A Pilot Study Investigating the Efficacy of a Professional Kinesiology Practice: An Intervention for Stress, Anxiety and Depressive Symptoms

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Table of Contents.

List of Tables.

Abstract

There is high usage of complementary and alternative therapies especially mind-body approaches, for people experiencing stress, anxiety and depressive symptoms. As these distress types have somatic as well as other presentation types (i.e., cognitive & emotional) it is important to investigate whether a body orientated intervention would improve psychological wellbeing. This pilot study investigated the efficacy of Professional Kinesiology (PKP) practice in treating psychological constructs of stress, anxiety, depression, subjective happiness, life satisfaction and mindfulness. Participants included 34 adults with self-reported mild-moderate symptoms of stress, anxiety and depression residing in Brisbane, Melbourne and Wide Bay Burnett regions. Participants were divided into a waitlist control or intervention condition for comparison. Participants completed questionnaires pre and post intervention (intervention group), or over a 6 week time period with no intervention (waitlist control). The intervention included 6 sessions of PKP, approximately once a week. Mixed ANOVA revealed that participants in the intervention group significantly reduced in symptoms of stress and depression and improved in life satisfaction and mindfulness. Showing there are psychological benefits to PKP as an intervention for depression and stress symptoms, satisfaction with life and mindfulness. This study has contributed to research investigating the efficacy of PKP. Much more research is needed in this area, as well as into other complementary and alternative therapies on the rise in multicultural Australia.

Declaration.

This thesis contains no material that has been accepted for the award of any other degree or diploma in any university or other institution and, to the best of my knowledge and belief, it contains no material previously published or written by another person, except where due reference is made.

The ethical principles and procedures specified by the Australian Catholic University's policy document on Human Research and Experimentation have been adhered to in the preparation of this report

Signed:

Date: 05/05/2015

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A Pilot Study Investigating the Efficacy of a Professional Kinesiology Practice: An Intervention for Stress, Anxiety and Depressive Symptoms

The present study investigated the efficacy of a Professional Kinesiology Practice intervention for depressive, stress and anxiety symptoms as these are common mental health presentations. People with these presenting issues are increasingly utilizing complementary and alternative approaches to therapy, even though there is limited research for these interventions. Mindfulness, general happiness and life satisfaction were also investigated as some psychological theories postulate that symptoms do not need to reduce in order for individuals to transcend the difficulties of depression, anxiety and stress (Harris, 2006). Professional Kinesiology Practice (PKP) is a mind-body therapy that takes a holistic approach to therapy. Individuals may be turning to these alternative approaches due to limitations of, or resistance to, traditional cognitive approaches to therapy. As these mood disorder types have somatic symptoms as well as cognitive symptoms it is essential to investigate whether somatic approaches to therapy can assist this population.

PKP has evolved from Traditional Chinese Medicine, and aims to achieve harmony in emotional, cognitive, physical and bio-chemical aspects of one's life (Liddell, 2013). Like many Complementary and Alternative Medicine (CAM) treatments, PKP is founded on the traditional eastern philosophy that good health is the balance of energy throughout the mind-body system and that the body and mind are interconnected. Increasingly, it is evident that emotional states, cognitive functioning and physiological responses are interrelated (Cho, Hwang & Lee, 2013).

CAM therapies have gained increasing interest and usage in treating mental health concerns. Research into the prevalence of CAM use has identified that mind-body therapies are most often used by patients presenting with anxiety, depression and stress symptoms (Bertischa,Wee, Phillipsa & McCarthy, 2009; Elkins, Marcus, Rajab & Durgam, 2005; Keng, Smoski & Robin, 2011). Greater attention is also being focused on examining the efficacy of CAMs (Barnett, Shale, Elkins & Fisher, 2014). CAM approaches have limited research and it is essential to investigate the efficacy and safety of these health practices.

Depression, anxiety and stress are common presentations in mental health care services and often cause severe disturbance in daily functioning (da Silva, Ravindran & Ravindran, 2008). Subclinical (mild to moderate) symptoms of these distress types are even more common (ABS, 2009). Australian census data from 2007 identified that 21% of Australians reported having a severe mental health issues, 33% reported having moderate issues and 46% reported experiencing mild issues (ABS, 2009). Further subclinical levels of mood disorders are postulated to be vulnerability factors for developing more severe levels of distress (Laeger et al., 2012). Depressive symptoms can include low mood, anhedonia, diminished energy and low self-worth, guilt, suicidal ideation and changes in sleep and appetite. Anxiety is a negative mood state that is characterized by physical tension, apprehension about the future as well as excessive and uncontrollable worry (Barlow & Durand, 2009). Depression and anxiety disorders are associated with somatic as well as emotional and cognitive symptomology as is detailed in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; APA 2013). Stress is the physiological response to an event that makes a person feel threatened, pressured or powerless (Sutton, 2011). Stress is also known to have impacts on physical, emotional and cognitive functioning (Sutton, 2011).

The link between psychological and physiological highlights the importance of investigating whether a body-orientated psychological treatment might be effective in improving such mood disturbances as depression, anxiety or stress (Röhricht, Papadopoulos, & Priebe, 2013). Further, it is likely some people may prefer, or respond better to somatic approaches as opposed to cognitive approaches to treatment (van der Kolk, Burbridge & Suzuki, 1997).

Research is required

There is increasing interest into the use of complementary and holistic mental health practices such as Traditional Chinese Medicine. Research into the prevalence of CAM shows these treatments are being more frequently utilised to treat mental health concerns, especially mind-body approaches for depression, anxiety and stress symptoms (Bertischa, et al., 2009; Elkins, et al., 2005; Keng, et al., 2011). Australian census data also illustrates this increasing trend. The number of people who confirmed they had consulted a CAM therapist in a two-week period increased from around 500,000 in 1995 to almost 750,000 in 2004-05 (ABS, 2008).

In terms of who uses CAMs and for what purpose, Australian census data revealed 62% of individuals visiting CAM therapists in a two-week period were women, mostly aged between 25 and 64 years (ABS, 2008). Over half (56%) had also visited other health professionals. People who had visited a CAM therapist were also more likely to be taking medication for mental wellbeing. Almost half (42%) of CAM provider visits were to address major health concerns including; mental or behavioural disorders (13%), arthritis (20%) and asthma (14%). Of these individuals attending CAM treatments, 15% were assessed as having high to very high levels of psychological distress, as measured by the Kessler scale. This was similar to the rate of high to very high psychological distress scores in the total population (13%) but lower than the rate for people who had consulted other types of health professionals (19%). As community members are more frequently seeking approaches outside of conventional western medicine, it is increasingly important to examine the efficacy and safety of CAM therapies. This is particularly important considering the rate of people accessing these services with high levels of distress.

Although Bertischa and colleagues (2009) found a high prevalence of use and general helpfulness of mind-body therapies, they highlighted the paucity of efficacy studies and scientific knowledge of these therapies, encouraging researchers and clinicians to *"broaden our perceptions of the complex relationship between the mind and body as they relate to health and healing."* (p. 7). Similarly, Barnett and colleagues (2014) pressed the importance for western scientists to reduce their bias in order to increase the research into these alternative therapies.

Although there is limited research in many types of CAM therapies, including PKP, some body-orientated therapies with shared eastern health philosophies have gained research attention including yoga, acupuncture, controlled breathing, meditation and mindfulness (Barnette et al., 2014). Examination of the efficacy of these practices can inform current psychological practice with alternative and effective techniques, as well as provide psychologists with knowledge in order to better inform their clients of standards, certification, safety, benefits, costs and efficacy of practices amongst CAM modalities (Barnette et al., 2014). Barnette and colleagues (2014) also identified that a knowledge of CAM may allow clients to feel more comfortable reporting CAM use.

An increasing multicultural society may explain the increase in alternative therapy interest. The American Psychological Association (APA) released guidelines on multicultural considerations in response to a growing multicultural society (2002). This document encouraged psychologists to develop cultural sensitivity and understanding which included; having a broad repertoire of interventions, and knowledge about non-traditional interventions, in order to be effective in their work (APA, 2002). Australia is a diverse and multicultural society, thus it makes sense to be able to provide individuals with diverse therapeutic approaches.

The increased interest in CAM approaches may be explained by limitations of broadly utilized western approaches such as Cognitive Behavioural Therapy (CBT), including the percentage of clients who do not successfully achieve a reduction in problem symptoms, or complete the therapeutic intervention (McMain, Newman, Segal & Derubeis, 2015). There is a need for diverse, efficacious options to be identified so that consumers, with alternative preferences have a choice of interventions which are evidence-based as well as concluded to be beneficial and safe.

Review of history and theory

Before the details of PKP are presented, a review of eastern health philosophies (in which PKP is grounded) is provided. Like many other mind-body therapies, PKP is based on eastern health, primarily Traditional Chinese Medicine, Vedic traditions of India (Ayurveda) and Buddhism (Dewe & Dewe, 2010). According to Traditional Chinese Medicine and Ayurveda, optimal health is considered to be physical, mental and spiritual harmony (Barnett et al., 2014). On the other hand, ill-health is believed to be due to the disharmony in the mind-body-spirit system, which leads to a disturbance in energy flow (Barnett et al., 2014). Traditional practices include the usage of diet and natural medicine, meditation, massage, yoga and acupuncture which aid healing by restoring balance and energy flow (Barnett et al., 2014). *Qi* is the name of the energy proposed by Traditional Chinese Medicine and its Ayurvedic equivalent is *doshas* (Barnett et al., 2014). This energy, or electrical flow, is postulated to regulate a person’s physical, emotional, spiritual and mental health (Sharma et al., 2014). This flow is thought to have many pathways throughout the body which connect organs, muscles, chemicals, thoughts and emotions (Liddell, 2013). These pathways are referred to as *meridian systems* in Traditional Chinese Medicine and considered synonymous with Ayurveda’s *Nadis* (Sharma et al., 2014).

Therefore good health from a Traditional Chinese Medicine perspective is a relatively balanced qi throughout the body-mind system. If qi is inhibited or altered in some way it can affect all the components allied to that meridian (Barnett et al., 2014). For example it is suggested that depression is associated with inhibited qi, or *stagnation*, of the liver-meridian (Lo, Man Ng, Chan, Lam & Lau, 2013). This stagnation is assumed to be influenced by repressed emotions, which impacts on different body organs and mechanisms of the body-mind system such as preoccupations, obstructed emotions, sleeping disturbances, fatigue, feeling of obstruction in swallowing, indigestion, bowel dysfunction, reduced energy and limited affect and movement (Lo et al., 2013). Lo and colleagues (2013) define stagnation as comprising of three constructs: a) over attachment; referring to an individual's preoccupation with fears of losing something valued, or being unable to let go of some emotion or thought, b) body-mind obstructions; referring to somatic symptoms that are linked to difficult emotions, or psychosomatic symptomology and c) affect-posture inhibition; referring to overly heightened awareness and uneasiness, leading to inhibited facial expression, affect or postural movement.

Traditional Chinese Medicine theorises that emotions can become stagnated in body meridians (Barnett et al., 2014). Trauma research has increasingly demonstrated something similar in showing that body memories are particularly strong after experiencing highly arousing events and a person can re-experience these physiological memories and associated emotions when triggers are presented (Hovdestad & Kristiansen, 1996; Rothschild, 2000). Thus trauma-specializing psychotherapists often take a body-orientated approach, targeting somatic markers (Langmuir, Kirsh & Classen, 2012; Ogden & Minton, 2000; Rothschild, 2010). It is also congruent with theories of embodied mind, which postulate that emotional perception involves somatovisceral and motor re-experiencing (Niedenthal, 2007, Wiswede et al., 2009). Following on from these theories, Fustos, Gramann, Herbert and Pollatos (2012) identified that acute awareness of one's bodily experience can assist with emotion regulation when negative affect is induced. Mindfulness and PKP practices share the objective of body awareness to increase emotion regulation in therapy.

Mind-body consciousness

A main differing factor that existed between eastern and western health philosophy was that the west had largely considered what Descartes postulated, that the mind and body are dichotomous and separate (Barnette et al., 2014; Sutton, 2010). However, with increased neuroscience and psychological research, there has been a shift in western, scientific perception, where the mind-body interconnection has become a largely accepted theory of health psychology (Bambling, 2006; Goleman, 2004; Leshner, 2007).

Traditional psychotherapies such as Cognitive Therapy work by integrating emotions and cognitions (Trower, Jones, Dryden, & Casey, 2011). Contemporary therapies like Mindfulness Based Stress Reduction (MBSR), and contemporary Cognitive Behavioural Therapy (CBT) attempt to integrate thoughts, emotions and physical experiences, or physical aspects of memory (Goldin & Gross, 2010; van der Kolk, 2002). For example; behavioural interventions are often implemented to assist with negative mood states, including exercise, pleasure activity scheduling, progressive muscle relaxation, deep breathing and identifying physiological responses, to name a few (Cohen, & Mannarino, 2008).

Chronic pain provides an example of using psychological processes to treat and manage a physical condition. Chronic pain conditions are often managed with components of psychological and psychopharmacological treatment (i.e. SSRI medication) as it is hypothesized that there is a complex interplay of mood cognition and somatic symptoms, included in pain (Cho, et al., 2013; Turk & Burwinkle, 2005; Hassed, 2013). For example, negative emotions and catastrophising have been shown to increase pain severity (Burns, 2006). There is a reciprocal and perpetuating effect that the physical pain and emotional states have on each other (Hassed, 2013). Psychological therapies, such as CBT, endeavor to change maladaptive thought processes, beliefs and behaviours that influence a person’s functioning and affect pain severity (Eccleston, 2001). In the same way, treatment based in the physical space, may influence cognitive and emotional functioning. Recent neuroscience research has shown how emotional pain and physical pain are experienced the same way neurologically; sharing a somatosensory brain pattern (Kross, Berman, Mischel, Smith & Wager, 2011; Flaskerud, 2011).

Placebo effects provide another example that psychological processes can influence physical responses and health. The relationship between psychological and physiological mechanisms is one of the reasons health researchers attempt to control for placebo effects, as cognitive and emotional components such as the patient’s beliefs and expectations have been demonstrated to affect how the body responds to treatment and recovery (Sherman &

Hickner, 200). The link between psychological and physiological symptoms highlights the essential question of whether a body-orientated psychological intervention might be effective in improving such mood disabilities as depression, anxiety or stress (Röhricht, et al., 2013).

The mind-body interconnection is particularly observed in psychology with emotional experience affecting both cognitive and physiological experiences, and in psychosomatic disorders (APA, 2013), as well as observed in the brain and body messaging systems observed in neuroscience. Specifically, the hippocampus, frontal lobes and the amygdala display extensive body connections, in particular with the immune system, with the endocrine system and with the autonomic nervous system (Rothschild 2010). “This begins to provide some clue as to how the mind can influence the body, so that we can understand the impact of emotions not just on our mental health but also on our physical health” (Davidson, 2001, as cited in Goleman, 2004, p. 193,).

Paul Eckman from his years of research on the universality of emotions and facial expressions, identified that emotion associated body changes are also universal (Levenson, Ekman, Heider & Friesen, 1992). For example he found people experiencing anger obtain hot hands, individuals experiencing fear obtain cold hands and both experience sweating and elevated heart rate (Levenson, et al., 1992). Research has found that the reverse is also true, where positioning one’s body in a specific posture, facial expression or movement, can produce an associated emotional response (Niedenthal, 2007, Wiswede, 2009). With the universality of somatic expressions of emotions, this raises the question whether somatic approaches may not only be beneficial for emotion regulation. Also this approach may be more cross-culturally appropriate and generalise more easily across culture.

Depression, stress and anxiety somatic symptomology

Depression, anxiety and stress are all experienced via three different presentations. These three presenting issue types include emotional, cognitive and somatic symptomology. Emotional symptoms include feeling excessive sadness (depression), fear or worry (anxiety and stress; APA 2013; Sutton, 2011). Cognitive symptomology comprises of diminished capacity to concentrate or remember things (depression, anxiety and stress; APA, 2013; Sutton, 2011). The somatic impacts can include marked change in appetite, sleep disturbance, psychomotor agitation, lethargy (depression), nausea, dizziness, heart rate disturbances, sweating, trembling, paresthesia, or muscle tension, deregulation of cardiovascular and immunological systems (anxiety and stress; APA, 2013; Contrada & Baum, 2010).

Some individuals are more prone to express their distress somatically than cognitively. As seen in cross-cultural research, somatic presentations of emotional disorders may be impacted by ideas of what is acceptable (Kirmayer, 2001). For example cross-cultural studies have investigated emotion *display rules*; socially acceptable expressions of emotions (Kirmayer, 2001). Culture provides categories and a lexicon for emotional experience, making some feelings salient and others difficult to articulate (Kirmayer, 2001). Culture also sets limits of tolerance for specific emotions with strong affect (Kirmayer, 2001). Therefore somatic responses to psychological experience as seen in anxiety, stress and depression have been hypothesised to be linked to subconscious, automatic, suppression of inner experience (Lalande, Bambling, King, & Lowe, 2012; Lo et al., 2013; Kroenke, 2007; Gross, 2002; van der Kolk, 2002). This may additionally, lead to exacerbation of emotional factors, for example, attempting to avoid or control inner experience is a specific risk factor found in generalized anxiety disorder (Roemer, Salters, Raffa & Orsillo, 2005). Therefore individuals who suppress their emotional experience, have alternative understandings of their emotions, or have a stronger sensory than conscious connection to their distress, may prefer or more greatly benefit from a somatic orientated therapeutic approach.

Somatic therapeutic approaches

It has been postulated that implicit memories can be stored in the body, and retrieval of such memory can be derived through posturing one's self in a similar manner to how they were postured when they formed the memory (Rothschild, 2010), congruent with procedural memory recognised in cognitive psychology (Claparede 1911, trans. Rapaport, 1951) and embodiment theory. Recent research on embodiment theory provides evidence that the body can be an important resource for emotion regulation (App, Reed & McIntosh, 2012; Borghi & Pecher, 2011; Shafir, Taylor, Atkinson, Langennecker & Zubieta, 2013).

The universality of emotional-somatic expressions and the recognition that the body can be a valuable resource for emotion regulation, highlights the importance of investigating whether working in reverse, that is, using a somatic orientated approach, could be successful in treating psychological distress. van der Kolk (2002) postulated that cognitive orientated therapies take a top-down approach requiring high-level executive functioning, the same process which inhibits and suppresses emotional and bodily awareness, where as a somatic orientated approach utilizes bottom-up processing of information, focusing on emotion and sensation rather than thought. He postulates that patients cannot inhibit emotional states that have origin in physical sensation. He likens a therapeutic bottom-up process to that of a parent's approach to a child, taking action to reduce their distress by using co-regulation tactics such as rocking and hugging.

Trauma research van der Kolk and colleagues (1997) postulated that due to the somatosensory nature of trauma memories, therapies that work with the body may be more efficacious. Individuals with Post-Traumatic Stress Disorder (PTSD) share symptomology with stress and anxiety and often depression as well (APA, 2013).

Psychological treatment programs such as Eye-Movement, Desensitisation and Reprocessing (EMDR) promotes the mindfulness of bodily experiences. EMDR has particular endorsement in the use of treating PTSD (Clark, Tyler, Gannon, Kingham, 2013; Shapiro, 2012). Positive effects in completing treatment include ambiguity of intruding and disturbing images related to trauma, and a rapid decrease in distress (Shiparo, 2012). Shiparo reviewed 24 randomised controlled trials which demonstrated positive outcomes for trauma victims who underwent EMDR, showing comparable effect sizes with that of Trauma Focused-CBT, which utilizes body relaxation strategies (Cohen, & Mannarino, 2008; Shiparo, 2012). While a patient will follow the therapist's fingers with eye movements or alternating right and left hand tap (conducing bilateral brain stimulation) the patient is encouraged to activate the traumatic event for short periods of time. The bilateral brain stimulation has been theorised to activate the brain's natural information processing avenues, this enables a client to create more adaptive associations to the traumatic event and enables the memory to be processed into long-term memory and no longer so readily or powerfully recalled (Clark, et al., 2013).

Similar to EMDR, PKP therapy does not require strong abilities in articulation or verbal skills. This makes this treatment choice more suitable for clients with weaker verbal abilities than those undergoing cognitive therapy (Clark, et al., 2013).

Babette Rothschild's book "The Body Remembers" (2010), similar to PKP, utilizes the body as a source of information. In this book, she outlines a treatment approach for PTSD. Rothschild begins the treatment process by increasing body awareness, derived from eastern practices of meditation and yoga. The goal of body awareness it to identify body sensations associated with stress and anxiety aspects of PTSD. Due to dissociative amnesia, some individuals with PTSD cannot cognitively recall their trauma and do not cognitively recognize triggers, therefore by becoming conscious of somatic markers, or body memories, a client can identify triggers and increase their understanding of precipitating factors of their condition. She also utilizes a strategy of muscle toning, with a goal to either tense or relax particular muscles identified in the awareness stage of therapy. Rothschild offers numerous case studies of how her body-orientated approach has assisted many individuals with PTSD.

Other body-orientated therapies, such as somatic experiencing and sensorimotor psychotherapy, have been postulated to be beneficial for individuals with PTSD symptomology (Eichhorn, 2011; Langmuir et al., 2012). Somatic Experiencing intervention focusses on increasing body awareness and somatic association to their traumatic experience. A study including 142 social service workers who were survivors of Hurricanes Katrina and Rita in the USA were provided a brief Somatic Experiencing intervention. Participants were provided one or two 40 minute sessions and a 90 minute psychoeducation session (n=91) and were compared to those who only received the psychoeducation session (n=51). This study found those who received treatment displayed significantly less PSTD symptoms and improved resilience, at a four month follow-up assessment.

Although more research is required, trauma research is far more developed in regards to investigating somatic focused therapy opposed to other mental health presentations (Langmuir et al., 2012; Price, 2005; van der Kolk, 2002). In October 2010 the Uniting States Association for Body Psychotherapy's 6th Annual Conference focused on body orientated therapies in regards to trauma research and theory. It was postulated that trauma is developed through a fear-based conditioned learning, and procedural/ implicit memory and the somatic and emotional response is stored in the body. More research is required in the area of clinician's using a somatic, bottom-up processing, approach to therapy (Eichhorn, 2011), particularly with alternative presenting issues. Further while there appears plentiful theoretical understanding based on neuroscience and embodied mind research, more efficacy studies are needed (Eichhorn, 2015).

Dance- movement therapy Dance and movement therapy has also gained research attention and has been investigating the effect that this bottom-up therapeutic approach has on depression, anxiety and general wellbeing. A meta-analysis by Koch, Kunz, Lykou and Cruz (2014) on dance movement therapy investigated 23 trials (N=1078) finding significant reductions in; depression symptoms, including an analysis of ten studies (Standardised Mean Difference [*SMD*]=0.34, $p<.001$), anxiety symptoms, including four trials (*SMD*=0.46, $p<.001$), and significant improvement in subjective wellbeing, including an analysis of seven studies (*SMD*=0.3, $p<.05$).

In cases where clients have a lack of cognitive awareness, dissociation, or cannot cope with cognitive processing of their distress, or have a stronger sensory than conscious connection to their distress, it is arguable that working within a cognitive framework may be difficult. For these clients, perhaps a bottom-up approach, as used in body-orientated therapies, may be a more optimum choice for treatment for these individuals.

Mindfulness Therapy Practices of Auyvedic medicine and Buddhist teaching have gained research attention and some approaches have largely been integrated into contemporary psychological therapy, including such practices of; meditation, yoga and particularly, mindfulness (Barnett et al., 2014). Clinicians are increasingly integrating eastern mind-body philosophies and approaches into western-style interventions. Mindfulness-based practice places emphasis on reducing judgement of mind-body processes while increasing one's awareness of the mind-body connection and is known to reduce impacts of depression, anxiety and stress (Keng, et al. 2011). Mindfulness has recently received abundant research attention. MBSR includes components of meditation and Hatha yoga practices such as, breath-focus attention, body-focus attention and a focus on the transient nature of sensory experience (Goldin & Gross, 2010). The aim of MBSR is to increase the monitoring of moment to moment experiences (Goldin & Gross, 2010). A study using neuroimaging assessments (functional MRI) found that patients who used breath-focused attention showed reduced anxiety and depression symptomology and they also showed decrease in amygdala activity, and increased activity in brain regions implicated in attentional deployment (Goldin & Gross, 2010).

In a systematic review of randomised control trials (RCT) of mindfulness based therapy models (including 18 MBSR, 11 Acceptance and Commitment Therapy, 13 Dialectical Behavioural Therapy and 14 Mindfulness Based Cognitive Therapy), Keng, and colleagues (2011) concluded that positive psychological outcomes from mindfulness training include reduced anxiety, stress and depression symptoms and enhanced self-reported subjective well-being. Further a recent meta-analysis on nine studies assessing the efficacy of MBSR for breast cancer patients showed a moderate to large positive effect on stress (d=0.710, CI=0.511–0.909), depression (d=0.575, CI=0.429–0.722) and anxiety (d=0.733, CI=0.450–1.017; Zainall, Booth & Huppert, 2013). Within this sphere of practice, PKP attempts to detect body dysfunctions and connect related cognitive or emotional, precipitating or perpetuating factors, while enhancing a patient's awareness of the connection between their body and mind (Liddell, 2013).

In a study by Lo and colleagues (2013) to investigate the role of Traditional Chinese Medicine philosophies of health in mindfulness, 82 participants were randomised to either a waitlist control group or an intervention group to receive eight weekly sessions of compassion-mindfulness therapy. Compared to the waitlist control group, those involved in the immediate intervention experienced a decrease in depression symptoms and anxiety intensity. Changes in stagnation was found to mediate these changes in psychological and physical well-being. The practice of *letting go* in mindfulness training is postulated to aid in the release of stagnated qi (Lo et al., 2013). Although this study was limited by a small sample and the absence of a placebo-control group, the results encourages further research into the goal of unblocking stagnated qi in treating mood problems and supports the unified and reciprocal functionality of the body and mind. PKP therapy shares the focus of letting go in mindfulness therapies. PKP works to assist releasing stagnated qi by using the body as a resource.

Yoga Therapy Yoga for example is a body-mind therapy which similar to PKP, uses the body as a resource for mental well-being and change (Barnette et al., 2014). Yoga uses breathing techniques in combination with meditation, physical exercise and postures, stretching, expansion of awareness, and training in universal consciousness (da Silva et al., 2009). Studies have found yoga may reduce symptoms of stress, depression and anxiety, as well as lead to improvements in biological disorders such as asthma and heart disease

(Khalsa, 2004). A meta-analysis study found that yoga is at least as good as medical treatment for depression; also, that yoga and medication in conjunction was superior to medication on its own. They also found that yoga was superior to no treatment and muscle relaxation for anxiety and depression (da Silva, Ravindran & Ravindran's, 2009).

In a waitlist control trial, Michalsen and colleagues (2005) found 24 women, after two weekly 90 minute Iyenger yoga classes for three months, significantly reduced in perceived stress, state and trait anxiety, wellbeing, fatigue and depression. This study also found a significant reduction in cortisol following participation in a yoga class, inferring that yoga can decrease physiological markers of stress. Similarly, Michalsen and colleagues (2012) found 72 women, after receiving 12 weeks of 90 minute yoga treatments once or twice a week in a randomized wait list control trial, significantly reduced in stress and depression symptoms.

Acupuncture as Therapy Acupuncture is a body-orientated, mind-body therapy which has been found useful in treating pain symptoms (Barnett, 2014, Han 2004). Han (2004) investigated the effects of electroacupuncture (using electrical stimulation on acu-points, with conducting polymer pads opposed to needles) on neurotransmitters and peptides discovering that endogenous opioid peptides in the central nervous system, monoamines and serotonin mediated acupuncture analgesia. Further the Australian cancer council promotes acupuncture alongside other CAM treatments as a complementary treatment for oncology patients to assist with pain or comorbid mental health issues (National Health and Medical Research Council, 2003).

Although there is a paucity of research investigating acupuncture in treating psychological symptomology, there are a few promising studies finding acupuncture to be a beneficial alternative treatment option for psychological distress (Dias, Vellarde & Olej, 2014). One study found acupuncture to successfully reduce anxiety and depression in participants who received 10 sessions, compared to others who received sham acupuncture. However this study had very small number of participants (Eich, Agelink, Lehmann, Lemmer & Kliesser, 2000). A recent study by Dias and colleagues (2014) assessed the effects of electroacupuncture on 25 medical students who presented with sleep impairment, anxiety, and depression. Using an RCT design, 12 students who received treatment were compared to 13 who did not on self-report measures. Significant differences were found;

75% of the electroacupuncture treated group reported markedly improved on sleep quality and depressive symptomology. One of the students was identified to have dropped-out of this study due to having a distressing reaction to the needling. This was noted to not be uncommon in the clinical practice of acupuncture (Dias, et al., 2014). PKP works in a similar manner to acupuncture by using acu-pressure and meridians to balance qi; however, without the need for invasive needling.

Professional Kinesiology Practice

PKP differs from yoga and acupuncture, by increasing mind-body awareness through an interactive process that engages the client with their emotions, thoughts and bodily responses in a dynamic mind-body process. PKP also offers a variety of techniques to shift stagnation in the mind-body system. Some of the techniques available include; emotional release, acupressure, lymphatic massage, hypertonic muscle release, attention to reflex, trigger and body points, and nutritional advice. Further, PKP utilises *manual muscle testing* to ascertain what emotions are associated with a clients' emotional or psychological concern and which techniques will be the best mechanism for change. PKP has a strong mindfulness component where patients are active, mindful participants in the process.

PKP was developed by Dr. George Goodheart who noticed the connection between muscles and meridians in his practice as a chiropractor (Liddell, 2013). He also identified that there were unexplainable weaknesses in muscles at times and so investigated eastern explanations (Liddell, 2013). Dr. Bruce Dewe and his wife Joan authored the PKP program based on Goodheart's extensive findings. PKP practitioners use this specific, standardised teaching manual, which was used by the PKP practitioners in this study. PKP is based on a mind-body connection philosophy that health is the balance of physical, biochemical, psychological and emotional states in the body and mind. This particular branch of kinesiology focusses on educating the client about the mind-body connection and uses diverse intervention techniques to increase coping mechanisms (Eardley, Brien, Little, Pescott & Lewith, 2013; Liddell, 2013).

Manual Muscle Testing: the guiding essence of PKP therapy Indicator muscle testing, or manual muscle testing (MMT) is the tool PKP practitioners use to access physical patterns, triggers, emotions and cognitions. MMT is derived from chiropractic practice to assess the presence of over or under acting energy or electrical flow in the

Traditional Chinese Medicine meridians (Hall, Lewith, Brien & Little, 2008) via revealing an imbalance of muscles where one set of muscles tends to become overactive while another is inhibited (Cuthbert & Rosner, 2011). The etiology often includes lifestyle factors such as psychological distress, stress, fatigue, emotional imbalance, sedentary movement or diet (Liddell, 2013).

PKP uses MMT to observe imbalances that may be causing dysfunction in the body, mind or emotional systems and aims to detect and correct any imbalances. Procedures of MMT involves testing the immediate neurological responses believed to identify specific articular soft tissue, disturbances in joint function, lymphatic drainage, the vascular supply to a muscle or related organ, aberrations in the stomatognathic system, biochemical issues, nutritional deficiency or excess, emotional issues or psychosocial stressors underlying muscle function (Cuthbert & Rosner, 2011). Disturbance in meridian qi influences muscle change; through different techniques such as holding or massaging particular acupressure points, stagnation can be released and muscles strengthened (Liddell, 2013).

From the beginning of a session a practitioner will isolate a selected pair of muscles, such as the anterior deltoid muscles, to be used as an Indicator Muscle (IM) throughout the session (Dewe & Dewe, 2010). The PKP practitioner will investigate the goals and relevant emotions by asking the client dichotomous questions, or statements which will allow the IM to respond with a change in muscle tone, by either holding or letting go when slight pressure is applied to the IM (Dewe & Dewe, 2010). Frequently this will be followed with a fourteen muscle assessment to identify any stagnation in the energy meridian systems (Dewe & Dewe, 2010). The fourteen muscle balance includes the practitioner testing neuromuscular integrity (biofeedback) by asking the person to position fourteen different muscles in a certain way, and then to hold that position while the practitioner exerts gentle pressure against the muscle (Dewe & Dewe, 2010). From this, further MMT evaluations are conducted where emotions and cognitions will be identified. Using counselling micro-skills, PKP practitioners will discuss how detected emotions have affected the client, aiming to establish cognitive, emotional and bodily awareness (Dewe & Dewe, 2010).

The PKP practitioner will also use MMT to determine which technique to use in order to restore relative balance in the mind-body system. The technique indicated by MMT may include breath-work, holding acupressure-points or use visualization; sometimes becoming aware of the emotion and mindfully letting go is sufficient to tonify a muscle and repair an imbalance in the meridian system (Dewe & Dewe, 2010). For example, if after a fourteen muscle testing analysis the practitioner finds an over active upper trapezius muscle the practitioner may hold the related acupressure holding point to sedate the over active muscle and associated kidney meridian (Dewe & Dewe, 2010). The practitioner will also assess for an underactive muscle, for example the potliteus muscle may be underactive, which is connected to the gall bladder meridian (Dewe & Dewe, 2010). During holding acupressure points, the practitioner explains qi and meridian systems as well as explains that these systems are connected to different functions, including behavioural patterns or cognitions (Dewe & Dewe, 2010). The client is encouraged to explore whether they have noticed experiencing any emotion identified, or any other related symptoms (Dewe & Dewe, 2010).

MMT may indicate a wide variety of possible causes of imbalances in a person's overall wellbeing. Each session of PKP therapy can include several tests or challenges dependent on the nature of the client's problem (Dewe & Dewe, 2010; Eardley et al., 2013). PKP practitioners can use a variety of techniques such as lifestyle and dietary recommendations or awareness of biopsychosocial impacts to reduce emotional stress and improve coping strategies (Dewe & Dewe, 2010; Eardley et al., 2013). These practices help integrate presumed causal reasons of stagnation and aid its release (Eardley et al., 2013).

The standardized intervention protocol Firstly, a PKP practitioner will conduct a history assessment, collecting information such as, demographic information and medical history. Secondly a PKP practitioner will identify an indicator muscle, review homework if they are a returning client and assess general functioning, such as hydration and qi of the central meridian. Thirdly a practitioner will set goals with the client, including a session agenda and use an indicator muscle to assess issues related to the goal that need to be addressed and find an associated emotion. Fourthly the manual outlines an evaluation phase which includes 5 steps; 1. Assess physical stressors, using MMT 2. Direct the client imagine/role-play their goal, and assess the stress of the goal using MMT, 3. Conduct a fourteen muscle balance, assessing muscle functioning 4. Assess for conflicting factors and the clients motivation for change using the MMT, and 5. Assess stress level and energy levels associated with the goal (numerical representation). After the evaluation phase a practitioner will move onto the balancing phase of the intervention, which targets unblocking stagnated qi, which can be conducted using a myriad of techniques. The final phase of the intervention includes evaluating the outcome of the session, inclusive of, assessing for change and re-evaluation (step 5 of evaluation phase). During this final stage homework tasks and any required follow-ups are assessed, using MMT and provided if indicated as beneficial.

PKP's relationship to mindfulness, and mind-body consciousness For MMT to be effective it relies on the interrelationship of the mind-body. Traditional Chinese Medicine theorises that the body stores memories and emotions that can be impeding on one's life while not being consciously aware. While MMT identifies bodily responses to questions, integrating cognitive and emotional responses is an important process for the client to achieve mindful processing of issues. Often clients can be unsure of why they are feeling a certain way, or have trouble in certain areas of life without consciously knowing why. It is believed that PKP can identify underlying issues or repressed emotions and thus bring into awareness why they have felt a certain way and bring into their awareness how they respond unconsciously to certain events. Practitioners look for the subtle but numerous imbalances that may lie behind physical, mental and emotional issues.

Research into PKP

To date, there is limited research investigating the efficacy of PKP in psychological health. Eardley and colleagues (2013) conducted the first single blind random control trial of PKP, assessing its impact on chronic low back pain. Participants (N = 70) were allocated to either an experiential group, a waitlist control, or a sham treatment control group. (The sham treatment used was created and confirmed reliably believable in a pilot study (Eardley, 2010). The waitlist control group were randomly allocated six weeks later into either the intervention condition or sham treatment group. The participants received one session per week, for five weeks. At post intervention there was a statistically significant effect for the intervention group in comparison to the waitlist control group (p<.001) with a large effect size (d=2.1) as well as compared to the sham treatment group (p=.04), with a moderate effect size (d=.07). Both the sham treatment group and intervention group had substantially improved compared to the waitlist control group. Whilst this was a small study, large effect sizes for this PKP intervention were demonstrated comparable to other types such as CBT and exercise therapy (Eardley et al., 2013). However, a limitation to this study included that only one practitioner was used and therefore outcomes may be influenced by unique attributions of the therapist. Therefore a study using a higher number of therapists would be desirable, as this current study has prepared.

Summary

PKP is a mind-body therapy that takes a holistic and bottom-up, approach to therapy. It provides an opportunity to self-explore, become self-aware and integrate positive change through MMT guidance and a myriad of CAM's and psychological techniques. PKP has evolved from Traditional Chinese Medicine, acupuncture, chiropractic practice, physiotherapy, naturopathy, nutrition and psychotherapy with an aim to achieve harmony in emotional, physical and bio-chemical aspects of one's life. Within this sphere of practice, PKP attempts to detect bodily problems and connect them to related cognitive or emotional precipitating or perpetuating factors.

Research into the prevalence of CAM use has identified mind-body therapies to be most often used by patients treating anxiety, depression and stress. With this increase in interest, research needs to investigate efficacy and safety of alternative therapies. Further, the more alternatives of therapy that offer different process of change, the more likely individuals can find a process that works best for them.

This study will attempt to better understand and examine the role of PKP as a mind-body, somatic-orientated therapy for the intervention of depressive, anxiety, and stress symptoms. The study recruited participants with mild to moderate symptoms as these subclinical levels are more common in Australia. This is the first study of this kind.

Research questions and hypotheses

This current study will explore whether there is a change in reported symptoms of depression, stress and/or anxiety, general happiness, life satisfaction and/or mindfulness over time. It will also explore if any differences in these psychological constructs are affected by whether respondents received PKP intervention or no intervention over a 6 week time period. It is predicted that PKP will reduce stress, anxiety and depressive symptoms and improve general happiness, satisfaction with life and increase mindfulness.

It is hypothesised that participants in the intervention condition will experience an increase in life satisfaction, general happiness and mindfulness, as well as a decrease in depressive, stress and anxiety symptoms across time one and time two. Conversely, it is predicted that participants in the waitlist control condition will experience relatively no change in reported life satisfaction, general happiness, depression, stress, anxiety and mindfulness, across time points.

Method

Participants

Participants were a convenience sample consisting of 34 adults residing in Brisbane, South East Melbourne, Hervey-Bay, or Bundaberg. Inclusion criteria were current self-report of mild to moderate symptoms of stress, anxiety or depression, willingness to participate in PKP intervention , once-a-week for six weeks and able to provide their own transportation to the intervention location. Exclusion criteria included being under the age of 18 years and any identified presence of self-harm, suicidal ideation, psychotic or severe symptomatology, see Appendix A-1 for telephone screening script. Therefore participants consisted of adults who reported experiencing mild to moderate stress, anxiety or depressive symptoms and did not have severe distress, suicidal ideation or impulsions to self-harm.

Measures

Demographic Information. Information including age, gender, education level and area code were collected to assess homogeneity of groups and to determine any demographic differences in results. An additional question "For what specific reason have you sought this treatment at this time?" was asked.

The Depression, Anxiety and Stress Scale – short version (DASS-21; Lovibond & Lovibond, 1995). The DASS-21 is a short form questionnaire of the original 42 item DASS. It is designed to measure level of depression, anxiety or stress one has experienced in the previous week (Lovibond & Lovibond, 1995). The 21 items are statements to which the respondent marks their level of agreement with, using a 4-point rating scale from 0 *(not apply to me at all*) to 3 (*applied to me very much, or most of the time*). Seven items make up each of the subscales for stress, depression, and anxiety. Scores are summed to create total scores; higher scores indicate more severe symptomology. Examples for each of the subscales include; "*I found it hard to wind down*" (stress subscale), "*I felt like I had nothing to look forward to*" (depression subscale) and "*I was aware of dryness in my mouth*" (anxiety subscale). The DASS-21 is commonly used in clinical practice and has shown to have sound psychometric properties, for example good internal consistency with a Cronbach alpha of .88 for the Depression scale, .82 for the Anxiety scale and .90 for the Stress scale (Henry & Crawford, 2005). Henry and Crawford (2005) also found the DASS-21 to have adequate construct validity using component factor analysis to determine the model's fit.

Mindfulness Awareness and Attention Scale (MAAS; Brown & Ryan, 2003). The MAAS is a 15 item scale designed to measure the level of mindfulness an individual applies in their daily functioning. An example of an item is *"I find myself doing things without paying attention",* where low values endorsed on a 7-point rating scale anchored at 0 (*not at all*), 3 (*somewhat*) and 6 (*very much*). Scores are summed to create total scores; lower scores indicate more mindfulness and higher scores indicate limited mindfulness. The MAAS has shown to have sound psychometric properties as it showed to have internal consistency with a Cronbach's alpha of .81 and has been validated as a reliable tool in further studies (e.g., Carlson & Brown, 2005 and MacKillop & Anderson, 2007).

Subjective wellbeing. The Satisfaction with Life Scale (SWLS; Diener, Emmons, Larson and Griffin, 1985) and the Subjective Happiness Scale (SHS; Lyubomirsky and Lepper, 1999) were used to measure subjective wellbeing. The SWLS was designed to assess satisfaction with one's whole life and has shown to be a reliable and valid measure (Diener et al., 1985; Lin et al., 2010). It has five items and participants rate how much they agree with the item on a Likert scale of 1 (*strongly disagree*) to 7 (*strongly agree*). An example of an item is; "*In general, I consider myself not a very happy person or a very happy person*". Scores are summed to create total scores; total score ranges from 5 (*low satisfaction*) to 35 (*high satisfaction).*

The SHS is a 4-item scale of global subjective happiness. The first item assesses if participants think they are happy. The second item asks participants to compare their happiness with that of their peers. The two final items describe happy and unhappy people; participants are asked to compare themselves to these descriptions. Ratings are from 1 (*strongly disagree*) to 7 (*strongly agree*). Item 4 is reversed scored. An example of an item is "*Some people are generally very happy. They enjoy life regardless of what is going on, getting the most out of everything. To what extent does this characterization describe* *you?"*. Scores are summed to create total scores; low scores indicate low happiness and high scores indicate high happiness.

Design

This study design consisted of pre and post measures with an intervention group and waitlist control group. Participants were randomly allocated into either an intervention condition, that is, those receiving PKP immediately, or into a waitlist control group, who received the PKP intervention after six weeks.

Procedure

The research was conducted with the approval of the Human Research Ethics Committee at the Australian Catholic University (approval number: 2013 313Q). Recruitment involved advertising the study around the Brisbane, Wide Bay Burnett and Melbourne regions at PKP practitioner offices, university advertising boards, on social media sites such as facebook and e-mails, enabling a snowball effect. Advertisements asking for research volunteers, offered six Professional Kinesiology Practice (PKP) sessions for a small nominal fee of $60 or $30 for concession holders, (see Appendix A-4 to observe flyer used). This fee represents a considerable reduction of what PKP clients would usually pay for PKP therapy which typically costs around $60 per hourly session.

Telephone interviews were conducted to screen participants for suitability (see Appendix A-1). Consent was discussed over the telephone with participants. Participants who consented to the study were randomly allocated into either the intervention condition or into a waitlist control condition. Random selection was facilitated using a computer-generated list of random numbers. Of the 34 participating clients, 17 were allocated into the intervention condition and 17 were allocated into the waitlist control condition. Those in the intervention condition received PKP sessions immediately and the waitlist control condition waited 6 weeks before commencing the intervention. Allocation was randomised, using an online random number calculator (see: http://stattrek.com/statistics/random-number-generator.aspx).

Participants were asked to read a participant information letter and, read and complete a consent form prior to filling out questionnaires (see Appendix A-2, Appendix A-3 and Appendix B). Intervention condition participants completed the consent form in the waiting area of the PKP practitioners practice and waitlist control participants were sent the consent forms via post. To preserve confidentiality, intervention condition participants filled out their questionnaires while waiting for their first session (time one) and after their last session (time two) in the practitioner's waiting area. They were also provided with sealable envelopes so they were able to conceal their responses. Time one and time two questionnaires for the waitlist control group were sent via post with a reply paid envelope and a private and confidential stamp. After six weeks participants in both the intervention condition and waitlist control conditions were asked to complete the questionnaires they filled in prior to commencing the study (except for the demographics questionnaire) again and the waitlist control group commenced PKP intervention.

The intervention was administered by higher degree PKP students and principals of Brisbane, Fraser Coast and South East Melbourne, Kinesiology Schools Australia (KSA) colleges. The students of these colleges had already obtained their certificate four in PKP which enabled them to assist the participants with depression, stress or anxiety mild to moderate symptoms. All students enlisted procedures from the International College of PKP (ICPKP) manuals. PKP is a standardized mode of practice and all practitioners were accredited by the ICPKP association.

Anonymity of participants was protected by destroying all identifying information after receiving all questionnaires at time two, prior to analysis. PKP practitioners recorded what techniques or advice and process of change was used in every session. Once all the questionnaires and the practitioner forms on specific details of treatment for each client were collected, the data was combined and files were de-identified.

Data Analysis

Analysis was conducted via the Statistical Package for the Social Sciences Version 20 (SPSS-20). The α level for this study was .05. As this was an exploratory, pilot study, approximately 30 participants were aimed to be recruited. The final sample size of this study included 34 participants.

Preliminary analysis included screening for accuracy of data entry, outliers and missing values. Analysis was employed to screen for missing values as well as univariate and multivariate outliers.

A series of mixed analyses of variance (ANOVAs) were used to assess the mean difference between pre and post intervention scores (within group difference) across groups (between group differences) for the outcome measures. Outcome measures included DASS-21 (depression, stress, and anxiety), SHS (perceived general happiness), SWLS (satisfaction with life), and the MAAS (mindfulness). Assumptions of normality, homogeneity of variances (Levene's test) and homogeneity of covariances (Box's M test) were tested. When Pillai's Trace revealed a significance difference, interaction effects were explored.

A series of paired sample t-tests were used to assess the within group mean differences pre and post intervention.

T-tests were conducted to compare the two groups at time one on the continuous dependent variables including; mindfulness, general happiness, satisfaction with life, depression, stress, and anxiety.

Chi-square tests were conducted to examine how the two groups (wait list control group vs. intervention group) differed on categorical personal characteristics including, marital status, employment, geographical location, education, number of children, age and gender. Chi-square lowest expected frequency in any cell should be 5 of more, unfortunately this assumption was violated therefore Fisher's Exact Probability Test was reported instead.

Results

Preliminary analyses

Preliminary analysis included screening for accuracy of data entry, outliers and missing values. There were two respective outliers identified upon inspection of box-plots; one was identified in the mindfulness scale score total, and the other in stress subscale score total. The means and trimmed means of each variable were very similar. Given the small sample size and negligible impact on their respective means, the offending cases were retained.

Missing Values Analysis identified that missing data did not exceed 6 (5%). One missing value belonged to the depressive subscale, one in the stress subscale, two on the mindfulness scale and two on the subjective happiness scale. Missing items were substituted with the serial mean by scale score (i.e., mean stress response) where no more than 1 of items on the scale were missing. Transformation was performed on the satisfaction with life scale only, as Levene's test of homogeneity of variances was violated and corrected by squaring both totals across all cases. This violation also appeared in the Anxiety subscale, where participants in the waitlist control condition had substantially higher rates of reported anxiety symptoms at time one; transformations were attempted but were not able to correct this violation. Therefore anxiety was unable to be examined using mixed ANOVA.

Upon inspecting graphs for normality, skews were observed. As ANOVAs and t-tests are relatively robust and as the inclusion criteria targeted participants experiencing mild to moderate levels of stress, anxiety or depressive symptoms, a skewed distribution was expected.

Participant characteristics

Initial participant response to the advertisement included N=55, post telephone screening included 47 participants and five participants were unable to schedule a first appointment in with a practitioner leaving the total sample at time one at 42 participants. A high retention rate from time one to time two was achieved with 34 of the original 42 participants (81%) completing time two of the study. Most participants were aged between 26 and 36 years (35%). Participants' education level ranged between completing Year 10 to completing a postgraduate degree, with the majority completing an undergraduate degree (35.3%). Respondents were mostly female (74%), employed full-time (47%), with no children (59%) and were in de facto relationships (44%). The most predominant reported reason for seeking PKP intervention at this time was for general wellbeing (41%), while others reported experiencing stress (32%), anxiety (29%) and depressive symptoms (18%). The most common distress type identified by questionnaire response was depression, with 22 individuals (65%) indicating they had experienced mild to severe depressive symptoms over the past two weeks. Eleven participants indicated experiencing mild symptoms (32%), eight participants indicated experiencing moderate symptoms (24%) and two participants indicated experiencing severe depression symptoms (6%). Participants also indicated experiencing mild to severe stress symptoms (50%), with ten indicating moderate levels (29%) and seven mild levels of stress (21%). Those experiencing mild to extremely severe anxiety symptoms (50%) included nine experiencing mild levels (27%), two moderate levels (6%), five severe levels (15%) and one participant indicated experiencing extremely severe levels of anxiety (3%). Table 1 displays the relevant descriptive and inferential statistics.

Table 1
Sociodemographic characteristics of participants N=34

Variable	Intervention *n* =17 *N*(%)	Waitlist *n* = 17 *N(%)*	*p*-value
Gender			
Female	14(82.4)	11(64.7)	.219
Male	3(17.6)	6(35.3)	
Marital Status			
Single	5(29.4)	5(29.4)	.116
Married	7(41.2)	2(11.8)	
De facto	5(29.4)	10(58.8)	
Age			
18-25years	2(11.8)	3(17.6)	.172
26-35years	4(23.5)	8(47.1)	
36-45years	4(23.5)	5(29.4)	
46-55years	2(11.8)	0	
56-65years	4(23.5)	0	
65years or above	1(5.9)	1(5.9)	
Children			
No	8(47.1)	12(70.6)	.148
Yes	9(52.9)	5(29.4)	
Employment Status			
Full-time employed	9(52.9)	7(41.2)	.824
Part-time employed	2(11.8)	3(17.6)	
Casual employment	1(5.9)	3(17.6)	
Seeking Work	1(5.9)	2(11.8)	
Not seeking Work	2(11.8)	1(5.9)	
Full-time parent/carer	2(11.8)	1(5.9)	
Education Completed			
Year 10	2(11.8)	1(5.9)	.701
Year 12	1(5.9)	2(11.8)	
TAFE/Apprenticeship	3(17.6)	5(31.3)	
Undergraduate Degree	6(35.3)	6(37.5)	
Postgraduate Degree	5(29.4)	2(12.5)	
Geographical Location			
Wide Bay Burnett	8(47.1)	7(41.2)	
Melbourne	6(35.3)	5(29.4)	.822
Brisbane	3(17.6)	5(29.4)	

Participants were compared on their initial reporting (time one) of outcome measures, participants were found to be similar across groups on all measure apart from anxiety, where the waitlist control condition displayed more anxiety symptoms and on satisfaction with life scores, indicating there were higher levels of life satisfaction in the waitlist control condition compared to the intervention condition, however when data was transformed this difference between groups became insignificant. Table 2 displays a summary of the independent t-tests.

Table 2

Group comparisons on outcome variables at time one N=34

Continuous Variable	Intervention *M(SD) n*=17	Waitlist *M(SD) n*=17	*p*-value
Mindfulness	34.47(11.60)	36.59(11.38)	.595
Happiness	11.76(2.54)	11.82(1.55)	.936
Satisfaction	19.12(5.83)	22.88(4.23)	.039
Transformed Satisfaction	397.47(231.04)	540.41(189.19)	.057
Depression	4.88(2.40)	5.47(3.30)	.556
Stress	7.06(2.56)	8.76(2.91)	.079
Anxiety	8.76(2.91)	5.00(3.41)	<.001

Examining the effect of the intervention

Mixed ANOVA then compared the groups on each of the outcome measures, that is, stress, depression, mindfulness, general happiness and satisfaction with life, at time one and time two. This was followed by paired-sample t-tests. As homogeneity of variance was violated for the Anxiety scale, only a paired-sample t-test was conducted to identify whether there is a change in anxiety in respective groups, without a between group comparison. For a summary of the results see Appendix C.

Stress There was a significant interaction effect between stress and group condition, F=(1,32)7.19, p=.011. This indicates that stress symptom scores showed different effects depending on which group participants were allocated to. Looking at descriptive statistics, this effect reflects that participants in the intervention group had significant reductions in reported stress symptoms (time one, M=7.06, SD=2.56; time two, M=5.06, SD=3.07) while participants in the waitlist control condition reported stress symptoms as relatively unchanged over time (time one, M=8.76, SD=2.91; time two, M=9.53, SD=4.00). According to Cohen's conventions however, this difference had a less than small effect size η^2=.19 <.20. The paired sample t-test confirmed that there was a statistically significant decrease in stress symptoms scores, *t*(1,16)=2.87, mean difference =2.00, *p*=.011 (two-tailed) for the intervention group on scores between time one and time two, and that there was no significant difference for the waitlist control condition across the time points on stress (*t*(1,16)=-1.01, mean difference=0.77, *p*=.329, two-tailed).

Depression A significant interaction effect was also found between reported symptoms of depression and group condition, *F*=(1,32)5.82, *p*=.022, indicating that depression symptom scores showed different effects depending on group allocation. However this was again reported to have a less than small effect size, η^2=.15. Descriptive statistics show a pattern inferring that participants in the intervention group had significant reductions in reported depressive symptoms (time one, *M*=4.88, *SD*=2.39; time two, *M*=2.82, *SD*=2.67), while participants in the waitlist control condition reported depression symptoms as relatively unchanged over time (time one, *M*=5.47, *SD*=4.86; time two, *M*=5.71, *SD*=4.86).

The paired sample t-test confirmed that there was a statistically significant decrease in depression symptoms scores, *t*(1,16)=3.41, mean difference =2.06, *p*=.004 (two-tailed) for the intervention group on scores between time one and time two, and that there was no significant difference for the waitlist control condition across the time points on depression (*t*(1,16)=-0.32, mean difference =0.24, *p*=.753, two-tailed).

Mindfulness Similarly, a significant interaction effect was also found between reported symptoms of mindfulness and group condition, *F*=(1,32)12.14, *p*<.001, meeting the criteria for a small effect size, η^2=.28. This indicates that mindfulness symptom scores showed different effects depending on group allocation. Descriptive statistics show a pattern which reflects that participants in the intervention group had significant elevations in reported mindfulness (time one, *M*=34.47, *SD*=11.60; time two, *M*=43.41, *SD*=12.29), while participants in the waitlist control condition reported depression symptoms as relatively unchanged over time (time one, *M*=36.59, *SD*=11.41; time two, *M*=36.65, *SD*=11.64).

The paired sample t-test confirmed that there was a statistically significant increase in mindfulness scores *t*(1,16)=4.17, mean difference=8.94, *p*=.001 (two-tailed) for the intervention group on scores between time one and time two, and that there was no significant difference for the waitlist control condition across the time points on mindfulness (*t*(1,16)=-0.04, mean difference =0.06, *p*=.967, two-tailed).

Happiness When Mixed ANOVA was conducted for general happiness score however, Pillai's Trace did not provide a significant result (*p*=.801) indicating that change in scores were similar across groups (intervention group time one, *M*=11.76, *SD*=2.54; time two, *M*=11.29, *SD*=1.49; waitlist control group, time one, *M*=11.82, *SD*=1.55; time two, *M*=11.53, *SD*=1.13). The paired sample t-test revealed that general happiness scores maintained relatively unchanged over time for both the intervention (*t*(1,16)=0.77, mean difference =0.29, *p*=.452, two-tailed) and waitlist control conditions group (*t*(1,16)=0.77, mean difference =0.29, *p*=.452, two-tailed) across the time points.

Life Satisfaction and Anxiety As Box's M test revealed that both anxiety and satisfaction with life scales violated the homogeneity of covariance assumption therefore transformations were attempted. The satisfaction with life total scores were squared across both groups and both times, meeting assumption criteria. A significant interaction effect was found between reported life satisfaction and group condition, *F*=(1,31)11.68, *p*=.002, η^2=.27, showing a small effect size. This indicates that satisfaction with life showed different effects depending on which group participants were allocated to. Looking at descriptive statistics, these effects reflect that participants in the intervention group had significant elevations in reported satisfaction with life (time one, *M*=999.12, *SD*=432.62; time two, *M*=1231.06, *SD*=495.42), while participants in the waitlist control condition reported their subjective wellbeing remained approximately the same over time (time one, *M*=1219.29, *SD*=273.19; time two, *M*=1185.94, *SD*=349.18).

Original data for the satisfaction with life scale scores were able to be used to conduct the paired sample t-test which confirmed that there was a statistically significant increase in life satisfaction scores, (*t* (1, 16)=3.93, time one *M*=19.12, *SD*=5.83, time two *M*=23.06, *SD*=6.96, mean difference =3.94, *p*=.001) for the intervention group on scores between time one and time two, and that there was no significant difference for the waitlist control condition across the time points on life satisfaction scores (*t*(1,16)=0.47, time one *M*=23.06, *SD*=6.56, time two *M*=22.53, *SD*=4.86, mean difference =0.35, *p*=.645, two-tailed).

For the anxiety subscale neither transformations nor bootstrapping could be performed to correct homogeneity of covariance and variance violation. A paired sample t-test across time for anxiety scores did not reach statistical significance for the intervention condition $t(1,16)=2.06$, time one $M=2.71$, $SD=1.49$, time two $M=1.76$, $SD=1.35$, that is a mean difference of 0.94, $p=.056$ (two-tailed), or the waitlist control condition ($t(1,16)=0.13$, time one $M=5.00$, $SD=3.41$, time two $M=5.12$, $SD=4.82$, $p=.901$, two-tailed).

Discussion

This is the first study to explore the efficacy of PKP on depression, stress, anxiety, mindfulness, life satisfaction and general happiness on a subclinical population. Similar to a previous study targeting chronic back pain (Eardley et al., 2013), this study found significant improvements in participants receiving a PKP intervention compared to no treatment. In regards to differences between participants who received PKP intervention and those who received no intervention, participants in the intervention group showed significant reductions in symptoms of stress and depression, as predicted. They also displayed significant elevations in reported life satisfaction, which was expected. Although a within group comparison of anxiety revealed participant’s anxiety symptoms had not substantially reduced, the original scores in the treatment group were quite low to begin with. Therefore anxiety symptoms in this group, did not have much room for reduction. However, no differences were found in perceived general happiness scores, this may be explained by the use of a global measure for happiness. As the participants were from a subclinical population they may have felt they generally were happy, when not experiencing symptoms of distress.

As hypothesised, participants who received no intervention demonstrated relatively no change in their reported anxiety symptoms over a 6 week period. The results of this pilot study support the proposition that a PKP intervention can significantly benefit psychological distress and wellbeing, and should therefore be investigated further. There were no reports of adverse consequences suggesting that PKP was a safe and effective practice for the individuals in this study.

This pilot study has contributed to the body of work regarding the use of somatic therapeutic approaches. PKP offers clients a body-orientated therapy; which uses bottom-up processing instead of a top-down process, which may be more useful for clients who supress their emotions or have difficulty working in a talk or cognitive focused framework.

Although mindfulness was not achieved through direct psychoeduction and teaching mindfulness skills, participants in this study, who received a PKP intervention, increased in mindfulness practice, likely contributable to participants being shown how their mind and body are interconnected and increasing their awareness of their emotions and issues associated with their distress; which they may not have been familiar with prior to partaking in the PKP intervention.

Psychological wellbeing was enhanced by targeting qi and increasing mind-body-spirit harmony. The successful outcomes of this study raises the question to what extent does letting go and mindfulness have on improving psychological wellbeing, regarding other practices founded on traditional eastern philosophies of health. Future research should look into the role qi may have in varied therapies, including whether qi is a mediating factor in traditional psychotherapy.

Research Limitations and Future Research

Limited empirical research into professional kinesiology practice has led to insufficient understanding of PKP's mechanisms of change. PKP's myriad of techniques should be investigated individually in order to illuminate mechanisms of change. This may lead to some PKP intervention strategies being integrated into psychotherapeutic practice and will highlight when it would be beneficial to refer clients to PKP as a complementary intervention. Future research should also investigate if PKP works well in conjunction with other, particular psychotherapeutic approaches in efficacy studies.

Although this study shows promising results of PKP on psychological wellbeing, it is important to note that, the results of this study investigated the standardised approach of PKP as identified by Eardley and colleagues (2013). Thus, the results of this study cannot be generalised to the alternative and diverse types of kinesiology practice. Further, as this was an exploratory pilot study, and had a small sample size, it would be negligent to generalise the effects of this study beyond this sample. Nevertheless, the study's results legitimise further investigation of PKP on psychological constructs on larger samples.

Although the design for this study increases external validity by investigating effects in their natural environment, a more controlled, standardised laboratory type study would improve internal validity, a possible limitation to this research study.

The inclusion criteria was founded on subjective, self-reported mild to moderate levels of either stress, anxiety or depression, as a result, a few individuals with severe symptomology, perceived and reported that they were experiencing mild to moderate symptoms. Future research may produce a more homogeneous sample by using results of standardised measures to determine part of their inclusion criteria, or separate participants who experience mild, moderate and severe symptoms.

This investigation was narrowed to a subclinical population with self-reported mild to moderate levels of stress, anxiety or depression. It is recommended future research investigate whether individuals displaying more somatic symptomology would benefit differently to individuals experiencing more cognitive symptomology. PKP has shown to have significant improvements for individuals with the somatic presentation of chronic back pain (Eardley et al., 2013).

As suggested in the review of the literature, different individuals may respond better to a body orientated approach. It might be beneficial to investigate whether there are particular populations who do benefit more or prefer this approach when addressing their psychological issues; including investigating demographic differences. Particular cultures, older adults or children, or populations with verbal deficits for example, may respond better to a PKP. It would also be worth researching whether clients who are resistant to traditional approaches, particularly resistant to talk or cognitive approaches (top-down processes) to therapy benefit from a PKP intervention.

As Eardley and colleagues (2013) suggested in the PKP study on chronic back pain, having a sham treatment to compare an intervention condition to would lesson confounding factors such as placebo effects. Therefore future research investigating the effect of PKP on psychological constructs would improve on this exploratory pilot study by utilizing an established sham treatment as a comparison group. As recommended, this study improved upon the study by Eardley and colleagues (2013), by utilizing a larger number of practitioners (N= 12), with an aim to reduce the possible confounding variable, where results may have been impacted on by the practitioner’s personal style, rather than uniquely related to the PKP intervention.

Conclusions

This study has contributed to PKP research. Examination into changes over time and between groups revealed significant differences between participants who received intervention and those who did not. The identified significant differences in depressive and stress states as well as mindfulness and life satisfaction, pre and post intervention, suggests PKP may be useful in assisting psychological wellbeing. This pilot study legitimises further investigation into psychological benefits of PKP and raises several new research questions.

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Appendices.

Appendix A-1

Initial Contact & Telephone Screening Script

Hello, my name is Anastasia Bohanna-Martin

I'm calling from Australian Catholic University in response to your interest in participating in our Professional Kinesiology Practice research.

PKP is a body therapy that takes a holistic approach to therapy. PKP has evolved from Traditional Chinese Medicine, acupuncture, chiropractic practice, physiotherapy, naturopathy, nutrition and psychotherapy. PKP is based on a mind-body connection philosophy that health is the balance of physical, biochemical, psychological and emotional states in the body and mind. This particular branch of kinesiology focusses on bringing about awareness of the mind-body connection and uses diverse treatment techniques to increase coping mechanisms. Muscle monitoring, used in PKP assists clients in making sense of the information their body is providing, which is done through a diagnostic tool derived from chiropractic practice Manual Muscle Testing. It is hoped that this study will identify which aspects of psychological well-being PKP has an effect on.

This project is being conducted by Dr Cathryne Lang and myself. The participating International Colleges of PKP are higher-degree students and also principals of the Hevery-Bay, South East Melbourne and Brisbane colleges This study will form the basis for my degree at the Australian Catholic University under the supervision of Dr Cathryne Lang.

As a participant of this study you will be required to read an information letter, sign a consent form and complete a demographic sheet on receiving these forms by post, before you commence treatment. Before treatment commences the practitioner will provide you with 6 questionnaires also needing to be completed in their waiting area. You will then be asked again to complete these questionnaires in 6 weeks' time, and again in a further 3 months' time. There is also an additional questionnaire to be completed only once, prior to the commencement of treatment (the Complementary and Alternative Medicine Beliefs Inventory). You will not have to complete this questionnaire at time 2 or 3.

Some of you will commence treatment immediately after completing the initial set of questionnaires, while others will commence treatment after you have filled out the questionnaires for a second time. We then ask all of you to complete these questionnaires again in a following 3months time. In total, the time to complete this study is 24 weeks.

Questions you may be asked include your age, sex and education level. Other questions will consist of well-being, health or emotional states. Some questions will be in the form of statements and you will be asked to rate how accurate that statement applies to your life. For example a statement might include: over the past week I found it hard to wind down or, I am satisfied with my life, or, Compared to most of my peers, I consider myself less happy. Or you may also be asked to indicate to what extent you feel nervous right now. One questionnaire will ask you about your beliefs about complementary and alternative medicines and how often you may use them.

The questionnaires will probably take about 30 minutes to complete and possibly another 5 minutes to complete the additional questionnaire I mentioned earlier, which is to be completed only once.

I need to ask a few questions before we proceed with talking more about the study if that's ok.

- First, are you 18 years of age or older?

Ok, second, as you are aware, we are looking for participants who are experiencing some symptoms of stress, anxiety or depression. However, we want to make sure that if people are experiencing severe symptoms, we recommend some appropriate psychological therapy. This trial is suitable for people with mild to moderate symptoms but would not be appropriate for someone experiencing severe symptoms. With that in mind, I just need to ask a few screening questions:

- Have you been experiencing mild to moderate stress, anxiety or depressive symptoms?
- Have you been diagnosed with a mental health condition such as schizophrenia or psychosis?
- Have you been diagnosed at any point with another psychological disorder? If so, what was it, and how long ago was the diagnosis? Do you still suffer from this disorder?
- Are you suffering from any suicidal thoughts or impulses to self-harm?
- Do you have any previous experience with PKP?

Now I am going to inform you of what to expect when you go to your appointments.

- The first consultation includes time for you to discuss your experiences and situation with your PKP practitioner. Your healing may be for past or present emotional concerns, or worry about the future.
- Your PKP Practitioner will conduct muscle testing to ensure that the bio-feedback circuit from your muscles to the brain and visa-versa is working and accurate. Muscle testing is non-invasive and does not hurt.
- As every person is different, so are your healing needs. Your PKP practitioner will discuss treatment planning with you as the process proceeds. The process ensures you know what you want and you have the right attitude to achieve it. We deal with the issues of accepting change, and being determined to make the changes.
- Treatment can be conducted on a massage table, or sitting or standing. You should wear comfortable clothing and be prepared to take off your shoes.
- Sessions are usually one hour in length. At the end of each session, your PKP Practitioner will summarise the session with you.

In addition to attending treatment, you will be asked to complete a set of questionnaires at three time points. These questionnaires will ask about your mood, wellbeing, your 'presence' and focus on tasks. You will also be asked some basic, non-identifiable demographic questions.

Half of the participants will commence treatment after completing the first set of questionnaires, while the other half will commence treatment after you have filled out the second set of questionnaires.

The information you provide in the questionnaires will be confidential. All information you provide will be kept private and therefore practitioners will be blind to your questionnaire responses. Also all data collected will be de-identified after all three questionnaires have been collected, therefore the researchers will be blind to who the data belongs. The de-identified data collected will be stored in a locked filing cabinet for 5 years in the primary researchers' office at the Australian Catholic University (ACU), Brisbane campus. It is hoped that the results of this study will be published in reputable psychology journals.

Participation in this study is completely voluntary. You are not under any obligation to participate. If you agree to participate, you can withdraw from the study at any time without consequences. However you cannot withdraw after you have submitted all three surveys, as the surveys will become non-identifiable.

If you wish to receive a summary of the final results please call or e-mail us and we will provide a summary for you. Individual feedback will not be able to be given by researchers as the information you give us is de-identified.

The study has been approved by the Human Research Ethics Committee at Australian Catholic University (NUMBER). If you have any complaints or concerns about the conduct of the project, you may write to the Chair of the Human Research Ethics Committee care of the Office of the Deputy Vice Chancellor whose address will be given to you in the Information letter we will be sending out.

Everything we have discussed here today will be sent out to you in an information letter with a consent form. We require you to sign and return this consent form prior to filling out any questionnaires and attending any treatment appointments.

Would you like to proceed with participation in the study?

Where are you from?

- If you are a Brisbane participant the location of your appointment will be at the Naturally Better Health Institute, Shop 9, 57 Gawain Rd, Bracken Ridge, Brisbane, QLD, 4017.
- If you are a Hervey-Bay participant the two locations available for your appointment include:
    - Shop 1, 59 Torquay Rd, Pialba Hervey Bay, QLD, 4655, Australia and
    - 36 Kululu cres, Scarness, Hervey-Bay 4655.
- If you are a Bundaberg participant the location of your appointment will be at Suite 22, Business Enterprise Centre, Cnr Quay & Tantitha Streets, Bundaberg
- If you are a Melbourne participant the locations available for your appointment include:
    - 12 Railway Avenue, Drouin, Vic 3818
    - 18 Trease ST, Leongatha, 3953
    - 541 Station ST, Carrum VIC, 3197

    - 30 Mullens RD Warrandyte VIC 3113
    - Balanced Health & Wellness, 26 Albert St, Warragul VIC 3820
    - 7 Ananda Court, Donvale VIC 3111.
    - 1/15 Jason ST, Oakleigh Sth 3167
    - 83 A'beckett Rd, Name Wamen Nth, VIC, 3804.
- In order to participate you will be asked for an enrolment fee of $60, or $30 if you are a concession card holder. This amount will be given to your Professional Kinesiology practitioner on the day of your initial session.

Are able to get to get the college providing by own transportation?

Are you able to afford the enrolment fee of $60 for full-time working adults, or $30 for concession holders?

When you receive the information package please read the Information Letter and read the consent form. If you agree to progress with the study please sign your and our copy of the consent form, and return our copy to the address given on the reply-paid envelope provided.

Please feel free to e-mail me if you have any questions regarding the project, my e-mail address will be provided on the Information letter. Or you may also contact me on this number (*give number*).

Do you have any questions?

Appendix A - 2

PARTICIPANT INFORMATION LETTER

PROJECT TITLE: An Investigation into the Efficacy of Professional Kinesiology Practice in Treating Depressive, Stress, and Anxiety States

PRINCIPAL INVESTIGATOR: Dr Cathryne Lang
STUDENT RESEARCHER: Anastasia Bohanna-Martin
STUDENT'S DEGREE: Master of clinical psychology

Dear Participant,

You are invited to participate in the research project described below.

What is the project about?
This research project investigates the psychological benefits of Professional Kinesiology Practice (PKP) treatment. PKP is a body therapy that takes a holistic approach to therapy. PKP has evolved from Traditional Chinese Medicine, acupuncture, chiropractic practice, physiotherapy, naturopathy, nutrition and psychotherapy. PKP is based on a mind-body connection philosophy that health is the balance of physical, biochemical, psychological and emotional states in the body and mind. This particular branch of kinesiology focusses on bringing about awareness of the mind-body connection and uses diverse treatment techniques to increase coping mechanisms Muscle monitoring, used in PKP assists clients in making sense of the information their body is providing, which is done through a diagnostic tool derived from chiropractic practice Manual Muscle Testing It is hoped that this study will identify which aspects of psychological well-being PKP has an effect on.

Who is undertaking the project?
This project is being conducted by Dr Cathryne Lang and Anastasia Bohanna-Martin (Australian Catholic University), and Susan Koschel-Gatenby, Danny Liddell Cathy Bohanna-Martin, Alison Dunlop, Megan Williams, Janet Wyllie, Sharyn Rayson, Nicki Kuurman, Phillipa Huynh, Myriam Walker, Violet Maleczek, Kristelle Dumas, Jenne Burns, Bronwyn Kennedy, Steve Telfer, Lisa Bayer, Naurelle Herbert, Kylie Evans, Heidi Trobbiani, Donna Collins and Eija Torkkola (International College of Professional Kinesiology Practice) and will form the basis for the Masters research project of Anastasia Bohanna-Martin at Australian Catholic University under the supervision of Dr Cathryne Lang.

Are there any risks associated with participating in this project?
If at any stage of the treatment you feel you require additional support please speak to your PKP practitioner about accessing a GP referral to a Psychologist or mental health professional. Additionally, the following contacts may be helpful:

- **Lifeline 13 11 14 (24 hours)**
  Or visit Lifeline's website**:** www.lifeline.org.au
- **Beyond Blue 1300 22 46 36 (24 hours)**
  Or web chat from 4pm-6pm from their website: www.beyondblue.org.au
- **Brisbane Psychology and Counselling Clinic (0)7 3623 7453**
  Or e-mail the clinic on: brisbanepsychologyclinic@acu.edu.au

What will I be asked to do?

Participation in PKP

- The first consultation includes time for you to discuss your experiences and situation with your PKP practitioner. Your healing may be for past or present emotional concerns, or worry about the future.
- Your PKP Practitioner will conduct muscle testing to ensure that the bio-feedback circuit from your muscles to the brain and visa-versa is working and accurate. Muscle testing is non-invasive and doesn't hurt.
- As every person is different, so are your healing needs. Your PKP practitioner will discuss treatment planning with you as the process proceeds. The process ensures you know what you want and you have the right attitude to achieve it. We deal with the issues of accepting change, and being determined to make the changes.
- Treatment can be conducted on a massage table, or sitting or standing. You should wear comfortable clothing and be prepared to take off your shoes.
- Sessions are usually one hour in length. At the end of each session, your PKP Practitioner will summarise the session with you.
- In addition to attending treatment, you will be ask to complete a set of questionnaires at three time points. These questionnaires will ask about your mood, wellbeing, your 'presence' and focus on tasks. You will also be asked some basic, non-identifiable demographic questions.
- Half of the participants will commence treatment after completing the first set of questionnaires, while the other half will commence treatment after you have filled out the second set of questionnaires.
- If you are a Hervey-Bay participant the two locations available for your appointment include:
    - Shop 1, 59 Torquay Rd, Pialba Hervey Bay, QLD, 4655, Australia and
    - 36 Kululu cres, Scarness, Hervey-Bay 4655.
- If you are a Bundaberg participant the location of your appointment will be at Suite 22, Business Enterprise Centre, Cnr Quay & Tantitha Streets, Bundaberg
- If you are a Melbourne participant the locations locations available for your appointment include:
    - 12 Railway Avenue, Drouin, Vic 3818
    - 18 Trease ST, Leongatha, 3953
    - 541 Station ST, Carrum VIC, 3197
    - 30 Mullens RD Warrandyte VIC 3113
    - Balanced Health & Wellness, 26 Albert St, Warragul VIC 3820
    - 7 Ananda Court, Donvale VIC 3111.
    - 1/15 Jason ST, Oakleigh Sth 3167
    - 83 A'beckett Rd, Name Wamen Nth, VIC, 3804.

- If you are a Brisbane participant the location of your appointment will be at the Naturally Better Health Institute, Shop 9, 57 Gawain Rd, Bracken Ridge, Brisbane, QLD, 4017.
- In order to participate you will be asked for an enrolment fee of $60, or $30 if you are a concession card holder. This amount will be given to your Professional Kinesiology practitioner on the day of your initial session.

How much time will the project take?

- The questionnaires will take approximately 30 minutes to complete and another 5 minutes to complete the additional questionnaire (CAMBI), which is to be completed only once.
- These questionnaires will be completed again after 6 weeks, then again after another 3 months.
- The PKP sessions will take approximately 1 hour.
- There will be six sessions all together, once a week for six weeks.
- You are required to provide your own transportation to the above mentioned locations.

What are the benefits of the research project?

It is expected that participants will experience an increase in positive mood and a decrease in stress, anxiety or depressive symptoms.

It is also expected that PKP will become another option for people to source when faced with psychological struggles such as depression, anxiety or stress. Psychological problems are quite diverse and which treatments people respond best to, is very individual, therefore increasing therapeutic option will hopefully allow those who do not respond as well to popular treatment options utilise alternative therapies.

Given the increasing community interest in holistic therapies, and the current lack of an adequate evidence base regarding certain therapeutic practice, it is considered that providing an adequate evidence base regarding these treatments is important in allowing consumers to be properly informed about outcomes. Further, the results of this research may lead to improvements in ongoing research and practice within the kinesiology field, which is likely to be of benefit to consumers of this modality.

Can I withdraw from the study?

Participation in this study is completely voluntary. You are not under any obligation to participate. If you agree to participate, you can withdraw from the study at any time without adverse consequences. However you cannot withdraw after you have submitted your surveys, as surveys are non-identifiable. Further if you choose to withdraw from the study after receiving any treatment you will not be refunded the enrolment fee.

Will anyone else know the results of the project?

After all three surveys have been collected. all information collected will be de-identified, therefore the researchers will be blind to who the data belongs during data analysis. Also the data collected will be stored in a locked filing cabinet for five years in the primary researchers' office at the Australian Catholic University (ACU), Brisbane campus. It is hoped that the results of this study will be published in in the format of applied research articles in Clinical, Health and Counselling Journals. When the results of this study are published only group statistics will be identified. All questionnaire responses will not be seen by practitioners for your privacy.

Will I be able to find out the results of the project?
Please e-mail the researchers if you wish to be provided with a general summary of the results of the study. Individual feedback will not be able to be given by researchers as the information you provide is de-identified.

Who do I contact if I have questions about the project?
Please feel free to e-mail or call Anastasia Bohanna-Martin if you have any questions regarding the project at aaboha@myacu.edu.au ____ (*phone number yet to be provided by ACU*)

What if I have a complaint or any concerns?
The study has been approved by the Human Research Ethics Committee at Australian Catholic University (approval number 2013 xxxx). If you have any complaints or concerns about the conduct of the project, you may write to the Chair of the Human Research Ethics Committee care of the Office of the Deputy Vice Chancellor (Research).

Chair, HREC
c/o Office of the Deputy Vice Chancellor (Research)
Australian Catholic University
Melbourne Campus
Locked Bag 4115
FITZROY, VIC, 3065
Ph: 03 9953 3150
Fax: 03 9953 3315
Email: res.ethics@acu.edu.au

Any complaint or concern will be treated in confidence and fully investigated. You will be informed of the outcome.

I want to participate. How do I sign up?
If you agree to progress with the study please read and sign both copies of the consent form, and return our copy to the address given on the reply-paid envelope provided. Please return also your demographic information,and a signed consent form together in this envelope.

The address on this envelope should be:

Attention: Ms Anastasia Bohanna Martin
School of Psychology
Australian Catholic University
PO Box 456
Virginia Queensland 4014

Yours sincerely,
Dr Cathryne Lang and Anastasia Bohanna-Martin
(*SIGNATURS*)

Appendix A- 3

CONSENT FORM

Copy for Researcher / Copy for Participant to Keep

TITLE OF PROJECT: An Investigation into the Efficacy of Professional Kinesiology Practice in Treating Depressive, Stress, and Anxiety States.

(NAME OF) PRINCIPAL INVESTIGATOR : Dr Cathryne Lang

(NAME OF) STUDENT RESEARCHER: Anastasia Bohanna-Marin

I .... *(the participant)* have read and understood the information provided in the Letter to Participants. Any questions I have asked have been answered to my satisfaction. I agree to participate in this study requiring six, one hour sessions over six weeks, realising that I can withdraw my consent at any time without adverse consequences. I agree that research data collected for the study may be published or may be provided to other researchers in a form that does not identify me in any way. I understand that PKP is not an evidence based-therapy and is based on Traditional Chinese Medicine. I understand I am being asked to complete three questionnaires at three different times which will take approximately 30-35 minutes to complete all three questionnaires once. I understand I will pay a fee of $60 or $30 if I hold a concession card and will be refunded the amount if I wish to terminate the study before receiving any treatment.

NAME OF PARTICIPANT: ....

SIGNATURE .... DATE ....

SIGNATURE OF PRINCIPAL INVESTIGATOR (or SUPERVISOR): ....

DATE:………………………..

(and, if applicable)

SIGNATURE OF STUDENT RESEARCHER: ....

DATE:...........................………

Appendix A-4

Advertising Script:

Have you been experiencing stress, anxiety or low mood? Have you found it difficult to be motivated or concentrate, had difficulty sleeping, or experienced weight change without any dietary changes? The Australian Catholic University in Brisbane is conducting a study on the helpfulness of **Professional Kinesiology Practice (PKP)** in assisting with mood problems and in enhancing wellbeing.

PKP is a body therapy that takes a holistic approach to therapy. PKP has evolved from Traditional Chinese Medicine, acupuncture, chiropractic practice, physiotherapy, naturopathy, nutrition and psychotherapy. PKP is based on a mind-body connection philosophy that health is the balance of physical, biochemical, psychological and emotional states in the body and mind. This particular branch of kinesiology focusses on educating the client about the mind-body connection and uses diverse treatment techniques to increase coping mechanisms (Eardely, Brien, Little, Pescott & Lewith, 2013; Liddell, 2013).

Because this treatment is being offered as part of a university research program, participants who are interested in partaking in this research will be eligible for six treatments of PKP over six weeks for a one time enrollment fee of $60, or $30 for concession holders. Participation is strictly confidential and participants may with draw at any time.

Should you be interested in helping us to better understand the benefits of this treatment, please contact: (*email and phone will be provided*)

Appendix B-1

Demographic Information

(please tick the appropriate box)

Age:

- ☐ 18-25
- ☐ 26-35
- ☐ 36-45
- ☐ 46-55
- ☐ 56-65
- ☐ 65 or above

Gender:

- ☐ Female
- ☐ Male
- ☐ Not-specified

Marital Status:

- ☐ Single
- ☐ Married
- ☐ De Facto
- ☐ Widowed

Children:

Number of children:

Employment status:

- ☐ Full-time employed
- ☐ Part-time employed
- ☐ Casual employed
- ☐ Not employed but seeing work
- ☐ Not employed and not seeking work
- ☐ Full-time parent or carer

Education Completed:

- ☐ High school Year 10
- ☐ High school Year 12
- ☐ TAFE/Apprenticeship
- ☐ Undergraduate Degree
- ☐ Postgraduate Degree

Postcode:

____

"For what specific reason have you sought this treatment at this time?"

____

____

____

____

____

Appendix B-2

*Please write your initials:*_______ *Please write today's date:* _______

Please choose one answer that is closet to describing your experience:

1. In general, I consider myself

not a very happy person ☐ a very happy person ☐

2. Compared to most of my peers, I consider myself

less happy ☐ happier ☐

3. Some people are generally very happy. They enjoy life regardless of what is going on, getting the most out of everything. To what extent does this characterization describe you?

Strongly Disagree ☐ Disagree ☐ Slightly Disagree ☐

Neither Disagree or Agree ☐ Slightly Agree ☐ Agree ☐ Strongly Agree ☐

4. Some people are generally not very happy. Although they are not depressed, they never seem as happy as they might be. To what extent does this characterization describe you?

Strongly Disagree ☐ Disagree ☐ Slightly Disagree ☐

Neither Disagree or Agree ☐ Slightly Agree ☐ Agree ☐ Strongly Agree ☐

5. In most ways my life is close to my ideal.

Strongly Disagree ☐ Disagree ☐ Slightly Disagree ☐

Neither Disagree or Agree ☐ Slightly Agree ☐ Agree ☐ Strongly Agree ☐

6. The conditions of my life are excellent.

Strongly Disagree ☐ Disagree ☐ Slightly Disagree ☐

Neither Disagree or Agree ☐ Slightly Agree ☐ Agree ☐ Strongly Agree ☐

7. I am satisfied with my life.

Strongly Disagree ☐ Disagree ☐ Slightly Disagree ☐

Neither Disagree or Agree ☐ Slightly Agree ☐ Agree ☐ Strongly Agree ☐

8. So far I have gotten the important things I want in life.

Strongly Disagree ☐ Disagree ☐ Slightly Disagree ☐

Neither Disagree or Agree ☐ Slightly Agree ☐ Agree ☐ Strongly Agree ☐

9. If I could live my life over, I would change almost nothing.

Strongly Disagree ☐ Disagree ☐ Slightly Disagree ☐

Neither Disagree or Agree ☐ Slightly Agree ☐ Agree ☐ Strongly Agree ☐

10. I could be experiencing some emotion and not be conscious of it until sometime later.

Almost Always ☐ Very Frequently ☐ Somewhat Frequently ☐
Somewhat Infrequently ☐ Very Infrequently ☐ Almost Never ☐

11. I break or spill things because of carelessness, not paying attention, or thinking of something else.

Almost Always ☐ Very Frequently ☐ Somewhat Frequently ☐
Somewhat Infrequently ☐ Very Infrequently ☐ Almost Never ☐

12. I find it difficult to stay focused on what's happening in the present.

Almost Always ☐ Very Frequently ☐ Somewhat Frequently ☐
Somewhat Infrequently ☐ Very Infrequently ☐ Almost Never ☐

13. I tend to walk quickly to get where I'm going without paying attention to what I experience along the way.

Almost Always ☐ Very Frequently ☐ Somewhat Frequently ☐
Somewhat Infrequently ☐ Very Infrequently ☐ Almost Never ☐

14. I tend not to notice feelings of physical tension or discomfort until they really grab my attention.

Almost Always ☐ Very Frequently ☐ Somewhat Frequently ☐
Somewhat Infrequently ☐ Very Infrequently ☐ Almost Never ☐

15. I forget a person's name almost as soon as I've been told it for the first time.

Almost Always ☐ Very Frequently ☐ Somewhat Frequently ☐
Somewhat Infrequently ☐ Very Infrequently ☐ Almost Never ☐

16. It seems I am "running on automatic," without much awareness of what I'm doing.

Almost Always ☐ Very Frequently ☐ Somewhat Frequently ☐
Somewhat Infrequently ☐ Very Infrequently ☐ Almost Never ☐

17. I rush through activities without being really attentive to them.

Almost Always ☐ Very Frequently ☐ Somewhat Frequently ☐
Somewhat Infrequently ☐ Very Infrequently ☐ Almost Never ☐

18. I get so focused on the goal I want to achieve that I lose touch with what I'm doing right now to get there.

Almost Always ☐ Very Frequently ☐ Somewhat Frequently ☐
Somewhat Infrequently ☐ Very Infrequently ☐ Almost Never ☐

19. I do jobs or tasks automatically, without being aware of what I'm doing.

Almost Always ☐ Very Frequently ☐ Somewhat Frequently ☐
Somewhat Infrequently ☐ Very Infrequently ☐ Almost Never ☐

20. I find myself listening to someone with one ear, doing something else at the same time.

Almost Always ☐ Very Frequently ☐ Somewhat Frequently ☐

Somewhat Infrequently ☐ Very Infrequently ☐ Almost Never ☐

21. I drive places on 'automatic pilot' and then wonder why I went there.

Almost Always ☐ Very Frequently ☐ Somewhat Frequently ☐

Somewhat Infrequently ☐ Very Infrequently ☐ Almost Never ☐

22. I find myself preoccupied with the future or the past.

Almost Always ☐ Very Frequently ☐ Somewhat Frequently ☐

Somewhat Infrequently ☐ Very Infrequently ☐ Almost Never ☐

23. I find myself doing things without paying attention.

Almost Always ☐ Very Frequently ☐ Somewhat Frequently ☐

Somewhat Infrequently ☐ Very Infrequently ☐ Almost Never ☐

24. I snack without being aware that I'm eating.

Almost Always ☐ Very Frequently ☐ Somewhat Frequently ☐

Somewhat Infrequently ☐ Very Infrequently ☐ Almost Never ☐

25. Over the past week I found it hard to wind down

Did not apply to me at all ☐ Applied to me to some degree, or some of the time ☐

Applied to me to a considerable degree, or a good part of time ☐

Applied to me very much, or most of the time ☐

26. Over the past week I was aware of dryness of my mouth

Did not apply to me at all ☐ Applied to me to some degree, or some of the time ☐

Applied to me to a considerable degree, or a good part of time ☐

Applied to me very much, or most of the time ☐

27. Over the past week I couldn't seem to experience any positive feeling at all

Did not apply to me at all ☐ Applied to me to some degree, or some of the time ☐

Applied to me to a considerable degree, or a good part of time ☐

Applied to me very much, or most of the time ☐

28. Over the past week I experienced breathing difficulty (eg, excessively rapid breathing,
breathlessness in the absence of physical exertion)

Did not apply to me at all ☐ Applied to me to some degree, or some of the time ☐

Applied to me to a considerable degree, or a good part of time ☐

Applied to me very much, or most of the time ☐

29. Over the past week I found it difficult to work up the initiative to do things

Did not apply to me at all ☐ Applied to me to some degree, or some of the time ☐

Applied to me to a considerable degree, or a good part of time ☐

Applied to me very much, or most of the time

30. Over the past week I tended to over-react to situations

Did not apply to me at all Applied to me to some degree, or some of the time

Applied to me to a considerable degree, or a good part of time

Applied to me very much, or most of the time

31. Over the past week I experienced trembling (eg, in the hands)

Did not apply to me at all Applied to me to some degree, or some of the time

Applied to me to a considerable degree, or a good part of time

Applied to me very much, or most of the time

32. Over the past week I felt that I was using a lot of nervous energy

Did not apply to me at all Applied to me to some degree, or some of the time

Applied to me to a considerable degree, or a good part of time

Applied to me very much, or most of the time

33. Over the past week I was worried about situations in which I might panic and make a fool of myself

Did not apply to me at all Applied to me to some degree, or some of the time

Applied to me to a considerable degree, or a good part of time

Applied to me very much, or most of the time

34. Over the past week I felt that I had nothing to look forward to

Did not apply to me at all Applied to me to some degree, or some of the time

Applied to me to a considerable degree, or a good part of time

Applied to me very much, or most of the time

35. Over the past week I found myself getting agitated

Did not apply to me at all Applied to me to some degree, or some of the time

Applied to me to a considerable degree, or a good part of time

Applied to me very much, or most of the time

36. Over the past week I found it difficult to relax

Did not apply to me at all Applied to me to some degree, or some of the time

Applied to me to a considerable degree, or a good part of time

Applied to me very much, or most of the time

37. Over the past week I felt down-hearted and blue

Did not apply to me at all Applied to me to some degree, or some of the time

Applied to me to a considerable degree, or a good part of time

Applied to me very much, or most of the time

38. Over the past week I was intolerant of anything that kept me from getting on with what I was doing

Did not apply to me at all ☐ Applied to me to some degree, or some of the time ☐

Applied to me to a considerable degree, or a good part of time ☐

Applied to me very much, or most of the time ☐

39. Over the past week I felt I was close to panic

Did not apply to me at all ☐ Applied to me to some degree, or some of the time ☐

Applied to me to a considerable degree, or a good part of time ☐

Applied to me very much, or most of the time ☐

40. Over the past week I was unable to become enthusiastic about anything

Did not apply to me at all ☐ Applied to me to some degree, or some of the time ☐

Applied to me to a considerable degree, or a good part of time ☐

Applied to me very much, or most of the time ☐

41. Over the past week I felt I wasn't worth much as a person

Did not apply to me at all ☐ Applied to me to some degree, or some of the time ☐

Applied to me to a considerable degree, or a good part of time ☐

Applied to me very much, or most of the time ☐

42. Over the past week I felt that I was rather touchy

Did not apply to me at all ☐ Applied to me to some degree, or some of the time ☐

Applied to me to a considerable degree, or a good part of time ☐

Applied to me very much, or most of the time ☐

43. Over the past week I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)

Did not apply to me at all ☐ Applied to me to some degree, or some of the time ☐

Applied to me to a considerable degree, or a good part of time ☐

Applied to me very much, or most of the time ☐

44. Over the past week I felt scared without any good reason

Did not apply to me at all ☐ Applied to me to some degree, or some of the time ☐

Applied to me to a considerable degree, or a good part of time ☐

Applied to me very much, or most of the time ☐

45. Over the past week I felt that life was meaningless

Did not apply to me at all ☐ Applied to me to some degree, or some of the time ☐

Applied to me to a considerable degree, or a good part of time ☐

Applied to me very much, or most of the time ☐

Appendix C-1

Table 3

Mixed ANOVA N=34

	Intervention					
	Intervention (N=17)		Waitlist (N=17)			
Variable	Time 1	Time 2	Time 1	Time 2		
Interaction Effects	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*	*F(df)*	η^2
epression (DASS-21 subscale)	4.88(2.39)	2.82(2.67)	5.47(4.86)	5.71(4.86)	5.82(1,32)*	.15
Stress (DASS-21 subscale)	7.06(2.56)	5.06(3.07)	8.76(2.91)	9.53(4.00)	7.19(1,32)*	.19
Life satisfaction (SWLS)	397.47(231.04)	577.29(307.82)	540.41(189.19)	529.82(213.62)	11.68(1,32)**	.27
General Happiness (SHS)	11.76(2.54)	11.29(1.49)	11.82(1.55)	11.53(1.13)	0.06(1,32)	.00
Mindfulness (MAAS)	34.47(11.60)	43.41(12.29)	36.95(11.38)	36.65(11.64)	12.14(1,32)**	.28

Note. A squared transformation was applied and is reflected in Life satisfaction scores.*=*p* value<.05; **=*p* value<.01; *F*=Mixed ANOVA. *t*= Independent t-test. *P*= Power. Waitlist= waitlist control condition, Intervention= intervention condition.

Appendix C-2

Table 4

Paired-sample t-test N=34

Variable	Intervention Mean Difference	Waitlist Mean Difference	Intervention *t*(df)	Waitlist *t*(df)
Depression (DASS-21 subscale)	2.06	0.24	3.41*	-0.32
Stress (DASS-21 subscale)	2.00	0.77	2.87*	-1.01
Wellbeing (SHS & SWLS)	3.47	0.65	3.12*	-0.07
Mindfulness (MAAS)	8.94	0.06	-4.17**	-0.04
Anxiety (DASS-21 subscale)	.094	.012	2.06	-0.13

Note. A squared transformation was applied and is reflected in Life satisfaction scores.*=*p* value<.05; **=*p* value<.01; *t*= t-test. Waitlist= waitlist control condition, Intervention= intervention condition.