

**The Influence of Coping Behaviours and Exercise on
Psychological Well-being**

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Abstract

The health care costs are on the rise, as it is reported by Department of Health in Ireland, therefore it is becoming more apparent, that health promotion and ill health prevention should be of interest to the governing bodies. The focus of this study was to examine the influence of coping behaviours (support, control, self-efficacy and optimism) and exercise on well-being operationalised as happiness, life satisfaction, stress, anxiety and depression. The study employed correlational and cross-sectional quantitative design to determine significance of the variables, which were subsequently entered into regression models with all the well-being measures. A questionnaire was administered in order to collect the data in relation to all the variables, and 107 individuals took part in the study. The results of the study showed, that all predictors had relationship with some, most or all of the outcome measures, however, only two predictors accounted for the most variance.

Introduction

Psychological Well-being and Health

In recent years the Organisation for Economic Co-operation and Development (OECD) had produced a report with prediction, that the health care costs are rising and by the 2050 they will become unaffordable without reforms (OECD.org). In Irish context the health expenditure is also on the rise and according to Department of Health it had increased by 9.1% between 2007 and 2016 (health.gov.ie). WHO definition of health is “a state of complete **physical, mental and social well-being** and not merely the absence of disease or infirmity” (WHO.int). According to World Health Organisation Regional Office for Europe report (2012) health contributes to well-being and well-being contributes to health, there is some evidence that people who score higher on well-being, have better health outcomes, there is also some more specific evidence, that low well-being can lead to depression. Present study is set out to examine the influencing factors on well-being, to provide more insight to the understanding of interconnections between various mental health aspects. Also, providing more information on important to well-being factors, may contribute to development of more effective mental health campaign, what in turn would lead to decrease in health care cost.

Definition of Elements of Subjective Well-being

The World Health Organisation Regional Office for Europe report (2012) also produced definition of well-being which states that there are two dimensions of well-being, subjective and objective, where subjective dimension comprises of individual’s experience of their life and objective dimension comprises of life circumstances with social norms and values (WHO, 2012). In relation to subjective well-being OECD conceptualised a framework which distinguished three elements of well being: life evaluation, eudaimonia (competence

and purpose) and positive and negative affect (WHO, 2012). Present study is going to focus on factors described as the positive and negative affect. According to WHO report, examples of positive affect measurements include happiness and life satisfaction. Examples of negative affect measurements include stress, anxiety and depression. Weich et al., (2011) in the study on well-being concluded that single item measures have limited value in monitoring well-being, or in identifying intervention aims. Therefore this study is going to use variety of measurements of well-being including single and multiple measures. In the present study well-being is operationalised as happiness, life satisfaction, stress, anxiety, depression and GHQ (a measurement of distress).

Subjective happiness in accordance with Erouzabi, Dogan and Adiguzel (2016), has emotional and cognitive aspects, while emotional aspects are divided into positive affect and lack of negative affect, cognitive aspect is referred to as life satisfaction. Anxiety can be defined as “an aversive emotional state, in which the feeling of fear is disproportionate to the nature of the threat” (Bouayed, Rammal and Soulimani, 2009, p.63). Depression can be “characterized by a constellation of symptoms including sleep and eating disturbances, low mood, feelings of worthlessness, increased guilt, and suicidal ideation” (Grant, Guille and Sen, 2013, p.1).

Interconnection Between Well-being and Stress Coping Behaviours

Dolan, Peasgood and White (2008) stated in the revision of well-being studies that there is strong relationship between well-being and physical and psychological health. World Health Organisation defines mental health as a “state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make contribution to her or his community” (WHO.int). As WHO definition mentions “stresses of life”, and correlation between mental

health and well-being was already established by other studies (WHO, 2012), both of these statements would lead to suggestion that there might be a relationship between stress coping behaviours and well-being. This study is going to examine the influences of stress coping behaviours on psychological well-being with expectation to identify the variables which are the strongest predictors of well-being. In order to better understand stress coping behaviours and mechanisms linked with them, various aspects of stress need to be mentioned and stress Transactional Model needs to be described, as coping mechanisms are build within the structure of the model, which explains the adaptation processes assuring human survival (Lazarus and Folkman, 1984).

Interconnection Between Stress and Other Adverse Well-being Measures.

The role of coping mechanisms is to protect individual from harmful effects of stress which can manifest in anxiety and other emotional consequences (Vaida, Todor, Bertossi and Corega, 2015). This statement closely relates stress to anxiety, also number of studies provide evidence to significant positive correlations between anxiety and depression (Rawson Bloomer and Kendall, 1994). In accordance with meta-analyses conducted by Stroud, Davila and Moyer (2008) the various studies provided evidence to the direct relationship between life stress and depression. Furthermore, in recent years the molecular link has been established between stress, anxiety and depression with the use of behavioural mouse model (Magalhaes et al., 2010). It was concluded that depressive disorders often occur with anxiety and both are strongly linked to stressful experiences (Magalhaes et al., 2010). The results of these studies provide an understanding that stress is an important variable connecting all the adverse indicators of well-being.

Stress Types, Definition and Transactional Model

With accordance to Hans Selye (Shabo et al., 2012), stress can be divided into negative stress, called distress and positive stress, called eustress. Distress is an example of mental ill health, however eustress can have positive affect on organisms' cognitive functions (Lupien et al., 2007). Stress is also unavoidable part of human life and it is defined as a response to disturbing incidents (Lazarus and Folkman, 1984). Stress was integrated into humans genetic make up, as an aid in defensive mechanisms and played important role in assuring survival of the species. Lazarus and his associates developed the psychological theory of stress and coping and distinguished in it the process of cognitive appraisal and the process of coping that forms a transaction between the organism and the environment – secondary appraisal (Folkman et al., 1986). During cognitive appraisal an organism evaluates an unexpected experience and its relevance to the organism's well being. This phase is followed by coping – secondary appraisal – which is based on continuously changing cognitive and behavioural efforts in order to meet the internal and external demands (Folkman et al., 1986).

Physiological and Physical Aspects of Stress

As per Boyce and Ellis (2005) – “Environmental events signalling threats to survival or well being produce a set of complex, highly orchestrated responses within the neural circuitry of the brain and peripheral neuroendocrine pathways regulating metabolic, immunologic, and other physiological functions (Boyce et al., 2005, p.272). Human bodies are designed to respond to stress in a physical way by running, climbing, jumping, performing agility movements and other forms of physical activity. This physical activity in turn brings all the bodily functions and chemical responses back to balanced and normal state. Stress is present in all aspects of life and rarely can be avoided (Baron and Branscombe,

2012). Nowadays, due to the sedentary changes in peoples life styles, human body can no longer deal with all the complex changes and in turn creates pressure effecting internal organs. Devastating effects of high level of stress can cause serious illness problems as well as contribute to wide scale of medical problems (Baron et al., 2012, p.272).

Changes elicited by stress on physiological level include enlargement of adrenal glands, atrophy of thymus and gastric ulcerations, these reactions to stressors were examined by Hans Selye in 1936 (Lupien et al., 2007). In a result of this studies Selye developed three stages of General Adaptation Syndrom: alarm reaction, stage of resistance and stage of exhaustion (Krohne, 2002). Alarm reaction stage involves shock phase and after-shock phase. Major physiological changes take place during the shock phase and increased adreno-cortical activity is characteristic of the after-shock phase (Krohne, 2002). In the stage of resistance, an organism starts to adapt to the stressor but its resistance to other stressors decreases, and in the exhaustion stage, while the stressor persists to appear, an organism goes through the physiological reactions of the first stage but there is no more resistance stage, therefore cell and tissue damage occurs (Krohne, 2002). Mental reactions to stress are not the only type of reactions that happen in human body, there is a number of physiological reactions that are caused by presence of chronic stress in peoples life. Physiological changes in the body that are triggered by stress include damaging effect on cell aging which manifests itself by shortening chromosome ends – telomeres (Puterman et al., 2010). Puterman et al., stated in the study that sedentary people would have shorter telomeres which is directly related to exposure to the chronic stress. It was found that physical activity lessens the effects of stress on cellular longevity (Puterman et al., 2010)

Damaged tissues and cells in the heart muscle have upmost significance in physical health, therefore stress is officially recognised by WHO as a contributing factor of Coronary Heart

Disease. CHD is the biggest cause of death globally – as per WHO statistics from January 2015.

Psychological Stressors and Coping Strategies

Selye's work was challenged by various researchers as he focused on physical stressors while psychological stressors significance was examined in great detail by Mason (1971). Mason had determined three psychological factors that would induce stress reaction in any individual: novelty, unpredictability and lack of control (Lupien et al., 2007). Handling stressful situation or reacting to a stressor is quite often dependent on coping strategies of the individual (Shankar et al., 2014). There are two main types of strategies: problem –focused (planning) and emotion-focused (support), which can be further divided into active and passive strategies (Shankar et al., 2014). However, there are also positive coping strategies, which involve engagement in physical activities , exercise, improved nutrition, adequate sleep (Sam et al., 2016). Sam et al., (2016) concluded that , if stress is managed using positive strategies the healthy psychological and physical results are possible. Nevertheless Park and Lacoocca (2013) argues that engaging in positive health behaviour like exercise is quite often associated with many other reasons, and coping with stress is only one of the factors.

The Influence of Exercise on Responses to Stressors

Relation between exercise and response to stressors was examined by Salmon (2001), where it was determined that exercise has lowering effect on physiological and psychological response to variety of stressors. This finding was confirmed by meta-analysis review on effects of exercise on stress induced blood pressure increase, carried out by Hammer, Taylor and Steptoe (2006) – where it was stated that moderate to high intensity exercise sessions reduce stress related blood pressure. Hammer et al., (2006) concluded that from the public

health perspective it has significant meaning as it reduces probability of development heart related diseases - therefore manifesting important ecological validity. Cardiovascular exercise was recommended as an intervention measure in physiological stress reactivity (Hammer et al., 2006).

Hammer, Stamatakis and Steptoe (2009) carried out study examining relationship between physical activity and mental health among Scottish population. Results of this study showed strong association between physical activity and reduced psychological distress, where lower levels of distress were associated with high levels of activity. However Gerber and Puhse (2009) reviewed 31 studies on effects of exercise and stress related health implications – and found that only half of the studies showed significant results confirming those effects. More experimental and prospective studies were recommended. A mounting body of evidence suggests, that correlation between exercise and stress has significance in reducing psycho-somatic symptoms of stress, therefore, present study is going to examine various aspects of exercise as a coping behaviour.

The Influence of Exercise on Well-being Measures (Happiness, Anxiety, Depression,)

Lathia et al., (2017) concluded, in the study examining physical activity and happiness, that a frequency of movement throughout the day is associated with physical health and happiness, even if the movement is not a rigorous exercise. Dubbert (2002) in the overview to major developments in the area of physical exercise and its affect on mental health, had determined that there has been major development in the last couple of decades. This development shows importance of exercise in increasing physical and mental well-being (Dubbert, 2002). As it is cited by Dubbert, Surgeon General's Report (U.S. Department of Health and Human Services, 1996) have determined that experimental studies have shown that exercise can be a successful intervention in treating anxiety and depression moods.

However clinical population is not the only population getting benefits from exercise, general public perceived mental health and its relation to physical activity was also measured. Goodwin (2003) in the study examining participants of Comorbidity Survey in U.S. concluded, that physical exercise was significantly related to reduction in occurrence of depression and anxiety disorders. More recent evidence of the negative correlation between exercise and self-reported anxiety and depression was provided by Tyson et al., (2010) in the study examining physical activity and mental health in student population. This study have shown dose-response relationship between the two variables, the greater the physical activity the lesser the symptoms of anxiety and depression (Tyson et al., 2010). Furthermore, Salmon (2001) in the review article on exercise and the influence on stressors, anxiety and depression, stated that number of studies provided evidence to effectiveness of cardiovascular exercise in reducing depression and anxiety. In addition Strickland and Smith (2014) in their review of exercise types and effects on well-being determined that combining cardiovascular exercise with strength exercise can have more robust effect on mental health measures. There are however studies which do not support relationship between exercise and mental health , therefore more comprehensive research should be carried out as suggested by Tylor, Sallis and Needle (1985) review article. In Tylor' s et al., (1985) review paper on relation of physical activity on mental health there was one study which had shown increase in anxiety following the exercise and two studies that have shown no change in anxiety levels. Therefore, current study is going to further examine the relationship between various aspects of exercise and adverse well-being measures.

In case of life satisfaction, a variable associated with well-being and prosperity (Maher et al., 2015), a number of cross-sectional and prospective studies have provided evidence to the statement that in midlife and in older adulthood, exercise is positively related to life satisfaction. Maher et al., (2015) concluded that there is a significant association between exercise and between-person life satisfaction approach (association driven by differences between more or less active people), and daily exercise and within-person life satisfaction approach (association driven by difference between more or less active days). There are

studies that confirmed links between life satisfaction and positive emotions (Cohn et al., 2009). Furthermore Pettit et al., (2001) concluded that people with positive emotions are less likely to report poor health, and this may have implications in the health care.

Support and Control as Coping Mechanisms and the Influencing Factors on Well-being.

In the article on social support and well-being by Ozbay et al., (2007), social support was defined as a “support accessible to an individual through social ties to other individual, group and the larger community” (Ozbay et al., 2007, p.37), and low social support was associated to physical symptoms of high stress reactivity. According to Roohafza et al., (2014), support mechanism coming from the family, friends or social groups can buffer against life stressors and promote health. In Roohafza et al., (2014) study, family support was a strong protective factor from depression and anxiety. Furthermore this study examined relation between perceived social support and coping styles, and concluded that there is a positive relationship between the social support and active coping styles. Active coping styles describe direct and rational approach in dealing with a problem and are associated with lower levels of anxiety and depression (Roohafza et al., 2014). In relation to influencing role of support on happiness, Liping (2001) concluded that support predicts happiness and positive affect. In the light of aforementioned studies the influence of support on well-being measures will be further examined.

A study conducted by Sherman et al., (2012) identified sense of control as a mediator between stress levels and rank among leaders. The negative relationship between stress levels and rank meant that the greater the rank the lower was the stress level. The findings of Sherman et al., (2012) study also associated leadership rank and related with it sense of control with lower anxiety levels. In case of influence of control on happiness and depression, Amoura, Berjot, Gillet and Altintas (2014) in their study on perceived control and

desired control, stated that the higher level of perceived control, the better is the mental state of the individual, in addition the lack of control was associated with depression. In the relation to above mentioned studies the influence of control on well-being measures will be further examined.

Optimism as a Coping Mechanism and an Influencing Factor on Well-being

Conversano et al., (2010) stated in the overview article on optimism, that optimistic individuals perceive their daily life events in positive manner, and optimism is positively correlated with stress reducing coping strategies. Furthermore Pavey, Burton and Brown (2015) concluded that there is an association between physical activity and optimism and exercise can promote optimism.

In relation to optimism and other well-being measures, Kiyanzad, Kajbaf and Phayazi (2016) study concluded that there is a positive correlation between happiness and optimism, Rajandram et al., (2011) study found low optimism as a predictor of depression and study by Kepka et al., found optimism as moderator of anxiety on Health Related Quality of Life. In relation to above mentioned studies, the influence of optimism on well-being measures will be further examined.

Well-being, Healthy Lifestyle and Self-efficacy

The importance of healthy lifestyle in mental health has been significantly underestimated by the health professionals in the past (Walsh, 2011). According to WHO (2013), healthy lifestyle consists of healthy diet and exercise. In well-being and mental health, promotion and prevention are as equally important as treatment, and bio-psycho-social factors are contributing elements (Min, Lee and Lee, 2013). In relation to psycho-social factors, increase in self –efficacy through developed social support has been shown to

be directly related to more effective coping with stress (Conner, 2015). Social-cognitive model of physical activity by Bandura (1998, p.6) states that self-efficacy is a prime determinant of consistent levels of physical activity, which in effect promotes health. In relation to well-being measures self – efficacy was also positively correlated with happiness (Erozuman, Dogan and Adiguzel, 2016) and negatively correlated with anxiety and depression (Tahmassian and Moghadam, 2011).

Identifying the associations between self-efficacy, optimism, support, control and exercise and well-being measures would help to better understand the interconnections and their impact on the full spectrum of the well-being measures (from happiness to depression). Present study is expected to filter out the coping behaviours, which would have the biggest contribution in mental health promotion and mental ill health prevention. In addition, the elements of Biopsychosocial Model (Hatala, 2012) will be used to select the most effective coping behaviours.

A Rationale for the Study on Irish Adults

In the light of aforementioned studies this research was designed to extend the existing studies on coping behaviours and exercise in relation to psychological well-being. The aim of this study is to explore the relation between coping behaviours (exercise, support, control, self efficacy and optimism) and various measurements of well-being (happiness, life satisfaction, stress, anxiety and depression), as well as provide some insights to interconnections between those elements and implications for health promotion and prevention of illness. Main hypothesis of this study states that, that there will be correlations between coping behaviours, exercise and psychological wellbeing. More detailed hypotheses are presented below:

H1: It is hypothesised that there will be a significant correlations between frequency of exercise and well being (operationalised as GHQ, stress, anxiety, depression, happiness and life satisfaction).

H2: It is predicted that there will be a significant difference in well being between participants who do and do not do cardiovascular exercise.

H3: It is also predicted that there will be a significant difference in well being between participants who do cardiovascular and strength exercise and those, who do only either cardiovascular or strength exercise.

H4: It is hypothesised that there will be a significant correlations between control , support and well being (operationalised as GHQ, stress, anxiety, depression, happiness and life satisfaction).

H5: It is also hypothesised that there will be a significant correlations between optimism, self-efficacy and well - being (operationalised as GHQ, stress, anxiety, depression, happiness and life satisfaction).

Methodology

Participants

The study consisted of 107 participants who completed the questionnaire in pen and pencil and an online form. Some items had missing values, therefore response rate was less than 107 in some parts of the questionnaire. The participants were a convenience sample recruited by the researcher personally in a fitness studio and a cross fit gym in the midlands of Ireland and online through facebook. The sample consisted of 40.2% of males (N=43) and 59.8% of females (N=64). The participants ranged in age (Mean=37.10, SD=8.59) from 22 to 61 years old. Participation in the study was voluntarily.

Design

This study employed quantitative, correlational and cross-sectional design. The predictor variables in correlational part of the study were identified as : weekly exercise, control, support, optimism and self efficacy. The criterion variables in the correlational part of the study were identified as : happiness, life satisfaction, stress, anxiety, depression and GHQ. The independent variables in relation to cross-sectional part of the study were identified as: cardio exercise, cardio and strength exercise. The dependent variables in relation to cross-sectional part of the study were identified as: happiness, life satisfaction, stress, anxiety, depression and GHQ.

Materials

Materials used in the study comprised of a brief, a consent form, demographic questionnaire developed by the researcher, Diener's Happiness scale (single item) (Kesebir and Diener, 2008), Control and Support measures (Gibbons, Dempster and Moutray, 2009),

the Satisfaction with Life Scale (Diener, Emmons, Larsen and Griffin, 1985), Peterson and Seligman's Values in Action optimism scale (Peterson and Seligman, 2004), the General Health Questionnaire (Goldberg, Williams and Williams, 1988), The Generalised Self Efficacy Scale (Jeruzalem and Schwarzer, 1992), the Depression, Anxiety, Stress Scales (Lovibond and Lovibond, 1995).

The brief form was provided to inform the participant of the title of the study and the aims of the study. There was also information about the researcher and the form of contact, as well as information in relation to anonymity and confidentiality. A consent form was also provided along with information sheet with contact details for Aware and the Samaritans, in case of occurrence of any negative feelings resulting from the completion of the questionnaire.

A demographic questionnaire was developed by the researcher to determine gender and age of participants, and for the purpose of this study there was a number of questions in relation to exercise. These questions were designed to establish the frequency of exercise (computed of individual and group sessions variables), type of exercise (cardio exercise variable) and variety of exercise (computed of cardio and strength exercise variables). The author and the thesis supervisor both read and agreed that the items had face validity.

Happiness measure.

In case of a happiness (Kesebir et al., 2008) a one item scale was administered with the 11 point answer scale (0-10). The participants were asked to answer single question: "How would you rate your happiness?". The answer possibility range was from 0 – Not happy to 10 – Very happy, and indicated that the higher was the score the higher was the participants level of happiness. The single item happiness scale reliability and validity was examined by Abdel-Khales (2006). The established reliability was at .86 and good concurrent and convergent validity was also denoted.

Support measure.

In relation to support (Gibbons et al., 2009) a 3 item scale was administered measuring family, friends and gym support on 11 point answer scale (0-10). The participants were asked to value the level of support. The example of the items asked include: "How much would you value level of support offered by your family". The answer possibility range was from 0- No value to 10- Very high value. The answer indicated that, the higher the score the higher was the valued level of support. The reliability of the support scale was established by Gibbons (2008) at .7 and the scale was judged to have face validity.

Control measure.

In relation to control (Gibbons et al., 2009) a 3 item measurement was used. The participants were asked to respond in 5 point likert scale from 5- Strongly agree to 1- Strongly disagree. The example of the questions asked include: "In general I feel in control of the things that happen to me". The first and the last item of the scale were scored in reverse and the highest was the score of participant the highest was the feeling of control. The reliability of the control scale was .7 (Gibbons, 2008), and the scale was judged to have face validity.

Satisfaction with life scale.

In terms of the Satisfaction With Life Scale (Diener et al.,1985), a 5 item scale was used to assess participants general satisfaction with life. Participants were asked to indicate how much they agree with each item using 7 point likert scale from 1- Strongly disagree to 7- Strongly agree. The examples of some of the questions asked, include: "In most ways my life is close to my ideal" and "If I could live my life over, I would change almost nothing". Scores from 5 to 9 indicate Extreme Dissatisfaction, 10-14 Dissatisfaction referred to substantially

dissatisfied with their lives people, 15-19 indicate that participants are Slightly Below Average in Life Satisfaction, 20-24 range indicates Average Satisfaction and can be referred to majority of people, 25-29 scores are described as High scores and people, who score in this range like their lives, finally 30-35 score indicates Very High Satisfaction With Life. Pavot and Diener (1993) reported good construct validity of Satisfaction with Life Scale with .87 reliability which decreases to .54 over longer period of time.

Optimism measure.

In relation to Peterson and Seligman's Values in Action optimism scale (Peterson et al., 2004), 8 item scale was used and participants were asked to respond in 5 item likert scale from 1- Strongly disagree to 5- Strongly agree. The examples of some of the items asked include: "I look on the bright side" and "I think about what is good in my life when I feel down". The last 3 items of the measurement were scored in reverse. The highest numbers on the scale, the highest level of optimism in the participant. Ruch et al., (2010) confirmed the validity and .7 reliability of Values in Action scale.

GHQ - measure of distress.

The General Health Questionnaire (12 item version) (Goldberg et al., 1988) is a well established measurement of distress and was developed to determine likelihood and risk of developing psychiatric disorders. For the purpose of this study the 12 item scale was used. Examples of some of the items include: "Have you recently lost much sleep over worry?" or "Have you recently been loosing confidence in yourself?" Each item was accompanied with 4 possible responses. Examples of some of the responses include: "Not at all" or "More so than usual". Participants were asked to provide one answer and responses were scored from 1 to 4. This method of scoring is useful to compare the degree of disorder, however the cut-offs have not yet been validated. Jackson (2007) confirmed the reliability of GHQ in the range between .78 - .95.

Self-efficacy measure.

The Generalised Self-Efficacy Scale (Jeruzalem et al., 1992) is a 10 item scale created to assess perceived self efficacy to predict coping with daily hassles and adapting after stressful life events. The participants were asked to provide answer on 4 point scale ranging from 1-Not at all true to 4-Exactly true. The examples of some of the questions asked include: "I can always manage to solve difficult problems if I try hard enough" and "No matter what comes my way, I'm usually able to handle it". The higher the score the higher the participant's self efficacy, but there are no cut off points to indicate low, moderate or high self efficacy. Schwarzer et al., (1997) confirmed validity and reliability of GSE in Cronbach's alpha range between .81 and .91.

Depression, anxiety and stress measure (DASS21).

The Depression, Anxiety, Stress Scales (Lovibond et al., 1995) is a scale developed to determine self reported state of emotional stress, anxiety and depression. For the purpose of this study shorter version of 21 items was used (DASS 21). There are 3 subscales determining each of the mentioned emotional states, each subscale contains 7 items. Participants were asked to provide the answers from the 4 point scale, from 0- Did not apply to me at all, to 3- Applied to me very much or most of the time. The examples of some of the questions asked include: "I felt that I had nothing to look forward to" and "I felt that life was meaningless". DASS 21 is based on dimensional concept of psychological disorders and determines differences of degrees between clinical and non-clinical population. The scores have to be multiplied by 2 to calculate the final score. Cut off points for the purpose of severity labels for Depression are as follow: Normal (0-9), Mild (10-13), Moderate (14-20), Severe (21-27) and Extremely severe (28+). Cut off points for the purpose of severity labels for Anxiety are as follow: Normal (0-7), Mild (8-9), Moderate (10-14), Severe (15-19) and Extremely severe

(20+). Cut off points for the purpose of severity labels for Stress are as follow: Normal (0-14), Mild (15-18), Moderate (19-25), Severe (26-33) and Extremely severe (34+). Tran, Tran and Fisher (2013) confirmed validity and reliability of DASS21 in Cronbach's alpha range between .72 and .77 for each subscale and reliability of .88 for the overall score.

Procedure

The study was approved by the ethics committee. The questionnaire for the study was distributed in paper form among the willing participants in trx fitness studio and cross fit gym in the midlands; the link to the online questionnaire was also distributed through facebook and e-mail network. The participants were provided with the questionnaire and the information sheet. Information sheet emphasised the anonymity and confidentiality of the participants, the consent form was also included and participants were asked to indicate their consent to take part in the survey. Participants in the fitness studio and gym were also provided with envelopes and self designed letter boxes to facilitate safe return of the surveys. They could bring the questionnaires home and return them at their convenience, however there was a deadline of two weeks after which the letter boxes were removed from the facilities. Participants in the gym and studio were also briefed personally by the researcher during the initial distribution stage, where they were told that the purpose of the study is to examine the relationship between mental health (stress), coping and exercise. Similar brief was given to the participants, who completed the questionnaires online, where the information page would precede the link to the questionnaire. All the participants were also advised that completing the questionnaire will take approximately 10-15 minutes. Participants were thanked for taking part in the survey and given contact information, should they require more information about the study. After two week period all the data was collected and entered into SPSS for analysis, paper form was entered manually and online form was downloaded in excel spreadsheet and subsequently uploaded to SPSS.

Ethical considerations

The study was approved by ethics committee of the Dublin Business School. It was of vital importance to the researcher to maintain rights and dignity of all participants in this study.

All the participants were advised about anonymity and the right to withdraw – as they could stop completing the survey at any stage however once submitted, withdraw would not be possible – as all the questionnaires were anonymous. All participants were asked to indicate their willingness to participate in the study by signing a separate questionnaire consent form or by placing a tick beside the consent in the online version.

Results.

Data analysis was carried out to determine the results of the study. SPSS version 24 (SPSS Inc., Chicago, IL, USA) was used to obtain the results. Descriptive and inferential statistics were undertaken in accordance with the hypotheses. Descriptive statistics determined the means and standard deviations of variables. Independent Samples T-tests and Pearson's Correlation Coefficient test were performed to determine significance between the predictor and independent variables: support, control, exercise, self efficacy, optimism and outcome measures: happiness, life satisfaction, stress, anxiety, depression and GHQ. There was one continuous and two categorical variables related to the exercise. Weekly exercise variable (predictor) was entered to correlation analysis with outcome measures. Two categorical variables (IV): cardiovascular exercise variable and cardiovascular and strength exercise variable were entered into Independent Samples T test analysis with outcome measures. Significant variables determined by the results of correlation and T test analyses, were used in subsequent regression analysis. Multiple regressions were carried out between statistically significant predictor variables and corresponding outcome measures.

Table 1, below, illustrates predictor variables with their means, standard deviations and minimum and maximum scores. Table 2, below, illustrates all the criteria with their means, standard deviations and minimum and maximum scores.

Table 1 *Table illustrating means, SD and the minimum and maximum answers possible per item for the key predictors of influences on well being.*

Predictor	Mean	SD	Minimum possible	Maximum possible
Weekly exercise	4.73	2.68	.00	18.00
Optimism	29.35	5.12	14.00	39.00
Self efficacy	30.03	6.57	12.00	40.00
Control	9.34	1.28	6.00	12.00
Gym support	5.89	3.31	0	10
Friend support	7.58	2.43	0	10
Family support	7.92	2.52	0	10

Table 2 *Table illustrating means, SD and minimum and maximum answers possible per item for the outcome measures of well being.*

Outcome measure	Mean	SD	Minimum possible	Maximum possible
Happiness	7.30	1.98	1	10
Depression	8.04	10.19	.00	40.00
Anxiety	7.63	9.02	.00	40.00
Stress	13.77	10.54	.00	42.00
Life satisfaction	24.66	6.51	6.00	35.00
GHQ	23.63	5.58	15.00	42.00

Some of the predictor variables were categorical, therefore Table 3 and Table 4 below show the number of participants in each group along with mean differences and standard deviations of the responses to the well being variables.

Predictor variable in Table 3 is cardiovascular exercise, this table shows the answers to outcome measures, provided by the groups of participants who did or did not do cardiovascular exercise. In terms of happiness, life satisfaction and GHQ scores, the results displayed in below Table 3 showed no differences between the participants who did and did not do cardiovascular exercise. In relation to stress, participants who did not do cardiovascular exercise ($M=14.56$, $SD=10.89$) recorded higher levels of stress than those who did do cardiovascular exercise ($M=12.68$, $SD=10.09$). In terms of anxiety, participants who

did not do cardiovascular exercise ($M=9.12$, $SD=10.16$) reported higher levels of anxiety to those who did do cardiovascular exercise ($M=5.46$, $SD=6.43$). In case of depression, participants who did not do cardiovascular exercise ($M=9.28$, $SD=11.13$) were found to display higher levels of depression than those who did do cardiovascular exercise ($M=6.29$, $SD=8.39$). The main difference in the mean scores shows that participants who did do cardiovascular exercise scored lower on the adverse indicators of well being to those who did not do the cardiovascular exercise.

Predictor variable in Table 4 is cardiovascular and strength exercise, this table shows the answers provided by the participants of the groups who did both types of exercise: cardiovascular and strength , and those, who did either cardiovascular or strength exercise. In case of happiness, life satisfaction and GHQ scores, the results displayed in below Table 4 showed no differences between the participants who did and did not do both types of exercise. In terms of stress, participants who did either cardiovascular or strength exercise ($M=14.23$, $SD=10.73$) recorded higher levels of stress than those who did both types of exercise ($M=11.23$, $SD=8.80$). In relation to anxiety, participants who did either cardiovascular or strength exercise ($M=7.97$, $SD=9.23$) reported higher levels of anxiety to those who did both types of exercise ($M=4.77$, $SD=5.37$). In case of depression, participants who did either cardiovascular or strength exercise ($M=8.72$, $SD=10.55$) were found to display higher levels of depression than those who did both types of exercise ($M=5.00$, $SD=7.08$). The main difference in the mean scores shows that participants who did both types of exercise scored lower on the adverse indicators of well being to those who did either cardiovascular or strength exercise.

Table 3 *Descriptive statistics of the outcome measures in relation to the categorical predictor variable of cardiovascular exercise.*

Outcome measure	Cardio Y/N	N	Mean	Std. Deviation
Happiness	No	65	7.35	2.16
	Yes	41	7.20	1.71
Life satisfaction	No	63	24.09	7.27
	Yes	40	25.42	5.11
GHQ	No	64	23.75	6.17
	Yes	41	23.56	4.61
Stress	No	64	14.56	10.89
	Yes	41	12.68	10.09
Anxiety	No	64	9.12	10.16
	Yes	41	5.46	6.43
Depression	No	64	9.28	11.13
	Yes	41	6.29	8.39

Table 4 *Descriptive statistics of the outcome measures in relation to the categorical predictor variable of cardiovascular and strength exercise.*

Outcome measure	Cardio and Strength Y/N	N	Mean	Std. Deviation
Happiness	No	70	7.30	2.08
	Yes	26	7.38	1.44
Life satisfaction	No	67	24.63	6.62
	Yes	26	25.58	4.54
GHQ	No	69	23.83	5.91
	Yes	26	23.00	4.62
Stress	No	69	14.23	10.73
	Yes	26	11.23	8.80
Anxiety	No	69	7.97	9.23
	Yes	26	4.77	5.37
Depression	No	69	8.72	10.55
	Yes	26	5.00	7.05

A Pearson's r correlation coefficient was carried out to assess the relationship between each outcome measure: happiness, life satisfaction, stress, anxiety, depression, GHQ and the predictor variables: weekly exercise, support, control, optimism and self efficacy. Where any significance was determined, the predictor variables were entered to regression analysis for the key predictors of influence on well being. The results of the correlations analysis are displayed below in Table 5.

Table 5 Table illustrating correlations between predictors and outcome measures.

Predictor	Well being measures					
	Happiness	Stress	Anxiety	Depression	Life satisfaction	GHQ
Weekly exercise	.213*	-.033	.039	-.028	.108	-.020
Optimism	.416**	-.412**	-.309**	-.599**	.542**	-.524**
Self efficacy	.340**	-.268**	-.235*	-.426**	.489**	-.380**
Control	.197*	-.007	-.054	-.121	.228*	-.138
Gym support	.323**	-.085	-.004	-.123	.107	-.161
Friend support	.228*	-.124	-.085	-.158	.281**	-.200*
Family support	.377**	-.224*	-.244*	-.338**	.499**	-.338**

p<.01**
p<.05*

Table 5 illustrates that there was a correlation between happiness and weekly exercise ($r(105)=.21, p=.028$) happiness and optimism ($r(102)=.42, p<.001$), happiness and self efficacy ($r(104)=.34, p<.001$), happiness and control ($r(103)=.19, p=.044$), happiness and family support ($r(104)=.38, p<.001$), happiness and friend support ($r(104)=.23, p=.019$) and between happiness and gym support ($r(102)=.32, p=.001$). There was also a correlation between stress and optimism ($r(101)=-.41, p<.001$), stress and self efficacy ($r(103)=-.27, p=.006$) and stress and family support ($r(103)=-.22, p=.022$). The correlation was also determined between anxiety and optimism ($r(101)=-.31, p=.001$), anxiety and self efficacy ($r(103)=-.23, p=.16$) and family support and anxiety ($r(103)=-.24, p=.012$). Life satisfaction was correlated to optimism ($r(99)=.54, p<.001$), to self efficacy ($r(101)=.48, p<.001$), control ($r(100)=.23, p=.021$), family support ($r(101)=.49, p<.001$) and friend support ($r(101)=.28, p=.004$). GHQ was correlated to optimism ($r(101)=-.52, p<.001$), self efficacy ($r(104)=-.38, p<.001$), family support ($r(103)=-.34, p<.001$) and friend support ($r(103)=-.20, p=.041$). Finally correlation was determined between depression and optimism ($r(101)=-.59, p<.001$), depression and self efficacy ($r(103)=-.43, p<.001$) and depression and family support ($r(103)=-.34, p<.001$).

An Independent Samples T test was carried out to distinguish differences between groups of participants who did and did not do cardiovascular exercise on all well being measures with results displayed below in Table 6. In relation to second categorical variable: cardiovascular and strength exercise, an Independent Samples T test results are displayed below in Table 7 illustrating differences between group of participants who did both types of exercise and those , who did either cardiovascular or strength exercise.

Table 6 Table illustrating the results of Independent Sample T test in relation to differences between participants, who do cardio exercise and those who don't do cardiovascular exercise on well being measures.

Well being measure	t	df	p	95% Confidence Interval of the Difference	
				Lower	Upper
Happiness	.39	104	.69	-.63	.95
Life satisfaction	-1.01	101	.32	-.3.94	1.28
GHQ	.17	103	.87	-2.04	2.42
Stress	.89	103	.38	-2.32	6.08
Anxiety	2.26	102	.03	.45	6.87
Depression	1.56	100	.12	-.80	6.78

As illustrated in Table 6, an independent samples T-test found that there was a statistically significant difference in anxiety levels between group of participants, who do cardiovascular exercise (M=5.46, SD=6.43) and participants, who do not do cardiovascular exercise (M=9.13, SD=10.16) ($t(102)=2.26$, $p=.026$, CI (95%) .45 -> 6.87). Cardiovascular exercise variable will be entered in multiple regression analysis as one of the key predictors of influence on anxiety.

Table 7 Table illustrating the results of Independent Sample T test in relation to differences between participants, who do cardiovascular and strength exercise and those who do either cardiovascular or strength exercise, on well being measures.

Well being measure	t	df	p	95% Confidence Interval of the Difference	
				Lower	Upper
Happiness	-.19	94	.849	-.97	.79
Life satisfaction	-.67	91	.503	-3.76	1.86
GHQ	.64	93	.523	-1.73	3.38
Stress	1.27	93	.206	-1.68	7.68
Anxiety	2.09	76	.040	.15	6.25
Depression	1.98	67	.051	-.02	7.47

As illustrated in Table 7, an independent samples T-test found that there was a statistically significant difference in anxiety levels between group of participants, who do both types: cardiovascular and strength exercise (M=4.77, SD=5.37) and participants, who do either cardiovascular or strength exercise (M=7.97, SD=9.23) ($t(76)=2.09$, $p=.040$, CI (95%) .15 -> 6.25). Cardiovascular and strength exercise variable will be entered in multiple regression analysis as one of the key predictors of influence on anxiety.

In order to evaluate the main hypothesis the regression analysis was carried out and statistically significant variables determined in result of T tests and correlation analyses were entered in to the regression blocks, to examine the amount of variance these variables have in influencing psychological well being. The variables with the lowest Beta values were removed, the regression analysis was repeated and the most parsimonious model was determined. In the most parsimonious model Adjusted R square approximated the R square and explained the greatest amount of variance. The assumptions for all the regression analyses were checked. Normally distributed residual scores were not related to predictor variables. Mahalanobis distance values showed that there was no substantial outliers. Tolerance values did not exceed .2 and VIF values were not above 10 therefore there was no multicollinearity. The criterion variable was always continuous. The assumptions for all the regressions were confirmed.

Table 8 *Table illustrating multiple regression model with happiness.*

	Unstandardised Coefficients		Standardised Coefficient	t	Sig
	B	Std. Error	Beta		
(Constant)	1.09	1.06		1.02	.307
Weekly exercise	.11	.07	.15	1.68	.097
Optimism	.10	.04	.27	2.34	.022
Self efficacy	.02	.03	.07	.62	.536
Gym support	.09	.05	.16	1.72	.089
Family support	.19	.07	.25	2.78	.007

Dependent Variable: Happiness

R squared = .309, Adjusted R squared = .273

Table 8 above illustrates regression model with happiness where predictors such as family support, optimism, gym support, weekly exercise and self efficacy explained 27.3% of the variance in happiness scores ($R^2 = .27$, $F(5,94)=8.42$, $P<.001$) . As family support, optimism, gym support, weekly exercise and self efficacy increased the happiness scores also increased.

Table 9 Table illustrating multiple regression model with anxiety.

	Unstandardised Coefficients		Standardised Coefficient	t	Sig
	B	Std. Error	Beta		
(Constant)	28.37	5.62		5.05	.000
Cardio	-1.44	2.43	-.08	-.59	.555
Cardio and Strength	-1.15	2.68	-.06	-.43	.669
Optimism	-.48	.18	-.28	-2.71	.008
Family support	-.44	.35	-.13	-1.28	.205

Dependent Variable: Anxiety

R squared = .147, Adjusted R squared = .108

Table 9 above illustrates the final regression model with anxiety, explained 10.8 % of the variance in its scores ($R^2=.11$, $F(4,86)=3.72$, $p=.008$). As the table shows, optimism, family support and cardio exercise accounted for the most variance in anxiety. As optimism and family support increased the lower were the reported anxiety scores. Lower anxiety scores were also present among people doing cardio exercise and those, who did combination of cardio and strength exercise as oppose to doing only one type of exercise.

Table 10 *Table illustrating multiple regression model with stress.*

	Unstandardised Coefficients		Standardised Coefficient	t	Sig
	B	Std. Error	Beta		
(Constant)	41.97	5.87		7.15	.000
Optimism	-.81	.19	-.39	-4.29	.000
Family support	-.53	.39	-.12	-1.35	.179

Dependent Variable: Stress

R squared = .193, Adjusted R squared = .177

Table 10 above, illustrates the final regression model with stress. The result of this regression indicates that optimism and family support explained 17.7 % of the variance in stress scores ($R^2=.187$, $F(2,99)=11.85$, $p<.001$). As the table shows optimism accounted for the most variance in stress. As optimism and family support increased the lower were the reported stress scores.

Table 11 *Table illustrating multiple regression model with depression.*

	Unstandardised Coefficients		Standardised Coefficient	t	Sig
	B	Std. Error	Beta		
(Constant)	46.44	4.79		9.69	.000
Optimism	-1.10	.15	-.57	-7.11	.000
Family support	-.75	.32	-.19	-2.37	.020

Dependent Variable: Depression

R squared = .401, Adjusted R squared = .388

Table 11 above, illustrates the final regression model with depression. The result of this regression indicates that optimism and family support explained 38.8 % of the variance in depression scores ($R^2=.39$, $F(2,99) = 33.07$, $p < .001$). As the table shows optimism accounted for the most variance in depression. As optimism and family support increased the lower were the reported depression scores.

Table 12 *Table illustrating multiple regression model with life satisfaction.*

	Unstandardised Coefficients		Standardised Coefficient	t	Sig
	B	Std. Error	Beta		
(Constant)	-1.93	2.97		-.65	.518
Optimism	.39	.12	.31	3.22	.002
Self efficacy	.22	.10	.21	2.19	.031
Family support	1.07	.19	.42	5.62	.000

Dependent Variable: Life satisfaction

R squared = .492, Adjusted R squared = .476

Table 11 above illustrates the final regression model with life satisfaction, where family support, optimism and self efficacy explained 47.6 % of the variance in its scores ($R^2=.48$, $F(3,95)=30.71$, $p<.001$). As the table shows, family support and optimism accounted for the most variance in life satisfaction. As family support, optimism, and self efficacy increased the life satisfaction scores also increased.

Table 13 *Table illustrating multiple regression model with GHQ.*

	Unstandardised Coefficients		Standardised Coefficient	t	Sig
	B	Std. Error	Beta		
(Constant)	42.89	2.81		15.22	.000
Optimism	-.52	.09	-.48	-5.76	.000
Family support	-.49	.19	-.22	-2.62	.010

Dependent Variable: GHQ

R squared = .328, Adjusted R squared = .314

Table 13 above, illustrates the final regression model with GHQ. The result of this regression indicates that optimism and family support explained 31.4 % of the variance in GHQ scores ($R^2=.31$, $F(2,99)=24.15$, $p<.001$). As the table shows optimism accounted for the most variance in GHQ. As optimism and family support increased the lower were the reported GHQ scores.

Discussion.

The purpose of this study was to examine the influence of coping behaviours and exercise on well-being. In addition, present study was expected to filter out the coping behaviours, which could have the biggest contribution in mental health promotion and mental ill health prevention. There were five sub-hypotheses, which addressed various coping behaviours and the associations with well-being measures.

In relation to the first hypothesis, current study provided evidence that frequency of exercise has significant positive correlation with happiness, however there was no correlation between weekly exercise and stress, anxiety, depression or life satisfaction. This relationship with happiness was found in accordance with Lathia's et al., (2017) study and it can be concluded that the higher the frequency of exercise the higher the level of happiness. The happiness regression model in the current study showed that weekly exercise was present as one of the predictors of happiness. The lack of relationship between weekly exercise and anxiety and depression did not support conclusions of Tyson et al., (2016) study on dose-response relationship between those variables. The absence of relationship between weekly exercise and stress also did not support Hammer et al., (2009) study, where the negative correlation between those variables was found to be very strong.

In case of the second hypothesis, current study provided evidence that participants doing cardiovascular exercise had different levels of anxiety in comparison to those, who did not do cardiovascular exercise. This result was in accordance with Salmon's (2010) statement on importance of cardiovascular exercise in lowering anxiety levels. The anxiety regression model, in the present study, revealed negative relationship between cardiovascular exercise and anxiety, as well as showed that cardiovascular exercise was one of the negative predictors of anxiety. However the differences in levels of stress and depression between the

participants, who did and did not do cardiovascular exercise were present, they were not significant as the T test determined therefore this finding did not support Salmon's (2010) unifying theory that exercise has antidepressant and stress-reducing effects. This study also did not provide any evidence on differences in happiness or life satisfaction between cardiovascular and non cardiovascular group.

In case of third hypothesis, current study provided evidence that participants doing both types of exercise (cardiovascular and strength) had different levels of anxiety in comparison to those, who did only one type of exercise. This result was in accordance with findings of Strickland et al., (2014), and confirmed the statement, that combining both types of exercise can have a significant effect on lowering anxiety levels. According to Strickland et al., (2014) during the exercise intervention, the use of cardiovascular (aerobic) exercise on its own failed, but when combined with strength exercise, the intervention produced significantly lower anxiety levels. The anxiety regression model, in the present study, revealed negative relationship between doing both types of exercise and anxiety, as well as showed that combining both types of exercise was one of the negative predictors of anxiety. However, the differences in levels of stress and depression between the participants, who combined two types of exercise and those, who only did either cardiovascular or strength exercise were present, they were not significant. Current study also did not provide evidence to differences in happiness or life satisfaction between the participants combining both types of training and those, who did only one type of exercise, however there is a growing body of research that confirms the association between exercise and well-being (Sharma, Madaan and Petty, 2005; Aidar et al., 2014) and exercise should not be dismissed as an influencing factor on mental health .

It can be concluded that in relation to physical activity as behaviour influencing well-being, the most effective way to improve mental health through exercise may be to combine cardiovascular and strength exercise to provide greater exposure to a wider range of benefits.

In relation to the fourth hypothesis, current study provided evidence to the very strong relationship between family support and well-being measures. Findings of this study were in accordance with finding of Ozbay et al., (2007) on strong negative relationship between stress and social support, and Roohafza et al., (2014) study on strong negative relationship between anxiety, depression and social support. Family support, friends support and gym support had significant correlation with happiness. This result was with accordance to the study by Liping (2001), who concluded that interpersonal support, which includes spouse, partner, friends, neighbours or colleagues, was significant predictor of happiness. Regression models for all the outcome measures showed strong predicting value of family support.

In relation to control, current study provided evidence that there is significant positive correlation between control and happiness and control and life satisfaction and this finding is in accordance with Amoura et al., (2014) statement, that the higher the perception of control the better the mental state of an individual. Current study, however did not confirm findings of Sherman's et al., (2012) study on negative correlation between stress and control levels.

In case of the fifth hypothesis, current study provided evidence to the statement that there will be a correlation between well-being measures and optimism, and between well-being measures and self-efficacy. In relation to the optimism and outcome measures, happiness and life satisfaction had strong positive correlation with optimism, and this finding was in accordance with findings of Kiyanzad et al., (2016). Furthermore very strong negative correlation was established between optimism and adverse indicators of well-being: stress,

anxiety and depression, what was in accordance with findings of Rajandram et al., (2011) and Kepka et al., (2013). The regression models for all the outcome measures showed strong predicting value of optimism.

Present study found very strong correlation between self-efficacy and all outcome measures. A positive correlation was established between happiness and self-efficacy as well as between life satisfaction and self-efficacy, which confirmed findings of Erozuman et al., (2016). Negative correlation was found between self-efficacy and adverse indicators of well-being: stress, anxiety and depression, these findings were in accordance with study results of Tahmassian et al., (2011) and Conner (2015).

The results of multiple regressions had shown, which coping behaviours were the key influence variables in predicting single outcome measure.

Predictors of the well-being measures (happiness and life satisfaction).

The regression model with happiness, had shown that optimism, family support, gym support, weekly exercise and self efficacy explained 27.3% of variance in happiness scores, however the two key variables, which accounted for most variance were optimism and family support. In case of regression model with life satisfaction, family support, optimism and self-efficacy explained 47.6% of variance in life satisfaction scores, however similarly to happiness, family support and optimism accounted for most variance. The same variables accounting for the most variance in both measures, could be explained by close relationship between happiness and life satisfaction, where it is important to note that life satisfaction, can be considered as a cognitive aspect of happiness (Erouzabi et al., 2016).

Predictors of the adverse indicators of well-being measures.

The regression model with stress, had shown, that optimism and family support explained 17.7% variance, however optimism accounted for the most variance in stress scores. The regression model with GHQ had shown the same variables explaining 31.4% of the variance, with optimism accounting for the most variance. The regression model with anxiety, had shown that optimism accounted for the most variance and along with family support, cardiovascular exercise and combined cardiovascular/strength exercise, these variables explained 10.8% of the variance in anxiety scores. The regression model with depression had shown that optimism and family support explained 38.8% of variance in depression scores, however optimism accounted for the most variance.

The key predictor variable, which had accounted for the most variance in all the examined well-being measures, was **optimism**. Previous research examining optimism and stress coping mechanisms, had found optimism to be associated with problem-focused coping strategies (Strutton and Lumpkin, 1992). Furthermore, previous research had also provided an evidence that problem-focused coping strategies are more effective than emotion-focused coping strategies (Tunkay, Musabak, Gok and Kutlu, 2008). Thompson et al., (2010), stated that problem-focused coping is considered to be an adaptive coping and adaptive coping as oppose to maladaptive coping has more beneficial effects on mental health. Therefore, it can be concluded that optimism, as a coping behaviour, positively influences mental health. Optimism, however is also a personality trait, but research on personality provided evidence to the statement that personality is dynamic, flexible and it undergoes changes over the life span, which are shaped by experience (Dweck, 2008). Furthermore, Seligman (2011), put forward Learned Optimism theory, which states that optimistic viewpoint can be cultivated by an individual, and everyone can learn the technique of recognising and disputing negative thoughts (Seligman, 2011). In the light of the

aforementioned research it can be concluded that optimism could be effectively used in mental health promotion and mental ill health prevention, as according to Seligman (2011), optimism can be elevated.

Coping as a secondary appraisal (Folkman et al., 1986), relates to the question of: what can be done? or how the stress can be managed? Providing answers to these questions involves judgement of the extent of control over the situation that individual can gain, and self-efficacy contributes to this judgment, what in turn effects coping (Chesney et al., 2006). Self-efficacy in the current study was only present as a predictor in the most parsimonious model with happiness, nevertheless it was significantly correlated with all of the outcome measures. Chesney et al., (2006) in the study on Coping Self Efficacy scale, identified three factors, that had significant influence in changing coping styles: using problem-focused coping, rejecting any unpleasant emotions and reaching out to friends and family. Chesney's et al., (2006) study provided evidence to the link between problem-focused coping and social support, which was the second strongest predictor of the well-being across all the well-being measures in the current study.

Present study provided evidence, to a strong predicting relationship between optimism and well-being, and optimism and adverse indicators of well-being. If, the well-being or mental health measures were to be presented on a spectrum, happiness would be on the one end and depression would be on the opposite end of the spectrum. A link established between both ends of the spectrum, was presented in the current study in the form of coping behaviours, which are closely related to stress. Furthermore, a mounting body of evidence suggests that the outcome measures from the opposite ends of well-being spectrum: happiness and depression are also associated with stress. Shiffrin and Nelson (2010) in the study investigating relationship between stress and happiness, concluded that there is a strong negative correlation between these two variables. Orzechowska, Zajackowska, Talarowska

and Galecki (2013) in the study investigating depression and coping with stress, stated that the effect of stress on depression, triggers subsequent phases of the disease. Interestingly the same study concluded that individuals suffering from depression use emotion-focused coping techniques, which were found to be ineffective (Orzechowska et al., 2013). Taking into consideration results of the current study, and complex interconnections between all the predictor and criterion variables, it can be concluded that all of the predicting variables had influence on some, or on all of the outcome measures. Therefore, in the light of the aforementioned studies, the concept of coping behaviours can be referred to all the items on the well-being spectrum.

Implications

Taking into consideration increasing costs of health care across all the European countries including Ireland (OECD.org), prevention and promotion of health would seem to be a good pro active approach to address the issue (Min et al., 2013). Present study identified factors influencing whole spectrum of well-being, with two top variables accounting for most of the variance in all of the outcome measures (optimism and family support). It would be crucial for mental health promotion and ill mental health prevention campaign to use these two factors and focus on emphasising their importance in daily lives of people. However, taking into consideration mounting body of evidence for the role of exercise as coping behaviour (Hammer et al., 2006) as well as use of exercise in prevention and treatment of psychological disorders (Dubbert, (2002), Goodwin (2003), (Tyson et al., 2010), Salmon (2001)), even though current study only found frequency of exercise as one of the predictors of happiness and cardiovascular exercise as one of the predictors of anxiety, it would be crucial for the mental health campaign to include the exercise as one of the influencing factors. Suggestion to

include exercise into the health campaign has foundations in the Biopsychosocial Model proposed by George Engel in 1970's (Hatala, 2012), where three important domains were mentioned in order to better understand health and illness. Biological factor of the model relates to the genetic makeup of the individual, however, it is important to note that contemporary research provided evidence to effect of exercise on gene expression (Rodrigues et al., 2015). Rodrigues et al., (2015) in the study on rats, had found that exercise has potential to modulate changes in DNA methylation and gene expression, in consequence to stress treatment. Another words, the damaging effects of stress on the brain cells can be reversed through exercise. Psychological domain of the model relates to behaviour and emotions, and influential role of optimism, as the present study established, would fit within this area. Social domain of the model represents social context, and influential role of family support, also established by the present study, would fit within this area.

Strengths

One of the strengths of the study is the wide range of coping behaviours used along with five well-being measures. With complexity of mental health in mind, this study managed to find the common predictor for adverse indicators of well being and endorsing indicators of well-being and draw conclusions, which may impact on mental health promotion and prevention of mental illness.

Limitations

The limitation of the study is sample size, as in relation to number of measured variables the expected ratio should be forty participants per variable. The sample type is also considered as a limitation as the sample is dominated mainly by regularly exercising adults.

Conclusions

Present study examined the influence of the various coping behaviours on well-being and concluded that all the coping behaviours : exercise, support, control, optimism and self-efficacy had association with some or all of the well-being measures. However, only two coping behaviours were determined as predictors for ALL the examined adverse and endorsing well-being measures. The two described variables are: optimism and family support, but only optimism accounted for the most variance in the well-being scores. This evidence, could have serious implication in mental health promotion and prevention of mental illness.

Solutions to complex mental problems do not have to be necessarily complex themselves, and sometimes simple interventions of increasing the awareness in relation to importance of optimism and family or social support, in people's lives, may bring unexpected results, and as quoted by Albert Einstein: "Everything should be made as simple as possible but not simpler" (Sessions, 1950).

Future research

It is recommended, that the future research conducts a study to examine the influence of coping behaviours on well-being, with bigger general population sample. It is also recommended that experimental approach should be used in assessing the impact of exercise intervention, also the optimism intervention can be design to build upon the results of this study to examine how optimism levels can change with use of Seligman's Learn Optimism theory (Seligman, 2011).

References

- Abdel-Khalek, A. M. (2006). Measuring happiness with a single-item scale. *Social Behavior and Personality: an international journal*, 34(2), 139-150.
- Aidar, F. J., Gama de Matos, D., Jacó de Oliveira, R., Carneiro, A. L., Tinôco Cabral, B. G. D. A., Moreira Silva Dantas, P., & Machado Reis, V. (2014). Relationship between depression and strength training in survivors of the ischemic stroke. *Journal of human kinetics*, 43(1), 7-15.
- Amoura, C., Berjot, S., Gillet, N., & Altintas, E. (2014). Desire for control, perception of control: their impact on autonomous motivation and psychological adjustment. *Motivation and Emotion*, 38(3), 323-335.
- Bandura, A. (1998). Health promotion from the perspective of social cognitive theory. *Psychology and health*, 13(4), 623-649.
- Baron R. A. Braanscombe N.R. *Social Psychology*. 13thed . United States of America. Pearson education. 2012.
- Bouayed, J., Rammal, H., & Soulimani, R. (2009). Oxidative stress and anxiety: relationship and cellular pathways. *Oxidative Medicine and Cellular Longevity*, 2(2), 63-67.
- Boyce, W. T., & Ellis, B. J. (2005). Biological sensitivity to context: I. An evolutionary–developmental theory of the origins and functions of stress reactivity. *Development and psychopathology*, 17(02), 271-301.
- Chesney, M. A., Neilands, T. B., Chambers, D. B., Taylor, J. M., & Folkman, S. (2006). A validity and reliability study of the coping self-efficacy scale. *British journal of health psychology*, 11(3), 421-437.

Cohn, M. A., Fredrickson, B. L., Brown, S. L., Mikels, J. A., & Conway, A. M. (2009). Happiness unpacked: positive emotions increase life satisfaction by building resilience. *Emotion, 9*(3), 361.

Conner, M. (2015). Self-efficacy, stress, and social support in retention of student registered nurse anaesthetists. *AANA journal, 83*(2).

Conversano, C., Rotondo, A., Lensi, E., Della Vista, O., Arpone, F., & Reda, M. A. (2010). Optimism and its impact on mental and physical well-being. *Clinical Practice & Epidemiology in Mental Health, 6*(1).

Department of health website: <http://health.gov.ie/publications-research/statistics/statistics-by-topic/health-expenditure/>

Diener, E. D., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of personality assessment, 49*(1), 71-75.

Dolan, P., Peasgood, T. & White, M., 2008, Do we really know what makes us happy A review of the economic literature on the factors associated with subjective well-being, *Journal of Economic Psychology, 29*(1), pp. 94-122.

Dubbert, P. M. (2002). Physical activity and exercise: Recent advances and current challenges. *Journal of Consulting and Clinical Psychology, 70*(3), 526.9-92.

Dweck, C. S. (2008). Can personality be changed? The role of beliefs in personality and change. *Current directions in psychological science, 17*(6), 391-394.

Erozkan, A., Dogan, U., & Adiguzel, A. (2016). Self-efficacy, Self-esteem, and Subjective Happiness of Teacher Candidates at the Pedagogical Formation Certificate Program. *Journal of Education and Training Studies, 4*(8), 72-82.

- Folkman, S., Lazarus, R. S., Dunkel-Schetter, C., DeLongis, A., & Gruen, R. J. (1986). Dynamics of a stressful encounter: cognitive appraisal, coping, and encounter outcomes. *Journal of personality and social psychology*, 50(5), 992.
- Gibbons, C. (2008). *Measuring Stress and Eustress in Nursing Students* (Doctoral dissertation, Queen's University Belfast).
- Gibbons, C., Dempster, M., & Moutray, M. (2009). Index of sources of stress in nursing students: a confirmatory factor analysis. *Journal of Advanced Nursing*, 65(5), 1095-1102.
- Goldberg, D., Williams, P., & Williams, P. (1988). *A user's guide to the General Health Questionnaire*. NFER Nelson Publishing.
- Gerber, M., & Pühse, U. (2009). Review article: do exercise and fitness protect against stress-induced health complaints? A review of the literature. *Scandinavian journal of public health*, 37(8), 801-819.
- Goodwin, R. D. (2003). Association between physical activity and mental disorders among adults in the United States. *Preventive medicine*, 36(6), 698-703.
- Grant, F., Guille, C., & Sen, S. (2013). Well-being and the risk of depression under stress. *PloS one*, 8(7), e67395.
- Hamer, M., Taylor, A., & Steptoe, A. (2006). The effect of acute aerobic exercise on stress related blood pressure responses: a systematic review and meta-analysis. *Biological psychology*, 71(2), 183-190.
- Hamer, M., Stamatakis, E., & Steptoe, A. (2009). Dose-response relationship between physical activity and mental health: the Scottish Health Survey. *British journal of sports medicine*, 43(14), 1111-1114.

Hatala, A. R. (2012). The status of the “biopsychosocial” model in health psychology: Towards an integrated approach and a critique of cultural conceptions. *Open Journal of Medical Psychology*, 2012, 1, 51-62. dx.doi.org/10.4236/ojmp.2012.14009.

Jackson, C. (2007). The general health questionnaire. *Occupational medicine*, 57(1), 79-79.

Jerusalem, M., & Schwarzer, R. (1992). Self-efficacy as a resource factor in stress appraisal processes. *Self-efficacy: Thought control of action*, 195213.

Kepka, S., Baumann, C., Anota, A., Buron, G., Spitz, E., Auquier, P., ... & Mercier, M. (2013). The relationship between traits optimism and anxiety and health-related quality of life in patients hospitalized for chronic diseases: data from the SATISQOL study. *Health and quality of life outcomes*, 11(1), 134.

Kesebir, P., & Diener, E. (2008). In pursuit of happiness: Empirical answers to philosophical questions. *Perspectives on psychological science*, 3(2), 117-125.

Kiyanzad, S., Kajbaf, M.B., & Phayazi, M., (2015). Examine The Relationship Between Happiness And Life Orientation (Optimism And Pessimism) Students Of Faculty Of Psychology, University Of Isfahan. *Indian Journal of Fundamental and Applied Life Sciences*, 6 (S1), 290-297.

Krohne, H. W. (2001). Stress and coping theories. *The international encyclopedia of the social and behavioural sciences*, 22, 15163-15170.

Lathia, N., Sandstrom, G. M., Mascolo, C., & Rentfrow, P. J. (2017). Happier People Live More Active Lives: Using Smartphones to Link Happiness and Physical Activity. *PLoS One*, 12(1), e0160589.

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer publishing company.

Liping, X. Z. C. (2001). THE RELATIONSHIP BETWEEN HAPPINESS AND SOCIAL SUPPORT [J]. *Journal of Chinese Psychology Acta Psychologica Sinica*, 5, 009.

Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour research and therapy*, 33(3), 335-343.

Lupien, S. J., Maheu, F., Tu, M., Fiocco, A., & Schramek, T. E. (2007). The effects of stress and stress hormones on human cognition: Implications for the field of brain and cognition. *Brain and cognition*, 65(3), 209-237.

Magalhaes, A. C., Holmes, K. D., Dale, L. B., Comps-Agrar, L., Lee, D., Yadav, P. N., ... & Anisman, H. (2010). CRF receptor 1 regulates anxiety behaviour via sensitization of 5-HT₂ receptor signaling. *Nature neuroscience*, 13(5), 622-629.

Mason, J. W. (1971). A re-evaluation of the concept of 'non-specificity' in stress theory. *Journal of Psychiatric research*, 8, 323-333.

Maher, J. P., Pincus, A. L., Ram, N., & Conroy, D. E. (2015). Daily Physical Activity and Life Satisfaction across Adulthood. *Developmental Psychology*, 51(10), 1407-1419.
doi.org/10.1037/dev0000037

Min, J. A., Lee, C. U., & Lee, C. (2013). Mental health promotion and illness prevention: a challenge for psychiatrists. *Psychiatry investigation*, 10(4), 307-316.

Orzechowska, A., Zajęczkowska, M., Talarowska, M., & Gałęcki, P. (2013). Depression and ways of coping with stress: A preliminary study. *Medical Science Monitor*, 19, 1050-1056.

- Ozbay, F., Fitterling, H., Charney, D., & Southwick, S. (2008). Social support and resilience to stress across the life span: a neurobiologic framework. *Current psychiatry reports*, *10*(4), 304-310.
- Park, C. L., & Iacocca, M. O. (2014). A stress and coping perspective on health behaviors: theoretical and methodological considerations. *Anxiety, Stress & Coping*, *27*(2), 123-137.
- Pavey, T. G., Burton, N. W., & Brown, W. J. (2015). Prospective relationships between physical activity and optimism in young and mid-aged women. *Journal of Physical Activity and Health*, *12*(7), 915-923.
- Pavot, W., & Diener, E. (1993). Review of the satisfaction with life scale. *Psychological assessment*, *5*(2), 164.
- Peterson, C., & Seligman, M. E. (2004). *Character strengths and virtues: A handbook and classification* (Vol. 1). Oxford University Press.
- Pettit, J. W., Kline, J. P., Gencoz, T., Gencoz, F., & Joiner, T. E. (2001). Are happy people healthier? The specific role of positive affect in predicting self-reported health symptoms. *Journal of Research in Personality*, *35*(4), 521-536.
- Puterman, E., Lin, J., Blackburn, E., O'Donovan, A., Adler, N., & Epel, E. (2010). The power of exercise: buffering the effect of chronic stress on telomere length. *PLoS One*, *5*(5), e10837.
- Rajandram, R. K., Ho, S. M., Samman, N., Chan, N., McGrath, C., & Zwahlen, R. A. (2011). Interaction of hope and optimism with anxiety and depression in a specific group of cancer survivors: a preliminary study. *BMC research notes*, *4*(1), 519.
- Rawson, H. E., Bloomer, K., & Kendall, A. (1994). Stress, anxiety, depression, and physical illness in college students. *The Journal of Genetic Psychology*, *155*(3), 321-330.

- Rodrigues, G. M., Toffoli, L. V., Manfredo, M. H., Francis-Oliveira, J., Silva, A. S., Raquel, H. A., ... & Gomes, M. V. (2015). Acute stress affects the global DNA methylation profile in rat brain: modulation by physical exercise. *Behavioural brain research*, 279, 123-128.
- Roohafza, H., Afshar, H., Keshteli, A. H., Mohammadi, N., Feizi, A., Taslimi, M., & Adibi, P. (2014). The association of perceived social support and coping styles With depression and anxiety. *Journal of Research in Medical Sciences*, 19(10).
- Ruch, W., Proyer, R. T., Harzer, C., Park, N., Peterson, C., & Seligman, M. E. (2010). Values in action inventory of strengths (VIA-IS): adaptation and validation of the German version and the development of a peer-rating form. *Journal of individual differences*, 31(3), 138.
- Salmon, P. (2001). Effects of physical exercise on anxiety, depression, and sensitivity to stress: a unifying theory. *Clinical psychology review*, 21(1), 33-61.
- Sam, A. T., Muttusamy, B., Yee, S. M., Ayapanaido, T., & Parasuraman, S. (2016). Investigation of Stressors Affecting a sample of Pharmacy Students and the Coping Strategies Employed using Modified Academic Stressors Scale and Brief Cope Scale: a Prospective Study. *Journal of Young Pharmacists*, 8(2), 122.
- Seligman, M. E. (2011). *Learned optimism: How to change your mind and your life*. Vintage.
- Schwarzer, R., Bäßler, J., Kwiatek, P., Schröder, K., & Zhang, J. X. (1997). The assessment of optimistic self-beliefs: comparison of the German, Spanish, and Chinese versions of the general self-efficacy scale. *Applied Psychology*, 46(1), 69-88.
- Stroud, C. B., Davila, J., & Moyer, A. (2008). The relationship between stress and depression in first onsets versus recurrences: a meta-analytic review. *Journal of abnormal psychology*, 117(1), 206.

Szabo, S., Tache, Y., & Somogyi, A. (2012). The legacy of Hans Selye and the origins of stress research: a retrospective 75 years after his landmark brief “letter” to the editor# of nature. *Stress, 15*(5), 472-478.

Shankar, P. R., Balasubramaniam, R., Ramireddy, R., Diamante, P., Barton, B., & Dwivedi, N. R. (2014). Stress and coping strategies among premedical and undergraduate basic science medical students in a Caribbean medical school. *Education in Medicine Journal, 6*(4).

Sharma, A., Madaan, V., & Petty, F. D. (2005). Exercise for mental health. *Primary care companion to the Journal of clinical psychiatry, 8*(2), 106-106.

Sherman, G. D., Lee, J. J., Cuddy, A. J., Renshon, J., Oveis, C., Gross, J. J., & Lerner, J. S. (2012). Leadership is associated with lower levels of stress. *Proceedings of the National Academy of Sciences, 109*(44), 17903-17907.

Sessions, R. (1950). How a “difficult” composer gets that way. *New York Times, 89*.

Schifffrin, H. H., & Nelson, S. K. (2010). Stressed and happy? Investigating the relationship between happiness and perceived stress. *Journal of Happiness Studies, 11*(1), 33-39.

Strickland, J. C., & Smith, M. A. (2014). The anxiolytic effects of resistance exercise. *Frontiers in psychology, 5*, 753.

Strutton, D., & Lumpkin, J. (1992). Relationship between optimism and coping strategies in the work environment. *Psychological Reports, 71*(3), 1179-1186.

Tahmassian, K., & Jalali Moghadam, N. (2011). Relationship between self-efficacy and symptoms of anxiety, depression, worry and social avoidance in a normal sample of students. *Iranian journal of psychiatry and behavioral sciences, 5*(2), 91-98.

Taylor, C. B., Sallis, J. F., & Needle, R. (1985). The relation of physical activity and exercise to mental health. *Public health reports*, 100(2), 195.

Thompson, R. J., Mata, J., Jaeggi, S. M., Buschkuehl, M., Jonides, J., & Gotlib, I. H. (2010). Maladaptive coping, adaptive coping, and depressive symptoms: Variations across age and depressive state. *Behaviour research and therapy*, 48(6), 459-466.

Tran, T. D., Tran, T., & Fisher, J. (2013). Validation of the depression anxiety stress scales (DASS) 21 as a screening instrument for depression and anxiety in a rural community-based cohort of northern Vietnamese women. *BMC psychiatry*, 13(1), 24.

Tuncay, T., Musabak, I., Gok, D. E., & Kutlu, M. (2008). The relationship between anxiety, coping strategies and characteristics of patients with diabetes. *Health and quality of life outcomes*, 6(1), 79.

Tyson, P., Wilson, K., Crone, D., Brailsford, R., & Laws, K. (2010). Physical activity and mental health in a student population. *Journal of mental health*, 19(6), 492-499.

Vaida, L., Todor, B. I., Bertossi, D., & Corega, C. (2015). Correlations between Stress, Anxiety and Coping Mechanisms in Orthodontic Patients. *Iranian journal of public health*, 44(1), 147.

Walsh, R. (2011). Lifestyle and mental health. *American Psychologist*, 66(7), 579.

WHO. Retrieved from website: <http://www.who.int/mediacentre/factsheets/fs317/en/>

WHO Mental Health Action Plan 2013-2020. Retrieved from website:

http://apps.who.int/iris/bitstream/10665/89966/1/9789241506021_eng.pdf?ua=1

World Health Organization. (2012). Measurement of and target-setting for well-being: an initiative by the WHO Regional Office for Europe. Retrieved from website:

http://www.euro.who.int/_data/assets/pdf_file/0009/181449/e96732.pdf

OECD. Retrieved from website:

[http://www.oecd.org/health/healthcarecostsunsustainableinadvancedeconomieswithoutreform
.htm](http://www.oecd.org/health/healthcarecostsunsustainableinadvancedeconomieswithoutreform.htm)

Appendices

Participant information sheet.**Study on : Stress, Coping Mechanisms and Life Satisfaction**

My name is Sylwia Majszyk. I am a final year student in Dublin Business School and I'm conducting research that explores stress, coping mechanisms and mental health awareness among adults, as part of my thesis in the Department of Psychology.

You are invited to take part in this study and your participation involves completing this anonymous survey. This survey has been used widely in the research however some questions might cause some minor negative feelings. If this occurs - contact information for support services are included below.

Participation is completely voluntary and so you are not obliged to take part.

Participation is anonymous and confidential - responses cannot be attributed to any one participant. For this reason, it will not be possible to withdraw from participation after you have submitted your survey.

It is important that you understand that you are consenting to participate in the study by completing and submitting the questionnaire.

Please note that this research will be submitted for examination and presented in class in a group setting, all data will be disseminated one year after the exam .

Should you require any further information about the research or have interest in the results of the study please contact me on xxxxxx@mydbs.ie.

Thank you in advance for taking the time to complete this survey.

*Required:

If you consent to participate in this research please provide your signature below:

Signed : _____ Date: _____

Please keep one copy of this information sheet for yourself, and return signed copy separately in the provided small self sealed envelope. Your answers to research questions, can be returned in the brown self sealed envelope. There is a different 'letter box' for both of those envelopes in the Gym/Studio.

I would appreciate if you could also take one copy set of this survey and give it to the person you know, who is not a member of the gym/studio and ask on my behalf if they could kindly fill it out , put it in a sealed envelope and return.

Contact Details Sheet

If you feel that answering this survey has raised some issues for you, please consider contacting some of the support services listed below, or speak to a friend, family member or professional.

Aware:

The Aware Support Line 1890 303 302

Available Monday – Sunday, 10am to 10pm.

Email for support at: supportmail@aware.ie

Samaritans

Call on: 116 123

Available 24hrs a day, 365 days a year. Free to call.

Email: jo@samaritans.org

Please answer ALL questions in the questionnaire

Please (v) tick or circle your answers:

1. What sex are you?

- Male
- Female

2. What age are you (please write)

3. What is your level of education?

- Junior Certificate / O levels
- Leaving Certificate / A levels
- Level 6 Certificate (advanced/higher)
- Level 7 Ordinary Degree
- Level 8 Honours Degree/Higher Diploma
- Level 9 Masters/Post-graduate Diploma
- Level 10 Doctorate/Higher Doctorate

4. What is your marital status?

- Married
- Single/never married
- Widowed
- Separated/divorced

5. Approximately what is your annual income?

- 0 - Don't work
- less than 10000
- 10000-19999
- 20000-29999
- 30000-39999
- 40000-49999
- 50000+

6. Do you have a job?

- Yes
- No

7. Is your job full-time or part-time?

- Full-time
- Part-time

8. How many hours a week do you work?

9. How would you rate your overall physical health? Please indicate on the scale from 1 to 10 (0 - Very Poor, 10 - Excellent).

0 1 2 3 4 5 6 7 8 9 10



10. How would you rate your happiness? Please indicate on the scale from 1 to 10 (0 - Not happy, 10 - Very happy).

0 1 2 3 4 5 6 7 8 9 10



11. Would you say you have a good understanding about importance of a balanced diet?

- Yes
- No

12. Do you train in (can be more than 1 answer):

- Cross Fit Gym
- TRX Studio
- Yoga or Pilates Studio
- Commercial Gym
- Athletic Club / Harriers
- Boxing Club / Martial arts
- Fitness classes in local venue/ hall
- Your own place indoors / outdoors
- I do not exercise

13. How many gym/studio based training sessions a week would you engage in (mark one answer)?

0 1 2 3 4 5 6 7 8 9 10

14. How many times a week do you exercise outside the gym/studio (mark one answer)?

0 1 2 3 4 5 6 7 8 9 10

15. How many weeks have you been exercising on your own, in a group or as a part of the gym/studio?

16. How long since you have started to participate in regular exercise as a member, or as a guest in a gym or studio? Please answer in weeks.

17. What type of training/activity do you prefer (You may tick more than one option):

- Cardio
- Strength
- Relaxation/Flexibility (ie.,Yoga, Pilates)

18. Would you have portion of nuts and seeds per day?

- Yes
- No

19. How many portions of fruit and vegetables would you have per day?

20. On a scale 1 to 10 please indicate, how much you value the level of support offered by your family:

0 1 2 3 4 5 6 7 8 9 10

21. On a scale 1 to 10 please indicate, how much you value the level of support offered by your friends:

0 1 2 3 4 5 6 7 8 9 10

22. On a scale 1 to 10 please indicate, how much you value the level of support offered by those you see and chat to at the gym/studio:

0 1 2 3 4 5 6 7 8 9 10

Please circle or tick(v) the answer that applies to You the most:

23. I often feel I don't have enough control over the decisions I have to make:

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
----------------	-------	---------	----------	-------------------

24. In general I feel in control of the things that happen to me :

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
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25. The pace of work often leaves me with little feeling of control:

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
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Below are five statements that you may agree or disagree with. Using the 1 - 7 scale below, indicate your agreement with each item by placing the appropriate number on the line preceding that item. Please be open and honest in your responding.

- 7 - Strongly agree
- 6 - Agree
- 5 - Slightly agree
- 4 - Neither agree nor disagree
- 3 - Slightly disagree
- 2 - Disagree
- 1 - Strongly disagree

26. _____ In most ways my life is close to my ideal.
27. _____ The conditions of my life are excellent.
28. _____ I am satisfied with my life.
29. _____ So far I have gotten the important things I want in life.
30. _____ If I could live my life over, I would change almost nothing.

Please circle or tick(v) the answer that applies to You the most:

31.(I) Look on the bright side:

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
----------------	-------	---------	----------	-------------------

32. (I) Can find positive in what seems negative to others:

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
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33. (I) Remain hopeful despite challenges:

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
----------------	-------	---------	----------	-------------------

34. (I) Will succeed with the goals set for myself:

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
----------------	-------	---------	----------	-------------------

35. (I) Think about what is good in my life when I feel down:

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
----------------	-------	---------	----------	-------------------

36. (I) Expect the worst:

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
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37. (I) Have no plan for my life five years from now:

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
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38. (I) Am not confident that my way of doing things will work out for the best:

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
----------------	-------	---------	----------	-------------------

The following items ask about your general health *over the past few weeks*. Please answer all the questions simply by circling or ticking (v) the answer that you think most nearly applies to you. Remember that we want to know about your present and recent complaints, not those you had in the past. It is important that you try to answer all the questions.

Have you recently:

39. been able to concentrate on whatever you're doing?	Better than usual	Same as usual	Less than usual	Much less than usual
40. lost much sleep over worry?	Not at all	No more than usual	Rather more than usual	Much more than usual
41. felt that you are playing a useful part in things?	More so than usual	Same as usual	Less useful than usual	Much less useful
42. felt capable of making decisions about things?	More so than usual	Same as usual	Less so than usual	Much less capable
45. felt constantly under strain?	Not at all	No more than usual	Rather more than usual	Much more than usual
46. felt you couldn't overcome your difficulties?	Not at all	No more than usual	Rather more than usual	Much more than usual

47. been able to enjoy your normal day-to-day activities?	More so than usual	Same as usual	Less so than usual	Much less than usual
48. been able to face up to your problems?	More so than usual	Same as usual	Less able than usual	Much less able
49. been feeling unhappy and depressed?	Not at all	No more than usual	Rather more than usual	Much more than usual
50. been losing confidence in yourself?	Not at all	No more than usual	Rather more than usual	Much more than usual
51. been thinking of yourself as a worthless person?	Not at all	No more than usual	Rather more than usual	Much more than usual
52. been feeling reasonably happy, all things considered?	More so than usual	About same as usual	Less so than usual	Much less than usual

Please answer all the questions simply by circling or ticking (v) the answer that you think most nearly applies to you.

	Not at all true	Barely True	Moderately true	Exactly true
53. I can always manage to solve difficult problems if I try hard enough.	1	2	3	4
54. If someone opposes me, I can find means and ways to get what I want.	1	2	3	4

55. It is easy for me to stick to my aims and accomplish my goals.	1	2	3	4
56. I am confident that I could deal efficiently with unexpected events.	1	2	3	4
57. Thanks to my resourcefulness, I know how to handle unforeseen situations.	1	2	3	4
58. I can solve most problems if I invest the necessary effort.	1	2	3	4
59. I can remain calm when facing difficulties because I can rely on my coping abilities.	1	2	3	4
60. When I am confronted with a problem, I can usually find several solutions.	1	2	3	4
61. If I am in a bind, I can usually think of something to do.	1	2	3	4
62. No matter what comes my way, I'm usually able to handle it.	1	2	3	4

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you *over the past week*. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

0 - Did not apply to me at all; 1 - Applied to me to some degree, or some of the time; 2 - Applied to me to a considerable degree, or a good part of time; 3 - Applied to me very much, or most of the time.

63.	I found it hard to wind down	0	1	2	3
64.	I was aware of dryness of my mouth	0	1	2	3
65.	I couldn't seem to experience any positive feeling at all	0	1	2	3
66.	I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
67.	I found it difficult to work up the initiative to do things	0	1	2	3
68.	I tended to over-react to situations	0	1	2	3
69.	I experienced trembling (eg, in the hands)	0	1	2	3
70.	I felt that I was using a lot of nervous energy	0	1	2	3
71.	I was worried about situations in which I might panic and make a fool of myself	0	1	2	3
72.	I felt that I had nothing to look forward to	0	1	2	3
73.	I found myself getting agitated	0	1	2	3
74.	I found it difficult to relax	0	1	2	3
75.	I felt down-hearted and blue	0	1	2	3
76.	I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3
77.	I felt I was close to panic	0	1	2	3
78.	I was unable to become enthusiastic about anything	0	1	2	3
79.	I felt I wasn't worth much as a person	0	1	2	3
80.	I felt that I was rather touchy	0	1	2	3
81.	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)	0	1	2	3
82.	I felt scared without any good reason	0	1	2	3
83.	I felt that life was meaningless	0	1	2	3

