personal development manual (Pienaar, 2001) was management of conflict. Here the participants were informed on the effective management of conflict. The sub-sections of conflict management included: definitions of the relevant terms; informing that conflict can be constructive and destructive and the controlling of the occurrence of conflict.

The third section, understanding personality preferences, assisted individuals in understanding how different personality types fit into the organisation and how different personality types communicate, acquire information, make decisions and do their orientation to the outside world. In this section the Meyers Briggs Type Indicators' (MBTI) domains of personality were utilised (Pienaar, 2001). Identification of candidates' specific MBTI codes was facilitated by the use of a MBTI lecture. The lecture focused on assisting the candidates in identifying their MBTI code through stating a question pertaining to a specific axis on the MBTI and then asking them to identify how they would respond. This would indicate which code they would use on each of the four axes building up their final MBTI code. Next, methods of communicating, effects of preferences in work situations, what different strengths each personality type brings to the organisations and lastly methods of how to communicate with the different personality types were discussed.

The last section within the personal development manual is creative problem-solving (Pienaar, 2001). Within this section various decision-making methods were discussed. The methods that were discussed within this manual were, namely, the rational model of decision-making, group decision-making techniques, group problem-solving techniques such as brainstorming and the nominal group technique (Pienaar, 2001). Educational and experiential learning is not enough to internalise newly-learned skills and according to the literature, social support is also needed.

Kadushin and Harkness (2002) stated that the supportive domain strengthens the participants' ability to deal with job stressors by providing reassurance and approval. The group-training setting facilitates interpersonal processes typical of groups, enhancing bonding and strengthening mutual peer support (Cohan & Gagin, 2008). These are important ways of fighting burnout (Koeske & Koeske, 1989).

Wade and Perlman (1993) found that supportive peer relationships reduced anxiety, stress and burnout. Thus the second part of the psychological intervention consisted of four group discussion sessions after completion of each section within the manual. These sessions were to discuss that week's specific section and the impact of it on their work environment and the way forward in terms of internalising the newly-learned skills within each section.

Within the group sessions individuals were guided through the week's specific section and the exercises were discussed within the group session. If a participant felt that he/she did not

want to participate in that week's session, for any reason, they were not forced. After the various exercises had been discussed the group was given the opportunity to discuss ways of using the newly-learned skill within the workforce.

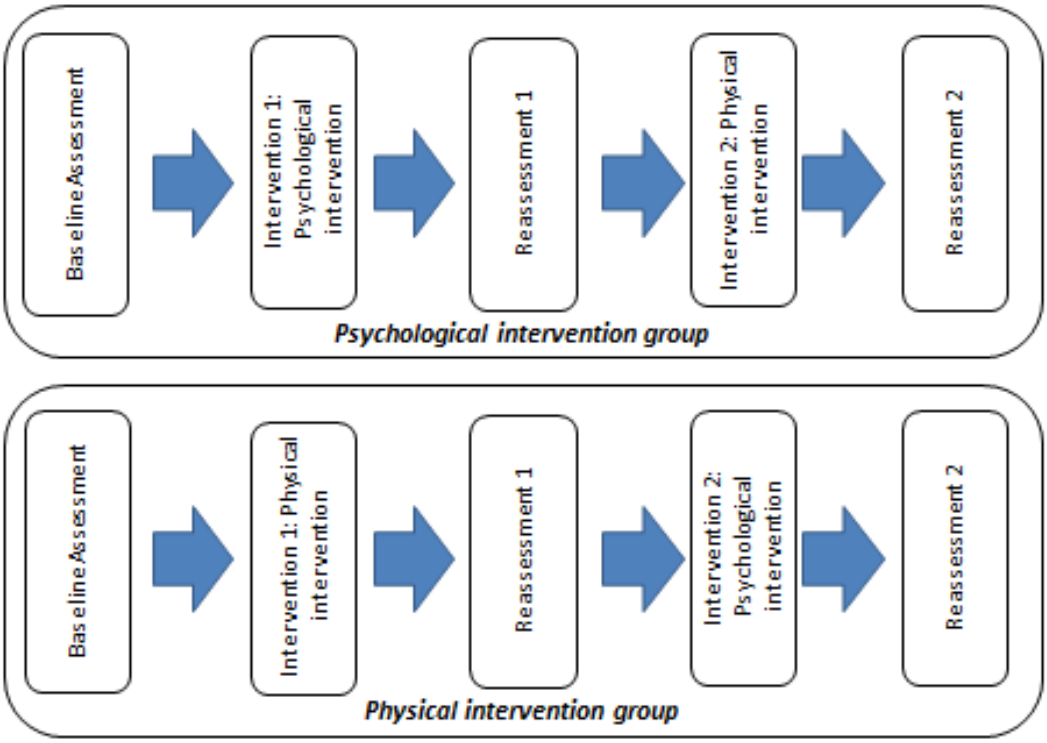

Figure 2: Illustration of the Intervention Programme Process

Measuring instruments

Measuring instruments consisted of the instruments used for physical parameters as well as work-related psychological health.

Physical activity parameters

Physical health

- *Demographic information*

  Name, age, date of birth, gender, address, contact information.

- *History of chronic disease*

This section of the questionnaire determined whether the participant had a history of certain chronic diseases (cardiovascular, pulmonary and metabolic) and whether he/she required or was currently receiving treatment for the condition.

Resting blood pressure (BP)

BP was measured with a sphygmomanometer using the Riva-Rocci/Korotkoff method (Verrij, Van Montsfrans, & Bos, 2008) on the non-dominant arm using an appropriate cuff size for obese and normal persons. Participants rested for 10 minutes in the supine position before the first measurement was taken. Two duplicate measures were taken with a 3-5 minute resting period between each measurement.

Blood glucose and total cholesterol measurement

The procedure was first explained to the client. Disposable gloves were used and an aseptic technique for blood collection was used. The clients were positioned in such a way that he/she was seated in a chair and with a hyperextended arm (during cold the finger was warmed by wrapping a warm cloth around it or by rubbing the finger). The finger prick site was cleaned with an alcohol swab and the alcohol was allowed to air-dry completely before making the prick. A sterile lancet (Lifescan Johnson & Johnson, One Touch lancets) was used. Full skin penetration was ensured by the tip of the lancet in order to obtain adequate blood flow for collection. A skin puncture was made just off the centre of the finger pad after which a dry and clean cotton-wool swab was used to wipe off the first drop of blood. The finger was then gently massaged to allow a drop to form at the punctured site. Sufficient quantities of blood for the technique were collected using the One Touch Select blood glucose and cholesterol meter. The patient was asked to hold a small ball of dry cotton-wool over the puncture site for a few minutes to stop the bleeding.

Anthropometry

The following basic anthropometric measurements were done in triplicate by Biokinetic postgraduate students (Invicta Stadiometer, IP 1465, U.K.; Precision Health Scale, A & D Company, Japan; Holtain stretchable flexible 7 mm wide metal tape): Height, weight, waist circumference, and hip circumference.

Body composition

Body composition was measured by means of the Bod Pod (Life Measurement, Inc, 2014). A safe, reliable and non-invasive body composition measurement for pregnant women, the Bod Pod was used to measure body composition (fat vs. lean mass) at every measurement point. The Bod Pod used a dual-chamber plethysmograph that measured body volume by changes in air pressure within a closed two compartment chamber. Once body density had been determined the percentage body fat was calculated (Heyward & Wagner, 2004). Participants were requested to wear minimal clothing and empty their bladder before measurement. The participant was then placed inside the chamber (Bod Pod) and asked to breathe normally. In order to estimate body fat, the thoracic gas volume using single anti-bacterial filters was measured. The estimated body fat mass, lean muscle mass and percentage body fat were determined.

Work-related psychological health

Burnout and engagement were measured using The South African Employee Health and Wellness Survey (Rothmann & Rothmann, 2006). The SAEHWS has been used to measure employees' health and wellness across various sectors (Schultz, 2010). The responses of the employee were related to the organisational climate and lastly compared to the South African norm for the specific variable (Rothmann & Rothmann, 2006). By comparing the employees' scores to the South African norms it is an objective and comparative measure (Schultz, 2010). The validity structure of the SAEHWS model has been found to be equal for different ethnic groups as well as organisations (Schultz, 2010). The SAEHWS is also sensitive to culture and is not biased towards any cultural group (Schultz, 2010). The SAEHWS model is supported by a predictive model which allows the SAEHWS to predict human capital risks and to ensure proactive management of the identified risks and work-related well-being of employees as well as teams and areas of operation (Rothmann & Rothmann, 2006).

Burnout: The scale ranges from 0 (never) to 7 (always) and includes the following subscales: Exhaustion (five items, e.g. "*I feel tired after a nights rest*") and cynicism ("*I feel negative when going to work*"). According to (Schultz, 2010), the internal consistency is above the recommended alpha coefficient cut-off point of 0,70 (Nunnally & Bernstein, 1994).

Engagement: Work engagement's measurement is done with two dimensions, which are vitality and work devotion. Vitality was measured using five items ($\alpha = 0.84$) (e.g. "*I am full*

of energy within my work") and another five items were used to measure work devotion (α = 0.83) (e.g. "*I feel I am passionate about my job*") (Rothmann & Rothmann, 2006).

Work-related attitudes

According to Jorgensen and Rothmann (2008), there are certain work-related attitudes that have been linked to burnout and engagement. These are Stress-related physical Ill-health, stress-related psychological ill-health and organisational commitment. These were also examined to see effects of interventions on the two intervention groups.

Stress-related physical Ill-health: According to Jorgensen and Rothmann (2008) stress-related physical ill-health can be caused by psychological and physical strain. Individuals exposed to stress over a long period may experience emotional as well as physical costs such as back and chest pains, high blood pressure (Jorgensen & Rothmann, 2008). Ill-health is viewed as an outcome of stress (Cartwright & Cooper, 2002). Stress-related physical ill-health was measured using seven items (α = 0.82) (e.g. *"Over the last 3 months, have you experienced any of the following symptoms or changes in behaviour? Muscular tension/aches and pains; Lack of appetite or over-eating"*) (Rothmann & Rothmann, 2006). The scale ranged from 0 (never) to 4 (always).

Stress-related psychological ill-health: Individuals exposed to stress over a long period may experience irritability and depression (Jorgensen & Rothmann, 2008). Stress-related psychological ill-health was measured using 11 items (α = 0.89) (e.g. *"Over the last 3 months, have you experienced any of the following symptoms or changes in behaviour? Constant irritability; Difficulty in making decisions"*) (Rothmann & Rothmann, 2006). The scale ranged from 0 (never) to 4 (always).

Organisational commitment: Is defined as a state in which an individual is aligned with an organisation and its goals, is willing to employ effort on into the organisation, desires to maintain involvement in the organisation, as well as the degree to which employees are loyal and devoted to the organisation (Cartwright & Cooper 2002). They also viewed low commitment as an effect of stress (Jorgensen & Rothmann, 2008). Commitment was measured using 11 items (α = 0.91) (e.g. *"Over the last 3 months, have you experienced any of the following symptoms or changes in behaviour? I feel a strong sense of belonging to my*

organisation; I defend the organisation when others criticise it.")(Rothmann & Rothmann, 2006). The scale ranged from 1 (Strongly Disagree) to 6 (Strongly Agree).

Ethical considerations

According to Foxcroft and Roodt (2010) the following ethical considerations were taken note of when administering the research. Confidentiality - The results were kept confidential. Informed consent - the informed consent acknowledges that participant's rights were protected during the data-collection phase (Creswell, 2009). Standardised measures and conditions - The measuring instruments were standardised, valid and reliable and all participants were tested under the same conditions and environment. The written manual does not contain any language or words that could have been seen as biased against the participants based on any of the following: gender, sexual orientation, racial or ethnic group, disability or age (Creswell, 2009). Researchers showed the utmost respect for the participants and data, once analysed, were kept for a reasonable period of time (Creswell, 2009).

Further ethical considerations according to the South African Good Clinical Practice Guidelines (Health, 2006) were taken into consideration. Before the intervention was initiated, foreseeable risks and inconveniences were weighed up against the anticipated benefit for the individual intervention subject. The intervention study was initiated and continued as the anticipated benefits justified the risks. The rights, safety and well-being of the intervention participants were the most important considerations and prevailed over interests of science and society. The intervention design was scientifically sound, and described in a clear, detailed protocol. The intervention study was conducted in compliance with the protocol that had received prior independent ethics committee (IEC) approval. Each individual involved in conducting the interventions was qualified by education, training, and experience to perform his or her respective task(s).

Statistical analysis

Statistical analysis was carried out using the SPSS-programme (version 20) (SPSS Inc, 2011). This programme supplies the researcher with an analysis and summary of the data that had been collected (Pallant, 2007). Cronbach's alpha coefficients that were used to assess the reliability of the instrument were compared to the guideline of Nunnally and Bernstein (1994) of $\alpha > 0, 70$, which is deemed to be acceptable. MANOVAs (Multivariate Analysis of

Variance) were used to determine significant differences between the different intervention groups and demographical variables (i.e. gender and age groups). MANOVAs were used to determine whether group differences occurred for more than one dependent variable (Salkind, 2009). ANOVAs (A One-way Analysis of Variance) were used to determine which intervention groups had been affected most in regard to the various constructs measured.

The same groups were used across the study. The groups were assessed after each intervention and significant differences were assessed between and within the groups. Significant differences that were determined between the groups within the given time period would indicate a difference of effectiveness of the two interventions. The Wilks' Lambda test was used to determine whether there were any statistically significant differences between the means of the burnout and engagement variable and the different interventions groups. Crichton (2009) explains that the Wilks' Lambda test is used in MANOVAs to test whether there are differences between the means of identified groups of subjects on a combination of dependent variables.

RESULTS

Table 3 and Table 4 below report the means and mean differences on the measured variables for the group that commenced with the psychological intervention (Time 1 to Time 2) and then moved on to the physical activity intervention (Time 2 to Time 3). The mean differences between Time 1 and Time 3 refer to the overall change in means after both psychological and physical activity interventions had been completed.

Table 3

MANOVA – Change in Burnout, Engagement and Work-related Attitudes of Psychological Intervention Group

Variable	Mean (Time 1)	Mean (Time 2)	Mean (Time 3)	$\Delta M_{1\text{-}2}$	p	$\Delta M_{2\text{-}3}$	p	$\Delta M_{1\text{-}3}$	p
Burnout	5.10	5.52	5.21	-0.42	0.48	0.31	0.52	-0.11	0.88
Engagement	10.97	11.09	11.04	-0.12	0.83	0.04	0.93	-0.07	0.92
Physical ill-health	2.71	2.59	2.81	0.116	0.50	-0.21	0.32	-0.98	0.32
Psychological ill-health	2.56	2.40	2.64	0.159	0.49	-0.24	0.34	-0.08	0.66
Organisational commitment	5.64	5.44	5.48	0.196	0.40	-0.04	0.87	0.16	0.49

$^{*}p \leq 0, 05$ = statistically significant

When referring to Table 3, it can be seen that the results show an increase for participants in both their burnout and engagement scores from Time 1 to Time 2 and a decrease from Time 2 to Time 3. Overall, the results indicated an increase from Time 1 to Time 3 after both interventions had been completed. In terms of the physical and psychological measures of ill-health, participants' scores decreased from Time 1 to Time 2; increased from Time 2 to Time 3; and also showed an increase from Time 1 to Time 3. Participants' organisational commitment declined from Time 1 to Time 2; increased from Time 2 to Time 3; and finally decreased from Time 1 to Time 3. However, none of these changes were of statistical significance.

Table 4

MANOVA – Change in Health Parameters of Psychological Intervention Group

Variable	Mean (Time 1)	Mean (Time 2)	Mean (Time 3)	$\Delta M_{1\text{-}2}$	*P*	$\Delta M_{2\text{-}3}$	*p*	$\Delta M_{1\text{-}3}$	*p*
SBP (mmHg)	113.33	112.78	108.56	0,55	0.92	4.22	0.28	4.78	0.15
HDL (mmol/Dl^{-1})	1.61	1.30	1.38	0.31	.00*	0.07	0.15	0.23	0.00*
TG (mmol/dl^{-L})	3.49	1.84	1.92	1.65	0.04*	-0.77	0.90	1.57	0.00*
Glucose (mmol/dL^{-1})	5.61	5.68	6.17	-0.07	0.75	-0.49	0.00*	-0.56	0.00*
Mass (kg)	71.47	71.11	71.76	0.37	0.25	-0.65	0.06	-0.29	0.59
BM (kg/m^{-2})	25.93	25.88	26.02	0.05	0.76	-0.14	0.15	-0.10	0.63
WC (cm)	81.33	77.25	76.63	4.08	0.20	0.63	0.16	4.71	0.15
Fat%	35.06	33.80	34.08	1.26	0.42	-0.27	0.80	0.98	0.62
LBM (kg)	66.06	66.20	65.92	-0.14	0.88	0.28	0.80	0.13	0.93

SBP = Systolic Blood Pressure; HDL = High Density Lipoprotein; TG = Triglycerides; BMI = Body Mass Index; WC = Waist Circumference; LBM = Lean Body Mass.

$^{*}p \leq 0, 05$ = statistically significant

When referring to Table 4, it can be seen that there were no statistically significant changes between the three measurements of Systolic blood pressure (SBP), Mass, Body Mass Index (BMI), Waist Circumference (WC), Percentage body Fat (Fat%) or Lean Body Mass (LBM). In terms of participants' High Density Lipids (HDL), a statistically significant decrease is seen from Time 1 to Time 2, and an overall decrease from Time 1 to Time 3. The change from Time 2 to Time 3, when participants participated in the physical activity intervention, was not significant. The difference occurred when participants were participating in the psychological intervention (i.e. between Times 1 and 2). Participants' Triglycerides (TG), decreased statistically significantly from Time 1 to Time 2, and overall from Time 1 to Time 3. The change from Time 2 to Time 3, when participants participated in the physical activity

intervention, was not significant. Further, there is a statistically significant increase in participants' Glucose levels from Time 1 to Time 3, and from Time 2 to Time 3.

Table 5 and Table 6 below report the means and mean differences on the measured variables for the group that commenced with the physical activity intervention (Time 1 to Time 2) and then moved on to the psychological intervention (Time 2 to Time 3). The mean differences from Time 1 to Time 3 refer to the overall change in means after both psychological and physical activity interventions were completed.

Table 5

MANOVA – Change in Burnout, Engagement and Work-related Attitudes of the Physical Activity Intervention Group

Variable	Mean (time 1)	Mean (time 2)	Mean (time 3)	ΔM_{1-2}	*P*	ΔM_{2-3}	*Pp*	ΔM_{1-3}	*P*
Burnout	6.78	7.35	6.82	-0.58	0.50	0.53	0.47	-0.43	0.92
Engagement	10.19	10.05	9.68	0.14	0.77	0.37	0.55	0.51	0.24
Physical ill-health	2.79	2.50	2.82	0.30	0.12	-0.33	0.15	-0.03	0.81
Psychological ill-health	2.72	2.50	2.72	0.22	0.18	-0.22	0.33	0.01	0.97
Organisational commitment	5.34	5.50	5.15	-0.26	0.57	0.35	0.45	0.09	0.65

$^{*}p \leq 0{,}05$ = statistically significant

When referring to Table 5, it can be seen that there was an increase in participants' burnout scores from both Time 1 to Time 2, and Time 1 to Time 3. There was a decrease from Time 2 to Time 3. The results indicated a decrease in Engagement from Time 1 to Time 2, from Time 2 to Time 3, and overall from Time 1 to Time 3. In terms of both the physical and psychological measures of ill-health, participants' scores decreased from Time 1 to Time 2 and increased from Time 2 to Time 3. Overall, physical ill-health increased from Time 1 to Time 3, while psychological ill-health remained unchanged (from Time 1 to Time 3). Participants' organisational commitment increased from Time 1 to Time 2; decreased from Time 2 to Time 3; and finally decreased overall, from Time 1 to Time 3. However, none of these changes were of statistical significance.

Table 6

MANOVA – Change in Health Parameters of Physical activity Intervention Group

Variable	Mean (time 1)	Mean (time 2)	Mean (time 3)	ΔM_{1-2}	*P*	ΔM_{2-3}	*P*	ΔM_{1-3}	*p*
SBP (mmHg)	114.13	116.25	115.00	-2.13	0.67	1.25	0.83	-0.88	0.64
HDL (mmol/Dl^{-1})	1.64	1.53	1.49	0.11	0.10	0.04	0.74	0.15	0.16
TG(mmol/dl^{-1})	3.62	1.13	1.14	2.49	0.00*	-0.01	0.94	2.48	0.00*
Glucose (mmol/dL^{-1})	5.63	5.63	5.75	0.00	1.00	-0.13	0.73	-0.13	0.62
Mass(kg)	72.61	72.50	72.84	0.12	0.83	-0.34	0.38	-0.22	0.56
BMI (kg/m^{-2})	26.10	26.14	26.28	-0.04	0.83	-0.14	0.50	-0.17	0.29
WC (cm)	79.23	77.74	79.44	1.49	0.12	-1.70	0.03*	-0.21	0.85
Fat%	31.79	31.65	33.80	0.14	0.90	-2.15	0.07	-2.01	0.04*
LBM (kg)	68.21	68.35	66.20	-0.14	0.90	2.15	0.07	2.01	0.04*

SBP = Systolic Blood Pressure; HDL = High Density Lipoprotein; TG = Triglycerides; BMI = Body Mass Index; WC = Waist Circumference; LBM = Lean Body Mass.

*$p \leq 0{,}05$ = statistically significant

When referring to Table 6, it can be seen that there were no statistically significant changes between the measurements of Systolic Blood Pressure (SBP), High Density Lipoprotein (HDL), Glucose, Mass and Body Mass Index (BMI). In terms of participants' Triglycerides (TG) levels, a statistically significant decrease was seen from Time 1 to Time 2, and overall from Time 1 to Time 3. The change from Time 2 to Time 3, when participants participated in the psychological intervention, was not significant. Participants' Waist Circumference (WC), decreased statistically significantly from Time 2 to Time 3. The change from Time 1 to Time 2, when participants participated in the physical intervention, was not significant. There is a statistically significant increase in participants' Fat percentage from Time 1 to Time 3. The change from Time 1 to Time 2 and Time 2 to Time 3, was not significant. There is also a statistically significant decrease in participants' Lean Body Mass (LBM) from Time 1 to Time 3. The change from Time 1 to Time 2, and Time 2 to Time 3, when participants first participated in the physical activity intervention and then in the psychological, was not significant.

DISCUSSION

This study examined the effect of a psychological intervention aimed at enhancing psychological capital and physical activity (PA) on self-reported burnout, work engagement, workplace attitudes and health among tertiary education staff. Participants from a range of

faculties within the tertiary education institution took part in an eight-week psychological and physical activity intervention programme. The aim of the study was to investigate whether a physical, psychological, or combined intervention of both, would decrease burnout and increase engagement.

The results of the study provide objective information on the impact the interventions had on various indicators of work-related wellbeing and individual assessments of health and organisational attitudes. Comparison between measurements at Time 1 and at Time 2 (following the first intervention) is used to address hypotheses *1a*, *1b*, *2a* and *2b*. Comparisons between measurements at Time 1 and Time 3 (after the combination of interventions has been completed) are used to address hypothesis *3a* and *3b*.

The first hypothesis (*1a*) was that a psychological intervention is effective in alleviating burnout of staff members at a tertiary education institution. Unfortunately, self-reported burnout of the group that participated in the psychological intervention in the first phase showed a slight increase rather than a decrease, albeit not at statistically significant levels. From a theoretical perspective, taking into consideration the conservation of resources standpoint of Hobfall and Sharom (2000), psychological development may have only added to the workload experienced by employees and that the supposed resources provided by the intervention in fact created a demand – the demand for psychological growth. Similar findings have been shown in the JD-R model of Demerouti et al. (2001). Rothmann et al. (2007) found that if an employee has high job demands, adding growth opportunities will only elevate the impact of the job-demands and produce higher levels of burnout

From the physical parameters it can be seen that significantly lower HDL (good cholesterol) but also significantly lower triglycerides levels were found. The lower HDL levels may be because of the added stress of completing the psychological intervention coupled with high work demands. This is supported by Higashiguchi et al. (2009), who found in a five-year study of the relationship between burnout and arteriosclerotic disease that the candidates with high levels of burnout had low levels of HDL. According to He, Chen, Zhan, Wu and Opler (2014), burnout has a positive and significant correlation with low levels of HDL. Between Times 2 and 3, when these participants participated in the physical activity intervention, they also showed a significant increase in their levels of glucose. Higher levels of burnout are associated with type 2 diabetes (Melamed, Shirom, Toker, & Shapira, 2006). Burnout in this investigation thus shows a similar relationship with high glucose levels in the blood.

Based on the findings above, that a psychological intervention is not effective in decreasing burnout, hypothesis 1(a) is rejected.

The next hypothesis 1(b) was that a psychological intervention is effective in increasing engagement of staff members at a tertiary education institution. The group that participated in the psychological intervention in the first phase's engagement increased, although again not to a level of statistical significance. This finding is somewhat supported by participants' reported physical and psychological ill-health decreasing over the same time period (i.e. from Time 1 to Time 2). Peterson et al. (2008) also found that engaged workers reported fewer physical and psychological problems. Shirom (2011) also found that the vigour dimension of engagement is positively related to mental and physical health. However, none of these findings reached a level of statistical significance, and this is rather suggestive of a general trend. Based on the findings, hypothesis 1(b), stating that a psychological intervention is effective in increasing engagement of staff members at a tertiary education institution, is rejected.

Practical implications of the above findings are that the psychological intervention apparently added to the downward spiral of burnout and may not have been effective over the short-term (i.e. one month) of the first intervention. By lowering the psychological and physical ill-health of candidates and increasing engagement, over a longer period of time, the candidate's burnout levels might have decreased and engagement continued to increase. This is supported by a study conducted by the Gallup Organization Research (2008) looking at engagement and health parameters. They found that there were significant decreases in cholesterol and triglyceride levels when employee engagement improved (Gullap Organization Research, 2008).

The next Hypothesis 2(a) stated that a physical activity intervention is effective in alleviating burnout of staff members at a tertiary education institution. The group that participated in the physical activity intervention in the first phase's burnout increased but concomitantly their organisational commitment also increased and physical and psychological ill-health decreased. Although these findings are again highly suggestive of a mostly positive trend in terms of self-reported ill-health and commitment, they are not at a level of statistical significance. Physical activity has been found to positively affect psychological and physical health (Van Rhenen et al., 2005). Their physical activity intervention, however, consisted of a combination of physical activity and relaxation exercises and ran for ten weeks. Furthermore,

San, Devin, Jafari, and Zohoorian (2012) found that regular physical activity is good for lowering burnout and ensuring mental health of university staff. However, they used a cross-sectional design for their study, and this may have prevented them from investigating the effect physical activity has on burnout over time.

Based on the results, hypothesis 2(a), that a physical activity intervention is effective in alleviating burnout of staff members at a tertiary education institution, is rejected.

According to the Conservation of Resources theory (Hobfoll, 2001), adding physical strain to already burnt-out or close-to-burning-out employees may have added to the emotional and cognitive load of the workplace and strengthened the downward spiral. Taking into consideration also the decrease of physical and psychological ill-health which, according to Demerouti et al. (2001), is associated with burnout, it may be argued that the intervention was indeed contributing to personal health resources that may in the long run have contributed to a decrease in burnout. This assumption is supported by the finding that over the same time period (i.e. from Time 1 to Time 2), organisational commitment also increased. This interpretation is supported by Gerber et al. (2013) and Weight et al. (2013), who found that a 12-week exercise programme reduced perceived stress among participants suffering from burnout. Again, this interpretation is in line with theoretical reasoning, but remains highly speculative, as none of the results reached a level of statistical significance.

The next Hypothesis, 2(b), stated that a physical activity intervention is effective in increasing engagement of staff members at a tertiary education institution. Based on the findings, this hypothesis is rejected, as participants' levels of engagement decreased from Time 1 to Time 2, although not statistically significantly. Although their engagement levels decreased, their physical and psychological ill-health improved. The findings are much in line with Meijerick (2010), who found that a physical exercise session has a positive, short-term effect on physical tension, balance and mental relaxation, but not on energy. In conclusion they found no convincing evidence on the effects of a ten-week exercise programme on engagement.

Practical implications of the above may be that companies struggling with employee engagement may need to look at the implementation of long-running physical exercise programmes. The reason for this is that the results of this study, as well as others (Meijerick, 2010; Forcier, et al., 2006; Ermalinski et al., 1997) consistently point to exercise not affecting

engagement in the short term (i.e. four weeks), and even up to ten weeks. Taking into consideration the physical parameters for the two hypotheses it can be seen that triglyceride levels significantly lowered during the first phase. These finding are supported by Monda, Ballantyne and North (2009), who found that that an increase in physical activity was associated with a decrease in triglycerides. Looking at Hypothesis 2(a) and 2(b), the statistically significant lowering of triglycerides may be an early indicator of engagement levels increasing, or the body's response to physical activity (Huttunen et al., 1979; Monda et al., 2009). This is supported by Higashiguchi et al. (2009), where a negative relationship between engagement and triglycerides was found and a positive correlation between burnout and triglycerides.

The next Hypotheses, 3(*a* and *b*) looked at whether a combination of a physical activity and psychological intervention is more effective at alleviating burnout of staff members at a tertiary education institution than either intervention by itself. Both groups that had participated in the two interventions' overall burnout increased, but not statistically significantly so. This leads to a rejection of the hypothesis, as a combination of interventions was not more effective in alleviating burnout than either intervention by itself.

It may be that introducing psychological as well as physical resources without looking at workplace demands could have led to the candidates seeing the intervention as an extra demand, instead of a resource (Hobfall & Sharom, 2000). This is supported by the JD-R model (Demerouti et al., 2001) stating that lifestyle (i.e. physical activity) can only work as a buffer against burnout from the workplace demands. If the individual does not have added resources at work, the extra demands outside of regular work may only aid in the further progression of burnout. Interestingly, where the psychological intervention was administered first, the increase in burnout was less pronounced. It may be argued from a theoretical standpoint that the psychological resources provided in the first intervention acted as a buffer to the demands of the physical intervention, as well as overall demands from the work place. Hobfall and Sharom (2000) state that providing emotional resources to individuals may buffer them from the psychological and physical demands of the workplace. From a practical perspective this may indicate that administering a psychological intervention first for a period of time, and then adding physical activity, may provide better resources to handle the added stress on the body of physical activity.

This is partially supported by the physical parameters showing that there were significantly lower overall good cholesterol levels (HDL) and significantly lower triglycerides. This reinforces previous indicated literature from Higashiguchi et al. (2009), who found in a 5-year study of the relationship between burnout and arteriosclerotic disease that their candidates with high levels of burnout also showed lower levels of HDL. Furthermore, according to He et al. (2014), burnout has a significant correlation with low levels of HDL.

The engagement of the group that participated in the psychological intervention in the first phase's overall increased, while the group that participated in the physical activity intervention first showed an overall decrease in engagement. Importantly, it must once again be borne in mind that these findings were not statistically significant. Based on the findings, hypothesis 3(b) is, however, rejected.

The group that participated in the physical activity intervention in the first phase's engagement decreased. From a theoretical background, looking at the COR theory (Hobfall & Sharom, 2000), participating in the physical activity intervention first may have taken away from the candidates' already depleted resources and pushed them further away from engagement. Adding the demands of cognitive development in the second phase further increased already high demands. Also looking at the JD-R model (Demerouti et al., 2001), the added physical demand to the already high emotional and cognitive demands from work without adequate resources would have added to burnout. Additionally adding the psychological demands may have just pushed them further away from engagement. This can also be deduced from their physical ill-health increasing and psychological ill-health returning to previous levels.

The physical parameters of the group that participated in the physical activity intervention first indicated that their triglycerides and lean body mass showed a statistically significant decrease. Their percentage body fat also increased. This may be interpreted as being in line with Chandola, Brunner and Marmot (2006), who showed that there is a link between stress and metabolic syndrome. Characteristics of the metabolic syndrome are abdominal obesity, atherogenic dyslipidaemia (raised triglycerides, small low-density lipoprotein particles, and low concentrations of high density lipoprotein cholesterol), high blood pressure, insulin resistance (with or without glucose intolerance), and pro-thrombotic and pro-inflammatory states (Chandola et al., 2006). Lower triglycerides, as stated earlier, can also be the body's reaction to physical exercise (Huttunen, et al., 1979).

It must be noted that most of the discussion has focussed on understanding the results within a theoretical framework, as many results did not reach levels of statistical significance. However, key findings of the study are that a psychological intervention was not effective in alleviating burnout of staff members at a tertiary education institution. However, a psychological intervention may be effective in increasing engagement of staff members at a tertiary education institution. Also, a physical activity intervention was not effective in alleviating burnout or enhancing work engagement of staff members at a tertiary education institution. A combination of both a physical and psychological intervention was not more effective in alleviating burnout of staff members at a tertiary education institution than either intervention by itself. However, it may be suggested that a combination of a psychological and physical activity intervention may be more effective for increasing engagement of staff members at a tertiary education institution than either intervention by itself, if the psychological intervention is scheduled first. It is also important to look at the contribution of the study in the bigger picture of things

Considering the various levels of interventions namely tertiary, secondary and primary the results indicate that tertiary interventions aimed at management and treatment of Burnout and engagement should focus on the combination of the two interventions for the best results. Primary and Secondary interventions are still the most effective (Cohan & Gagin, 2008), Organisations should focus more on addressing work place factors that lead to burnout and that diminish engagement. Also looking at the field of Industrial Psychology, these findings show that there is academic support for the further investigation of collaborative interventions that incorporate the physical as well as psychological aspects in wellbeing. Future studies could focus more on an inter-level approach to addressing burnout and engagement. Initiating interventions of all three levels at once.

Limitations

Limitations of this study should be noted. The first was that the study was of a longitudinal design. Although using a longitudinal design has its advantages, the average longitudinal intervals between measurements were relatively short (Stalhouse, 2013). This can be seen from the results between Times 1 and 2, and 2 and 3, where there seemed to be improvement, but which was followed by a regression. The longitudinal design also placed considerably more demands on the participants and researcher, and escalated the costs.

The second limitation was that there was a big dropout percentage (attrition) from time 1 to time 3, although Salkind (2009) states that longitudinal studies should anticipate a big dropout percentage. He also indicates that the dropout will be systematic over time and this was also observed in the study as from time one to time two 48% dropped out and from time two to time three another 14% dropped out. The implication for the findings, however, is that it is very narrowly focused on a small segment of the population. It is unknown the reasons for the high dropout numbers. The candidates indicated that they could not continue because of various personal and professional reasons

The third limitation was that the final sample group that was used (n=19) is very small. This is also why there was no control group assigned, as the size of the sample group did not permit it. The group used is also highly homogeneous, i.e. it consisted only of white females. This may not give a good indication of the wider population from which the sample group was collected from. This could have an impact on the generalizability of the study.

The fourth limitation was that the interventions were not aimed at specifically addressing the constructs of burnout and engagement *per se*. The interventions were aimed at increasing physical activity and psychological capital in a more general sense, in anticipation that burnout and engagement should be affected, based on the literature. This may have had effects on the results as there was no statistically significant movement in burnout and engagement scores. Statistically significant differences were, however, noted in terms of participants' reported physical and psychological health and levels of organisational commitment.

The limitations were managed cautiously. Initially, 3000 employees of the tertiary education institution were approached. Because of the diverse geographical nature of the university many employees could not participate in the study. Then only 50 of the contacted employees indicated an interest in the study. This had a severe trickle-down effect after time one and time two as candidates also dropped out, with the project finally ending up with 19 candidates. However, the population was utilised and a larger population was not possible.

Next, recommendations are made for future research and for future use of the intervention design for alleviating burnout and increasing engagement among tertiary education staff.

Recommendations

The last objective of this study is to make recommendations for future research, managers and organisations concerning intervention management aimed at alleviating burnout and increasing engagement. There has been limited research into the relationship between physical and psychological interventions in the alleviation of burnout as well as promoting engagement (Scherrer, Scheridan, Sibson, Ryan, & Henley, 2010).

To this researcher's knowledge, this is the first study conducted in South Africa focusing on the application of dual interventions on burnout and engagement with a group of working employees. This implies that similar intervention studies may still be fruitfully pursued with other occupational groups, as the current sample only covered the higher educational sector. This study gives a framework for interventions aimed at burnout and engagement. Future research can work from these interventions, develop a greater focus in terms of specific dimensions of burnout and engagement, and possibly consider prolonging the interval periods between assessments. This would give more time for the newly-obtained resources from the interventions to have an effect on burnout and engagement.

Future research can also look at a bigger sample size as this may give the necessary statistical power to see significant changes in burnout and engagement scores. Taking into consideration the homogeneous nature of the current sample group, future research can look at possibly obtaining a more diverse sample, as this would contribute to the generalizability of the results.

Also, future researches can focus on the interventions themselves, as this study focused on increasing physical activity in general, as well as developing psychological capital in general. Future research can investigate the impact of physical activity intervention aimed at addressing the two burnout constructs (emotional exhaustion as well as cynicism), and the two constructs of engagement (vitality and dedication) directly.

Perhaps the most pertinent implication from this research for individuals and organisations is to again highlight the importance of ensuring awareness of the impact of physical activity and personal development on individuals when they are already suffering from burnout. Individually focused interventions, without due consideration of changing work itself, may act as an additional demand instead of a resource. Lastly, the suggestion is made here that

implementing a psychological intervention first, followed by a physical activity intervention, may be more effective in positively influencing employee work engagement levels.

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APPENDIX: 1

Resistance training programme

The intervention programme consisted of a resistance circuit training regime complying with the following programme prescription:

Prescription	Description
Frequency	3 x week
Duration	40-60 minutes session for 12 weeks
Type	Circuit programme using machines and body weight as exercise resistance
Intensity	Low to moderate (12-15 RM) High volume (3 sets of 12-15 repetitions) Short rest periods (30-60 sec) between sets and exercises
Circuit	The circuit consisted of 12 stations focusing on the major body muscles in order to ensure maximum energy expenditure.
Exercise session	Each session included the following: 5 minutes of warming up (cycling/walking), stretching of all major muscle groups (2 x 30 sec/group), resistance programme (circuit training), stretching of all the major muscle groups (2x30 sec/group).

Sequence of circuit programme

The sequence of the circuit programme is indicated below:

Table 1

Sequence of Circuit Programme (Day 2 &4)

Order	**Body area**	Exercise	**Intensity**	**Volume**	**Rest**
1	Chest	Pec Dec	15-RM	3 x 15	30-60 sec
2	Legs (anterior)	Leg press	15-RM	3 x 15	30-60 sec
3	Upper back	Lats pull down	15-RM	3 x 15	30-60 sec
4	Legs (posterior)	Leg curls	15-RM	3 x 15	30-60 sec
5	Shoulders	Seated press	15-RM	3 x 15	30-60 sec
6	Legs & buttocks	Abduction machine	15-RM	3 x 15	30-60 sec
7	Arms (anterior)	Bicep curls	15-RM	3 x 15	30-60 sec
8	Inner thighs	Adduction machine	15-RM	3 x 15	30-60 sec
9	Arms (posterior)	Triceps push downs	15-RM	3 x 15	30-60 sec
10	Lower back	Machine back extensions	15-RM	3 x 15	30-60 sec
11	Legs (inferior)	Seated calf raises	15-RM	3 x 15	30-60 sec
12	Abdominal	3-Direction crunches		3 x 10	30-60 sec

RM = Repetition maximum

Aerobic interval training programme (day 1 & 3)

In Table 2 the intervals for aerobic training are indicated.

Table 2

Aerobic interval training programme (day 1 & 3)

Intensity	Duration	RPE-scale
Warm up	2 minutes	RPE = 5
60% HRmax	2 minutes	RPE = 6
70% HRmax	1 minutes	RPE = 7
80% HRmax	30 seconds	RPE = 8
60% HRmax	3 minutes	RPE = 6
70% HRmax	1 minutes	RPE = 7
80% HRmax	30 seconds	RPE = 8
60% HRmax	3 minutes	RPE = 6
70% HRmax	1 minutes	RPE = 7
80% HRmax	30 seconds	RPE = 8
60% HRmax	3 minutes	RPE = 6
70% HRmax	1 minutes	RPE = 7
80% HRmax	30 seconds	RPE = 8
60% HRmax	3 minutes	RPE = 6
Cool down	2 minutes 30 seconds	RPE = 5

CHAPTER 3

CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

This chapter contains conclusions concerning the literature review as well as the empirical study consistent with the specific objectives. The limitations of the study are discussed, followed by recommendations for organisations as well as for future research.

3.1 CONCLUSION

There were six objectives for this study. They were, firstly, to conceptualise burnout, engagement, interventions aimed at their management, and physical and psychological employee health according to the literature. Secondly, there was an intention to conceptualise the relationships between burnout, engagement, interventions aimed at their management, and physical and psychological employee health according to the literature, with a third focus on establishing whether a psychological intervention was effective in alleviating burnout and increasing engagement of staff members at a tertiary education institution. Fourthly, there was an attempt to establish whether a physical activity intervention is effective in alleviating burnout and increasing engagement of staff members at a tertiary education institution, fifthly, to establish whether a combination of both a physical activity and psychological intervention was more effective at alleviating burnout and increasing engagement of staff members at a tertiary education institution than either intervention by itself. Finally, the intention was to make recommendations regarding the management of employees' physical and psychological health at a tertiary education institution. Each of these objectives is addressed individually below.

Specific objective 1: To conceptualise burnout, engagement, interventions aimed at their management, and physical and psychological employee health according to the literature.

Burnout was defined as a response to long-lasting work-related stress characterized by emotional exhaustion (i.e., the draining of emotional resources), cynicism (i.e., a negative and cynical approach towards one's job) and lack of professional efficacy (i.e., the inclination to assess one's work negatively) (Gonzalez-Roma, Schaufeli, Bakker, & Lloret, 2005, 166). Emotional exhaustion and cynicism are considered to be the core dimensions of burnout

(Green, Walkey, & Taylor, 1991). Therefore, for the purposes of this study, the two-factor structure of burnout which entails exhaustion and cynicism was used.

Work engagement has most recently been conceptualised as being a positive, fulfilling and emotional state of work related well-being (Bakker, 2008). Further, the core constructs of engagement are vigour and dedication (Schaufeli & Bakker, 2001), and this conceptualisation was also adhered to in this research.

There is significant research concerning available psychological interventions for treating and managing burnout. These intervention programmes are predominantly cognitive-behavioural and aimed at enhancing job competence, personal coping skills and social support (Awe, Plaumann & Walter, 2009). Limited interventions studies focus on the relationship between physical activity and burnout. Psychological intervention programmes for burnout can either be person-directed (tertiary intervention), organization-directed (primary intervention) or a combination of both person- and organisation-directed aspects (secondary intervention) (Awe et al., 2009; Nowack, 2000).

The literature available on engagement interventions is limited and only very few interventions to improve work engagement exist and have been tested (Schaufeli & Salanova, 2011). According to Coom (2012), there has been no apparent research into the direct effect of physical activity on engagement. As with burnout, psychological interventions for engagement are divided into three categories (Schaufeli, 2011). Individual-based interventions are, for example: behavioural (e.g. performing acts of kindness, showing gratitude, sharing positive news); cognitive (e.g. counting one's blessings, savouring, cultivating optimism); or motivational (e.g. setting and pursuing meaningful goals, finding flow). Team-based interventions are, for example, following a participative, strengths-based action approach; fostering transformational leadership and increasing collective/team-efficacy. The final category is organisation-based interventions, which include, for example, job (re)design: increasing job resources; leadership training: career development and keeping jobs challenging (Bakker, Albrecht & Leiter, 2011).

Specific objective 2: To conceptualise the relationships between burnout, engagement, interventions aimed at their management, and physical and psychological employee health according to the literature.

Based on the conceptualisation above regarding engagement and burnout as well as previous findings that engagement is negatively related to burnout (Hakanen, Bakker, & Schaufeli, 2006), it was formulated that interventions aimed at alleviating burnout would also increase engagement. By addressing the candidates' burnout and engagement, their physical and psychological health would become better. The physical parameters as well as physical and psychological health and organisational commitment were used as early indicators of the effect of the interventions on burnout and engagement.

Employees' ill health increases when they have burnout. Some of the physical symptoms, according to (Rakovec-Felser, 2011), for the individual who has burnout, are nausea and muscle pains, particularly lower back pain. He further states that burned-out individuals could experience sexual problems, loss of appetite, shortness of breath and chronic fatigue. Engagement is seen to be negatively related to burnout according to Hakanen et al. (2006). These symptoms will be reduced and physical ill-health parameters should reduce as well, with an increase in engagement.

The psychological health of employees who suffer from burnout will be expressed in terms of depressed mood, helplessness and meaninglessness, a sense of failure, poor self-esteem, aggression and anxiety and over-sensitivity (Rakovec-Felser, 2011). Behavioural symptoms such as hostility and suspiciousness, not only towards recipients of services, but also towards colleagues and superiors could be present. Cognitive and sensory-motor symptoms could also be present, such as inability to concentrate, forgetfulness, difficulties in decision-making, nervous tics and restlessness. The following indicators of psychological health will be exhibited by engagement employees, according to (Buckingham, 2007): employees become authentic; exhibit receptiveness; they are proactive; the primary focus is on adding value to the organisation; they are focused and more productive and have enhanced levels of understanding. Furthermore, they cope better with the challenges and are more likely to recover from stress (Maslach, 2011). Lastly, they have high life satisfaction and good health (Van Beek et al., 2012).

Specific objective 3: To establish whether a psychological intervention is effective in alleviating burnout and increasing engagement of staff members at a tertiary education institution.

The group that participated in the psychological intervention first showed higher levels of burnout but also higher levels of engagement. This shows that participating in a psychological intervention may, in line with both the COR (Hobfall & Sharom, 2000) and JD-R model (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001), provide the candidate with resources to improve engagement and organisational commitment. However, as the workplace demands were not altered, very likely the burnout increased and psychological demands were added to burnout levels (Rothmann, Mostert, & Pienaar, 2007). Based on the available results, it has to be concluded that the psychological intervention was not effective in alleviating burnout and increasing engagement in this sample of participants.

These findings are supported by previous studies conducted on burnout, where adding development opportunities to individuals with signs of burnout only increased levels of burnout (Rothmann et al., 2007; Rothmann & Rothmann, 2006). Furthermore, there have also been numerous studies indicating the effect of providing an individual with cognitive and emotional resources increasing engagement (Schaufeli & Bakker, 2004; Schaufeli, 2011; Schaufeli & Salanova, 2011).

Specific objective 4: To establish whether a physical activity intervention is effective in alleviating burnout and increasing engagement of staff members at a tertiary education institution.

It is concluded here that the applied physical activity intervention was not effective in alleviating burnout of this sample of staff members at a tertiary education institution, as well as not being effective in increasing their levels of work engagement. Taking into consideration the COR theory (Hobfall & Sharom, 2000), as well as the JD-R model (Demerouti et al., 2001), it might be inferred that the candidates may already have been suffering from burnout and suffering depleted emotional and cognitive resources and by participating in physical activity, the candidates' physical resources were further depleted, increasing levels of burnout. Previous studies had success in alleviating burnout by focused relaxation and breathing exercises (Awe et al., 2010).

These findings are supported by a study conducted by van Berkel et al. (2013), who found no evidence to support the positive effect of moderate to vigorous physical activity on the positive side of mental health (i.e. well-being). Further, Toker and Biron (20120 showed that

physical activity only acted as a buffer between burnout and depression and not as a treatment of burnout.

Specific objective 5:* To *establish whether a combination of both a physical activity and psychological intervention is more effective at alleviating burnout and increasing engagement of staff members at a tertiary education institution than either intervention by itself.

During the study there were two groups that participated in different combinations of the physical activity and psychological interventions. Both intervention groups' overall burnout levels increased, albeit not statistically significantly. Also, both groups' organisational commitment showed an overall decrease – again not statistically significantly. The conclusion is therefore reached that a combination of interventions was not more effective in alleviating burnout, bearing in mind that the individual interventions had not been either. The COR theory (Hobfall & Sharom, 2000) and the JD-R model (Demerouti et al., 2001) state that adding physical demands or psychological development opportunities to individuals already experiencing burnout will only add to the downward spiral and increase burnout.

The group that participated in the psychological intervention in the first phase's overall engagement increased. However, the group that participated in the physical activity intervention in the first phase's engagement decreased. This is supported by their physical ill-health increasing and psychological ill-health staying the same. Looking at the COR theory (Hobfall & Sharom, 2000) as well as the JD-R model (Demerouti et al., 2001), the group that participated in the psychological intervention first may have gained more resources that could be used to alleviate some of the demands from the work place. This is supported by some of the emails sent by the candidates after participating in the interventions. One candidate said:

> *I do want to mention that I am firmly convinced that the promotion occurred because of a visible change in my human relationships and communication skills, something I definitely learned during our contact sessions and day tasks we had to complete out of the prescribed book which was supplied to us.*

Another candidate sent:

> *It will like to give you good news to know that I am at the gym and have joined. I definitely want to keep exercising! It is quite life changing for me as I have never been at a gym in my life, and for more than 30 years I did not partake in any kind of exercise! So thanks to you I changed a new leaf in my life to (hopefully in time)*

Although the above quotes are anecdotal, they do suggest a process of increased resources. In contrast, the group that was first faced with the physical activity intervention likely experienced a further depletion of resources, perhaps in the form of physical demands (i.e. tiredness), and this process of depletion of resources apparently continued throughout the second intervention.

The sixth objective, which deals with recommendations from the research, will be discussed in section 3.3

3.2 LIMITATIONS

Limitations of this study should be noted. The first was that the study was of a longitudinal design. Although using a longitudinal design has its advantages, the average longitudinal intervals for this study between measurements were relatively short (Stalhouse, 2013). This can be seen from the results between Times 1 and 2, and 2 and 3, where there improvement began to be visible, but it was then followed by deterioration. The longitudinal design significantly increased the pressure on the participants and researcher as well as escalated costs of the study.

The second limitation was that there was a significant fallout percentage (attrition) of candidates from time 1 to time 3, although Salkind (2009) warns that longitudinal studies should expect a fallout percentage of candidates. He also specifies that the dropout can be expected to be systematic over time and this was also witnessed in this study. From time one to time two, 48% dropped out and from time two to time three another 14% dropped out. The implication for the outcomes, however, is that it is very narrowly focused on a small section of the population. The reasons for the high fallout are unknown. The candidates indicated that they were dropping out because of various personal and professional reasons

The third limitation was that the final sample group (n=19) was very small. This is also why there was no control group assigned, as the size of the sample group did not permit it. The

final group used was also highly homogeneous, i.e. consisting only of white females. This may not provide a respectable indication of the wider population from which the sample group was collected. This could have an impact on the generalizability of the study.

The fourth limitation was that the interventions were not designed to address the constructs of burnout and engagement *per se*. The interventions were aimed at increasing physical activity and psychological capital in general, in expectation that burnout and engagement should be alleviated, based on the literature. This may have had effects on the results as there were not statistically significant movements in burnout and engagement scores. Statistically significant differences were, nevertheless, still observed of participants' reported physical and psychological health as well as levels of organisational commitment.

The limitations were managed carefully. Originally, 3000 employees of the tertiary education institution were contacted. Since the university has a diverse geographical nature numerous employees could not participate in the study. Then only 50 of the contacted employees specified an interest in the study. This had a severe trickle-down effect on the study and after time one and time two there were candidates who dropped out, with the researcher finally ending up with 19 candidates. However, this population was used as a larger population was not possible.

Next, recommendations will be made for future research and for future use of the intervention design for alleviating burnout and increasing engagement within tertiary education staff.

3.3 RECOMMENDATIONS

In this section recommendations will be discussed regarding directions for future research. This will be followed by suggestions for the tertiary education sector and South African context.

3.3.1 Recommendations for future research

The final objective of this study is to give recommendations for future research, managers and organisations regarding intervention management specifically aimed at alleviating burnout and increasing engagement. There has been limited research into the relationship physical activity and psychological interventions have in alleviating burnout as well as increasing engagement (Scherrer, Scheridan, Sibson, Ryan, & Henley, 2010).

To this researcher's knowledge, this is the first study conducted in South Africa focusing on the application of dual interventions on burnout and engagement on a group employee. This suggests that similar intervention studies may still be rewardingly pursued with other occupational groups, as the present sample only investigated the educational sector. This study gives an outline for interventions aimed at burnout and engagement. Future research can work from these interventions, developing a greater focus in terms of specific dimensions of burnout and engagement, and possibly contemplating extending the interval periods between measurements. This would give more time for the recently attained resources from the interventions to have an effect on burnout and engagement.

Future research can also look at a larger sample size as this may give the needed statistical power to see significant variations in burnout and engagement scores. Taking into consideration the homogeneous nature of the current sample group, future research can look at possibly locating a more diverse sample group, as this would contribute to the results being generalizable to the broader community.

Also, future research can concentrate on the interventions themselves, as this study focused on increasing physical activity, as well as developing psychological capital in general. Future research can investigate the effect of physical activity intervention intended to address the two burnout constructs (emotional exhaustion as well as cynicism), and the two constructs of engagement (vitality and dedication) directly.

3.3.2 Recommendations for practice

Perhaps the most relevant implication from this research for individuals and organisations is to again ensure awareness of the effect of physical activity and personal development on individuals when they are already suffering from burnout. Individually-directed interventions, without due consideration to changing work itself, could possibly act as an added demand instead of a resource.

Organisations looking at alleviating burnout should be cautious about providing work-related growth opportunities or personal growth opportunities to employee's already experiencing burnout as this may only add to the individual's experienced workload. Lastly, the proposition is made here that implementing a psychological intervention first, followed by a

physical activity intervention, may be more effective in positively influencing employee work engagement levels.

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