On-campus supervised physical activity programme for university students facing mental health challenges: a feasibility study exploring feasibility, acceptability, fidelity and preliminary effects

Mitra Bahrami

It is submitted in accordance with the requirements for the degree of Masters of Science by Research.

York St John University

School of Science, Technology and Health

February 2026

The candidate confirms that the work submitted is their own and that appropriate credit has been given where reference has been made to the work of others.

Acknowledgements

This research has been carried out by a team which has included Garry A. Tew, Garcia Ashdown-Franks, Martin Bond, Steve Jones, James Sampson and Katie Paterson. My own contributions, fully and explicitly indicated in the thesis, have been as service coordinator and full-time post graduate research student, completing this thesis as an evaluation of the new service. We are very grateful to all the participants for their valuable contributions to this study.

I would also like to express my sincere gratitude to my family, particularly my parents, whose constant encouragement, energy, and unwavering support have been a continuous source of motivation throughout this journey. I am also deeply thankful to my husband for being by my side and providing support during this process.

Abstract

Aims and objectives: University students experience mental health problems, and despite the link between physical activity and improved mental well-being, are often physically inactive. This study evaluated the feasibility, acceptability, fidelity, and preliminary effects of a supervised physical activity programme for students with mild-to-moderate mental health challenges.

Method: This exploratory mixed-methods prospective cohort study assessed a 6-week on-campus supervised physical activity programme, including one 60-minute group session per week and one-to-one behavioural support at the start and end. Participants were recruited via university-wide advertising and self-referral. Health outcomes included physical activity, quality of life (ReQoL), depression (PHQ-9), mental health (MHI-38), muscular strength, and aerobic fitness. Feasibility, acceptability, and fidelity were assessed via analysis of study process data, an exit survey and one-to-one interviews with staff and participants.

Results: Eighteen students joined, with 11 (61%) consenting to research participation (mean age = 19.6 years, 8 females). Six (54.5%) participants completed the intervention and mean attendance was 4.2 sessions (out of 6). All sessions were delivered as scheduled, with individual adaptations where required. The programme was highly acceptable, supported by psychological safety and the small group format. 83.3% rated their experience as “Excellent,” and 100% would recommend it. Quantitative analyses showed statistically significant improvements in depressive symptoms (PHQ-9, p=0.027), recovery-related quality of life (ReQoL, p=0.027), and overall mental health (MHI-38, p=0.043). Physical activity and fitness outcomes were inconclusive due to missing data. Qualitative findings supported improvements in mood, confidence, sleep, and daily functioning, emphasising the importance of psychological safety and staff support.

Conclusion: Supervised, psychologically-informed physical activity programming can be an acceptable component of university wellbeing provision when delivered supportively and flexibly. Preliminary mental health improvements are promising, but findings should be interpreted cautiously due to sample size. Future research with larger, diverse samples and follow-up is needed to evaluate effectiveness, sustainability.

Table of contents

Abbreviations

BDI, Beck Depression Inventory

DSM-5, Diagnostic and Statistical Manual of Mental Disorders

ERS, Exercise Referral Scheme

GAD, Generalized Anxiety Disorder

MDD, Major Depressive Disorder

MHI, Mental Health Inventory

NICE, National institute for Health and Care Excellence

PAR-Q+, Physical Activity Readiness Questionnaire

PHQ-9, Patient Health Questionnaire-9

PSS, Perceived Stress Scale

ReQoL-10, Recovery Quality of Life-10

RET, Resistance exercise training

SDT, Self-Determination Theory

SMI, Serious mental illness

UK, United Kingdom

WHO, World Health Organization

List of figures

List of tables

List of appendices

Chapter 1: General introduction

The significant global burden of mental health disorders is underscored by the estimate that in 2022, 1 in 8 people worldwide, totalling 970 million individuals, were living with such a condition [1]. While the overall prevalence of mental health disorders has remained relatively consistent globally over the past three decades, there is a concerning trend of increasing rates of common conditions like depression and anxiety, particularly among younger populations [2]. Due to the particular stressors that university students encounter, the prevalence of mental health disorders like stress, anxiety and depression among them is higher than the general population [3-7]. In an international survey from the World Health Organization (WHO) World Mental Health Initiative involving over 5,700 young adults aged 18–22 across 21 countries, approximately 20% of college students (defined as university or higher education students in the study) met the diagnostic criteria for at least one common mental health disorder within the past year, with most cases beginning before college enrolment [8]. In the UK, recent data show that over 43% of university students report moderate to severe anxiety symptoms, and more than 47% experience moderate to severe depression. Around 61% report moderate to high levels of stress, and 67% experience moderate to high loneliness [9].

Considering that mental health issues at a young age can lead to low employment rates, poor academic outcomes, and substantial loss of total earnings over the lifetime, a strong research focus on students' mental health is needed [10]. An appropriate intervention must be implemented to help reduce the burden of mental disorders. Increasingly, research indicates that physical activity offers a cost-effective and safe approach to both prevent and treat a variety of mental health issues [11-13].

Nowadays, there is growing interest in the use of physical activity and exercise in the management and treatment of mental health disorders. Evidence from randomised controlled trials indicates that aerobic exercise can reduce depressive symptoms [14], while broader research highlights additional physical, mental, and social benefits of regular exercise [15, 16]. Structured physical activity has been shown to have a positive impact on mental health symptoms in individuals diagnosed with clinical depression, anxiety, and stress-related disorders [16, 17]. As a result, physical activity interventions should be incorporated into the routine care of people with mental disorders [18].

Despite the well-documented and extensive health benefits of physical activity, research from around the world consistently reveals that insufficient numbers of individuals especially undergraduate students, participate in regular physical activity [19, 20]. While systematic reviews and meta-analyses suggest that physical activity interventions can enhance mental health in this population, the overall quality of the evidence is low, and findings are often mixed due to variability in intervention types and study designs [12]. Furthermore, the effects and lived experiences of physical activity programmes specifically tailored to university students with mental health challenges remain underexplored, with only limited pilot studies addressing this gap [21].

In autumn 2024, York St John University launched a physical activity programme for students facing mild-to-moderate mental health challenges. This thesis reports a mixed-methods feasibility study that was conducted to evaluate the acceptability, feasibility, fidelity, and preliminary effects of this new programme, particularly from the perspectives of its participants and key programme stakeholders.

The thesis is structured as follows. Chapter 1 provides an overview of the research context, rationale, and aims of the study. Chapter 2 presents a critical review of the literature relating to physical activity, mental health, and feasibility research in university settings. Chapter 3 outlines the study methodology, including the research design, participants, intervention, and data collection and analysis procedures. Chapter 4 presents the quantitative and qualitative results of the study. Finally, Chapter 5 discusses the findings in relation to existing literature, considers the strengths and limitations of the study, and outlines implications for practice and future research.

Chapter 2: Literature review

2.1 Overview of the literature review purpose and structure

This literature review aims to present a comprehensive overview of existing research related to the study's central themes: mental health challenges among university students and the role of physical activity as an intervention. It will outline the current state of knowledge, identify key theoretical frameworks, and evaluate the evidence supporting physical activity in addressing mental health concerns within this population. The review begins by defining mental health, illness and its disorders, then discusses challenges specific to university students. It proceeds with an in-depth analysis of the link between physical activity and mental health, including supervised interventions, and concludes by considering the feasibility of such interventions and highlighting key gaps in the literature that this study intends to fill.

To conduct this review, six electronic databases were utilised: PubMed, CINAHL, PsycINFO, ScienceDirect, Scopus, and digital dissertations via Ethos. Google Scholar was used for supplementary searches. The keywords used were: mental health disorders, physical activity, university students, exercise, supervised, supervised exercise programme or therapy, and quality of life. The search was limited to English language publications, with no date restrictions. Electronic searches were augmented by examining cross-references, identifying and searching for articles by popular authors, and reviewing references and citations within relevant articles.

2.2 Mental health

Mental health is an integral part of our general health and well-being. Having good mental health means being better able to connect, function, cope and thrive [1]. Over the years, the way mental health is defined and understood has changed significantly. Mental health is much more than just not feeling "sick", it is also about living well and functioning effectively [22]. However, this definition has been reconsidered in more recent literature. For instance, the WHO's updated World Mental Health Report (22, p.8) describes mental health as "a state of mental well-being that enables people to cope with the stresses of life, realise their abilities, learn well and work well, and contribute to their community." This newer definition focuses

more on everyday functioning and resilience, while still recognising the importance of well-being [1].

Corey Keyes [23], in his influential work, introduces the *mental health continuum*, which conceptualises mental health as "a syndrome of symptoms of positive feelings and positive functioning in life" [23, p. 208]. According to this model, individuals may range from *flourishing*, defined as "filled with positive emotion and functioning well psychologically and socially", to *languishing*, which is described as "emptiness and stagnation, constituting a life of quiet despair". This model crucially underscores that being mentally healthy involves more than just not having a mental illness; individuals may still experience low levels of well-being, or languish, even without any clinical diagnosis [23]. The current research integrates the comprehensive Dual-Continuum Model of mental health [24]. In this model, psychological distress and mental well-being operate on two separate yet related continua. The horizontal axis represents the psychological distress continuum, ranging from low to high distress. The vertical axis represents the mental well-being continuum, ranging from low to high well-being. The model suggests that high levels of psychological distress and mental well-being are possible at the same time. It also demonstrates the need to measure both psychological distress and mental well-being together to accurately understand an individual's overall mental health status [24] (Figure 1).

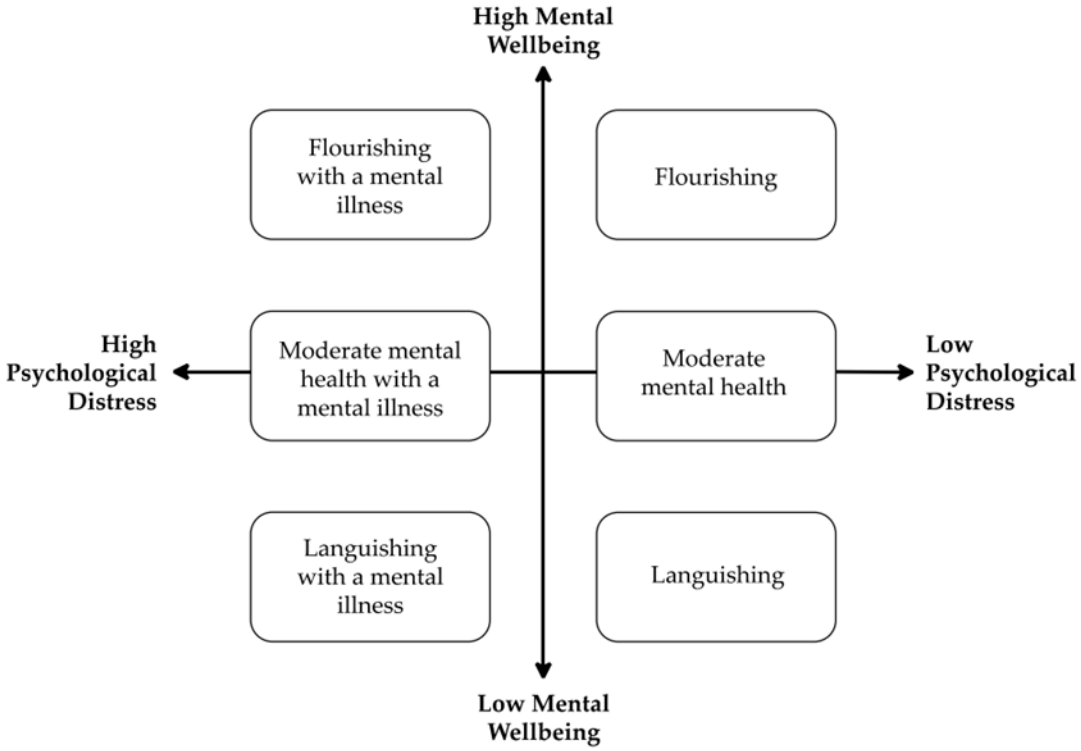


Figure 1 The Mental Health Continuum (Adapted from Keyes, 2002, as presented in Mason Stephens et al [24].

2.2.1 Mental health disorders

Beyond these definitional nuances, it's crucial to acknowledge that mental health conditions exist along a spectrum, ranging from mild symptoms that interfere with everyday functioning to severe psychiatric disorders that can drastically impair one's ability to think, feel, and act. Understanding this continuum is essential to framing how these conditions affect individuals—especially students—on both functional and emotional levels. Indeed, the prevalence of these conditions is remarkably high globally. Whiteford and colleagues in their study "Global burden of disease attributable to mental and substance use disorders" showed that mental health challenges are incredibly common, affecting a substantial portion of the global population [25]. McGrath and colleagues [26], in a comprehensive cross-national study, revealed striking insights into the lifetime prevalence of mental health disorders. Analysing data from over 150,000 individuals across 29 countries, the researchers found that 1 in 2 people are likely to develop a mental health disorder by the age of 75. This large-scale study, part of the World Health Organization's World Mental Health Survey initiative, provides robust evidence that mental health challenges are not only widespread but also touch the lives of a

significant portion of the global population [26]. To better understand the practical implications of this spectrum, it's helpful to categorise these conditions by their severity, ranging from mild to moderate and severe.

2.2.2 Mild to moderate mental health disorders

Although moderate to mild mental health disorders are generally less severe than major conditions, they can still have a substantial impact on individuals' daily functioning and overall quality of life. The most common of these include Generalized Anxiety Disorder (GAD), Social Anxiety Disorder, Panic Disorder, Persistent Depressive Disorder (dysthymia), and mild to moderate depression.

GAD is marked by chronic worry, restlessness, irritability, and difficulty concentrating—even in the absence of obvious stressors. Although it may not fully disrupt a person's life, it can drain cognitive energy and reduce academic engagement [27].

Social Anxiety Disorder involves an intense fear of being judged or embarrassed in social or performance situations. This can prevent students from participating in class discussions, attending events, or forming peer relationships [28].

Panic Disorder is characterised by sudden episodes of intense fear accompanied by physical symptoms like rapid heartbeat, shortness of breath, and dizziness. Even if infrequent, these attacks can cause anticipatory anxiety and avoidance behaviour, particularly in high-pressure environments like universities [28].

Persistent Depressive Disorder (Dysthymia) represents a chronic, low-grade depression lasting two years or more. It may not incapacitate someone entirely, but it can significantly reduce motivation, emotional resilience, and engagement with daily life [27].

Mild to moderate depression can be a loss of interest in things once enjoyed, a shift in sleep or appetite, or a nagging feeling of worthlessness. While it might not stop one from attending classes, it can drain energy and motivation. Persistent Depressive Disorder (Dysthymia) can be like a chronic drizzle – not a storm, but persistent and dampening [27].

2.2.3 Serious mental illness

Serious mental illness (SMI) is defined as a mental, behavioural, or emotional disorder resulting in serious functional impairment, which substantially interferes with or limits one or more major life activities [29]. The burden of mental illnesses is particularly concentrated among those who experience disability due to SMI [30]. Major Depressive Disorder (MDD), Schizophrenia and Bipolar Disorder are among the most common severe mental disorders [31].

MDD is one of the most common and debilitating mood disorders. It is characterised by persistent sadness, loss of interest in previously enjoyed activities, fatigue, and difficulty concentrating or making decisions. These symptoms can last for weeks or months and often interfere with academic performance, relationships, and self-care [27].

Schizophrenia, a severe psychotic disorder, affects how a person thinks, feels, and interprets reality. Symptoms may include hallucinations, delusions, disorganised thinking, and reduced emotional expression. These experiences can be disorienting and deeply isolating, often requiring long-term treatment and support [27].

Bipolar disorder is characterised by alternating cycles of depression and periods of high energy or irritation. During a depressive phase, a person often experiences feelings of profound sadness, irritability, or emptiness, losing interest in most activities nearly every day. Conversely, during a manic phase, an individual may feel intensely happy or irritable, show a significant increase in energy, talk more than usual, have racing thoughts, feel overly confident, need less sleep, become easily distracted, and sometimes act impulsively [32].

2.3 Mental health challenges among university students

2.3.1 Prevalence and common types of mental health issues

While mental health conditions are broadly prevalent across the population, their manifestation and impact within the university student demographic warrant specific attention. Indeed, an increasing body of research highlights how the unique pressures of

academic life, social transitions, and newfound independence can exacerbate existing vulnerabilities or trigger new challenges among this group [3, 9, 33].

A recent large-scale systematic review and meta-analysis by Sheldon and colleagues [3] significantly illuminated just how common mental health challenges are among undergraduate students. This comprehensive review, which looked at data from 66 longitudinal studies, found some concerning numbers: about one in four students experienced depression, and around 14% had faced suicide-related thoughts or behaviours during their time at university. The review also pointed to several factors that appear to contribute to these issues, including pre-existing mental health problems, persistent negative thinking, family challenges like parental separation, and experiences of trauma such as sexual harassment. Financial stress and tough childhood experiences were also linked to suicidal outcomes. The outcome measures used in the reviewed studies included diagnoses from the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), self-report measures like the Beck Depression Inventory (BDI), and risk assessment tools such as the Colombia-Suicide Severity Rating Scale (C-SSRS) [3].

During the COVID-19 pandemic, Ochnik et al. [4] conducted a large-scale cross-national study examining the mental health of 2,349 university students from nine countries, including Poland, Germany, Turkey, Israel, and Colombia. The researchers employed standardised psychometric instruments—the PHQ-8 for depression, GAD-7 for anxiety, and Perceived Stress Scale (PSS-10) for stress—to assess students' mental well-being. The results were notable: more than 61% of participants reported high perceived stress, over 40% exhibited moderate to severe depressive symptoms, and approximately 30% showed clinically significant anxiety. One of the most compelling findings was the substantial variation in mental health outcomes across countries, which appeared to be influenced by differences in the severity of lockdown restrictions and the availability of institutional support. This study highlights that student mental health is not solely an individual concern but also deeply shaped by cultural, social, and structural factors—especially during times of global crisis [4].

A study of 895 UK university students [34] conducted shortly after the initial COVID-19 lockdown assessed mental health symptoms using validated instruments including the PHQ-9 and GAD-7, as well as measures for insomnia, substance misuse, and suicide risk. The results revealed that approximately 40% of participants reported moderate to severe anxiety, around

45% experienced moderate to severe depression, and about 25% met criteria for clinically significant insomnia, while 33% were at risk for suicidal behaviour. Conducted between July and September 2020, the study included a follow-up survey of 201 students six months later, which showed that while anxiety and depression symptoms had improved slightly, insomnia and suicidality persisted. By using standardised tools and a large student sample, the study offers a clear picture of the enduring mental health burden among UK university students [34]. However, when considering this study, it's worth noting some key points. The assessment of mental health symptoms primarily relied on self-reported outcomes, which may introduce a degree of bias. Additionally, while valuable, the follow-up data was limited to six months, potentially constraining the long-term generalisability of the findings. Nevertheless, despite being conducted during the pandemic, this study offers relevant insights into the vulnerability of students facing large-scale stressors, which remain pertinent even today [34].

In one of the largest surveys of its kind, Pereira et al. [35] explored the mental health of over 37,000 university students across 140 institutions in the UK. The findings present a concerning picture: more than a third of students reported struggling with serious emotional or psychological issues that made them feel they needed professional help. Additionally, over 21% had received at least one formal mental health diagnosis, with depression and anxiety being the most commonly reported conditions. The online survey included a broad range of questions about students' mental health experiences, substance use, sleep difficulties, and self-harming behaviours. The data revealed that younger students—particularly those aged 18 to 20, in their first year, and identifying as female—were most likely to experience such challenges. Alarmingly, nearly half of respondents admitted using alcohol or recreational drugs to cope with life difficulties, with one in ten saying they did this often or always. These findings highlight not just the scale of mental health problems among students, but also the urgent need for more responsive and compassionate support systems both on campus and in student accommodation settings [35].

Another large-scale UK study [9] surveyed 1,408 university students between late 2018 and mid-2019 using eight validated mental health measures, including the GAD-7 for anxiety, PHQ-9 for depression, Mood Disorder Questionnaire (MDQ) for mania, Sleep Condition Indicator (SCI) for insomnia, PSS for stress, Suicidal Behaviours Questionnaire-Revised (SBQ-R) for suicidal ideation, Prodromal Questionnaire 16 (PQ-16) for psychotic experiences, and the

University of California Loneliness Scale (UCLA3) for loneliness. This comprehensive approach revealed high levels of distress: over 40% of students reported moderate to severe symptoms of both anxiety and depression, 44% showed probable insomnia, and 67% experienced moderate to high loneliness [9].

Multiple studies indicate that mental health problems are highly prevalent and increasing among university students. A range of personal, social, and structural factors contribute to these challenges. These findings underscore the urgent need for comprehensive and targeted support programs to improve student mental well-being.

2.3.2 Contributing factors in the university context

Understanding the factors that contribute to mental health challenges in the university setting is essential for developing effective support systems. One of the most comprehensive efforts to understand student mental health comes from a narrative review by Mohammad Mofatteh [36], who meticulously examined 41 international studies on the factors linked to stress, anxiety, and depression among undergraduates from 2000 to 2020. Mofatteh grouped these factors into six interconnected themes: psychological, academic, biological, lifestyle, social, and financial. As visually represented in Figure 2 (Concept Map of Risk Factors), these areas often overlap—for example, financial pressure might force students to work extra hours, which can limit sleep, reduce social interaction, and increase academic stress. Mofatteh highlights that it’s the combined effect of these interconnected stressors, rather than any single factor, that most profoundly impacts student well-being.

However, it is important to note that this was a narrative review, which brought together many different studies but did not combine their findings statistically, as some other reviews do. This can sometimes make it more challenging to compare all findings directly. Also, the studies he looked at were quite varied in how they were designed and how good their quality was. Still, even with these points in mind, Mofatteh's review is really helpful for showing the many different factors that can affect student mental health and why it's so important to find ways to help students early [36].

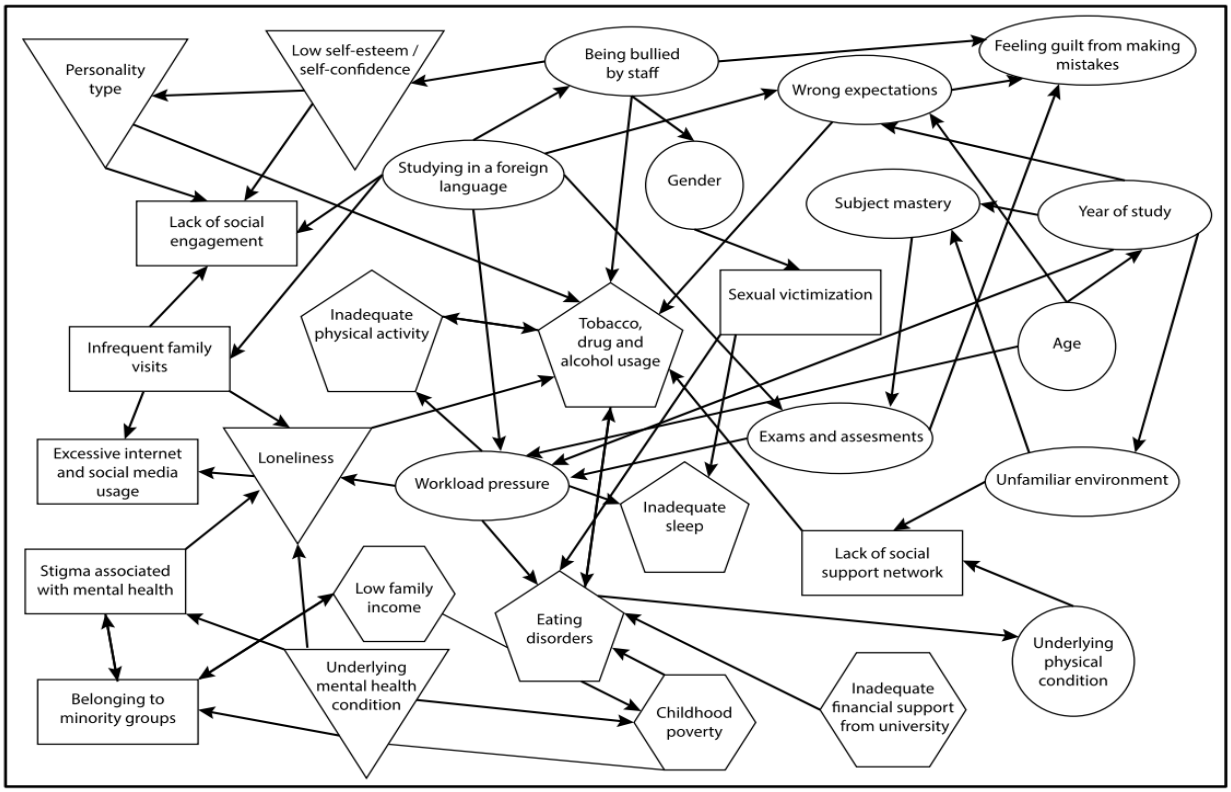


Figure 2: A Concept Map Demonstrating the Complex Relationship Between Risk Factors Associated with Stress, Anxiety, and Depression (SAD) in University Undergraduate Students (Adapted from Mofatteh, [36]).

2.3.3 Impacts on academic and social functioning

A growing body of research highlights the significant impact of mental health challenges on university students' academic engagement and social connections, particularly in the UK context. Studies have consistently shown that students grappling with mental health issues are more prone to experiencing difficulties that directly hinder their academic progress. For instance, Thorley [33] reports that poor mental health and wellbeing can affect students' academic performance and desire to remain in higher education, with data showing a 210% increase in drop-outs among students with mental health problems between 2009/10 and 2014/15 [33]. Beyond academic outcomes, these issues profoundly affect students' social lives within the university setting. Surveys in the UK, such as that by Akram and colleagues [9], have revealed high levels of loneliness among university students alongside anxiety and depression [9]. In line with this, Eisenberg et al. [37] in a large-scale study involving over 2,798 American college students, found that depressive symptoms were associated with a lower GPA.

Although anxiety showed a slightly weaker correlation, it too had a notable negative effect on academic outcomes [37].

A comprehensive understanding of mental health– from its broad definition to the nuances of various conditions and their impact – is essential, especially when considering the lives of university students. This deeper understanding helps individuals recognise diverse needs and build more effective ways to support well-being, including exploring interventions such as physical activity programmes.

2.4 Physical activity and mental health

2.4.1 Physical activity and mental health

As mental health issues become more widespread, researchers have been exploring practical ways to support peoples' well-being. One area that has gained attention is physical activity**.** To ensure conceptual clarity within this study, 'physical activity' and 'exercise' are defined according to widely accepted definitions. Physical activity is broadly defined as any bodily movement produced by skeletal muscles that results in energy expenditure. This includes a wide range of daily movements, from occupational tasks to household chores. In contrast, exercise is a more specific subset of physical activity; it is characterised as planned, structured, and repetitive bodily movement undertaken with the objective of improving or maintaining physical fitness [38].

This section gives an overview of how physical activity may help reduce symptoms of anxiety and depression and improve mental health and introduces different types of exercise that have been studied in this context. The following sub-sections will explore these types in more detail, including aerobic exercise, resistance training, mind-body practices like yoga, and the difference between individual and group formats.

2.4.2 Theoretical framework: how physical activity influences mental health

Understanding how physical activity contributes to improved mental health requires a multidimensional theoretical approach that integrates both psychological and physiological mechanisms.

From a psychological perspective, the Self-Determination Theory (SDT) offers a compelling lens. According to Deci and Ryan, individuals experience greater well-being when their basic psychological needs—autonomy, competence, and relatedness—are satisfied. SDT highlights that when people feel a sense of control over their actions (autonomy), capable in what they do (competence), and connected to others (relatedness), their motivation and overall psychological health flourish [39]. Beyond these foundational needs, physical activity also influences several other important psychosocial aspects. For instance, self-esteem, which involves how individuals evaluate their own worth and image, is impacted by depression, often leading to feelings of worthlessness. Exercise, including aerobic and resistance training, can promote better physical self-perception and improve body image, which in turn may enhance overall self-esteem, even without body composition changes. Similarly, self-efficacy, the belief in one's ability to achieve a specific task, can be low in depression, potentially leading to a negative cycle where individuals avoid achievable goals. Engaging in exercise can boost this self-efficacy, making continued engagement more likely and potentially influencing depressive symptoms. Additionally, social support, referring to assistance from social relationships, is crucial. Physical activity helps improve social networks by creating opportunities for interaction and socialisation, particularly in interactive settings like team sports. This support can act as a buffer against stress and may prevent depressive symptoms from worsening, though preliminary evidence suggests this specific pathway still needs more exploration [40].

On the physiological side, exercise has been shown to elicit a range of neurobiological responses that may underlie its mental health benefits. For instance, regular aerobic exercise is linked to increased hippocampal volume, which is associated with improved memory [41]. Furthermore, exercise also influences the neuroendocrine system: while it initially elevates cortisol circulation, regular participation develops an adaptive, protective response, potentially reflecting increased hypothalamic-pituitary-adrenal (HPA) axis resilience and dampening cortisol sensitivity [40].

This theoretical understanding lays the groundwork for exploring specific types of physical activity and their unique impacts on mental health outcomes.

2.4.3 Types of physical activity with mental health benefits

Building on the theoretical understanding of how physical activity influences mental health, it becomes clear that these benefits are not limited to a single type of activity. This section will explore various forms of physical activity and exercise and their impacts on mental health.

2.4.3.1 Aerobic exercise and mental health

Aerobic exercise is a type of physical activity that increases heart rate and breathing rate and is generally classified into two levels of intensity: moderate and vigorous. It is performed rhythmically, continuously, and involves large muscle groups, helping the body improve its ability to use oxygen for energy production. At a moderate intensity, a person can talk but not sing during the activity, at a vigorous intensity, only a few words can be spoken without pausing for breath. Common examples of aerobic exercise include brisk walking, running, cycling, tennis, and swimming [42].

One of the studies exploring the link between aerobic exercise and mental health is a meta-analysis conducted by Yang and colleagues in 2025 [43]. This study aimed to update existing evidence on the antidepressant effects of aerobic exercise in young people, to investigate potential dose-response relationships, and to provide evidence-based insights for future research and clinical depression treatment. In this comprehensive review, 26 eligible studies were analysed, including data from 1308 participants aged younger than 24 years. College students represented a notable portion of the educational stages examined. Depressive symptoms were assessed using various standardised scales, including the Beck Depression Inventory (BDI), Patient Health Questionnaire-9 (PHQ-9), Self-rating Depression Scale (SDS), Zung self-rating depression scale (Zung), Center for Epidemiologic Studies Depression Scale (CES-D), and Hamilton Rating Scale for Depression (HAM-D). The meta-analysis found that aerobic exercise significantly decreased depressive symptoms among youth, showing a large effect size [$g = -0.92$; 95% CI (-1.16, -0.69); $p < 0.01$]. The review further investigated potential dose-response relationships for aerobic exercise interventions. It suggested that a moderate-intensity aerobic exercise programme, lasting between 25 and 40 minutes and conducted three times a week for 9 to 15 weeks, could effectively alleviate depression. The efficacy of this programme in reducing depressive symptoms was significantly related to the intensity of

the exercise, with moderate-intensity aerobic exercise showing a more significant effect than light-intensity aerobic exercise [43].

Although this review offers valuable insights, there are also a few aspects worth discussing. The included meta-analyses primarily relied on self-reported outcomes, which may introduce bias compared to objective measurements. Additionally, a lack of long-term follow-up data in the included studies could limit how well the results generalise over time. The study reports substantial heterogeneity in results, likely due to variations in exercise type (e.g., running vs. cycling), intensity, or participant characteristics (e.g., clinical vs. non-clinical populations). Although Yang et al. conducted meta-regression to explore these factors, the specific sources of heterogeneity remain partially unclear, complicating the interpretation of optimal exercise protocols. Nevertheless, Yang and colleagues' work provides a strong foundation by consolidating evidence for the antidepressant effects of aerobic exercise in young people [43].

2.4.3.2 Resistance training and mental health benefits

Resistance exercise training (RET) typically involves activities designed to increase strength, skeletal muscle mass, endurance, or power. A meta-analysis by Gordon and colleagues [44] specifically examined the effectiveness of RET in reducing depressive symptoms among adults. This comprehensive review analysed data from 33 randomised clinical trials involving 1877 participants, encompassing adults regardless of their health status. The meta-analysis found that RET was associated with a significant reduction in depressive symptoms, with a moderate pooled effect size of 0.66. These benefits were observed across adults regardless of participants' age, sex, health status, or the specific features of the RET programme, such as its duration, intensity, or frequency. On average, RET programs in these studies typically lasted about 16 weeks, with sessions most commonly occurring three times per week at a low to moderate intensity. It's worth noting that smaller reductions in depressive symptoms were derived from trials where allocation and/or assessment were blinded, suggesting the importance of methodological rigour. The available empirical evidence supports RET as an effective alternative or additional therapy for depressive symptoms [44].

2.4.3.3 Yoga, Tai Chi, & Mind-Body Practices

Mind-body practices offer unique approaches to supporting mental health. Yoga, for instance, typically combines physical postures, controlled breathing, and meditation. This practice has been noted to reduce anxiety and depression [45].

One of the studies exploring the link between meditation-based mind-body interventions (MBIs) and mental health is a meta-review conducted by Vancampfort and colleagues in 2021. This study aimed to evaluate the efficacy of MBIs, such as mindfulness, yoga, tai chi, and qigong, for various mental disorders by aggregating evidence from 17 meta-analyses of RCTs targeting disorders such as schizophrenia, depression, PTSD, and ADHD. In high-quality meta-analyses, large effect sizes (0.80 or higher) were observed for mindfulness in schizophrenia and ADHD, a moderate effect size (0.50 to 0.80) for mindfulness in PTSD, and a small effect size (0.20 to less than 0.50) for yoga in schizophrenia. No serious adverse events were reported across 43 RCTs with 1,774 participants in MBI arms, and attrition rates were comparable to those in control groups. The study concludes that mindfulness and, to a lesser extent, yoga can serve as effective adjuncts to pharmacotherapy and psychotherapy, although evidence for tai chi and qigong remains limited [46].

This meta-review utilised the AMSTAR tool to assess the methodological quality of meta-analyses, representing a significant strength for the study and ensuring confidence in the validity of the results. However, several aspects warrant consideration. The authors explicitly state that, due to various limitations, providing "firm recommendations" remains challenging. The reviewed meta-analyses exhibited high heterogeneity in results [I^2 often >50%], likely due to variations in MBI type, participant characteristics (e.g., clinical versus non-clinical populations), or control conditions, which may overestimate effects and reduce generalizability. Additionally, reliance on small RCTs (41% with fewer than 500 participants) and the risk of publication bias in 59% of meta-analyses may limit the robustness of findings and complicate the interpretation of optimal MBI protocols. The study also demonstrates uneven coverage for certain disorders (e.g., eating disorders or dementia). The field of research should advance from study-level to patient-level meta-analyses to provide a more personalized picture of treatment effects. This could help identify specific patient subgroups who respond to MBIs, and future research is needed to explore the underlying mechanisms and determine which individuals benefit most. Nevertheless, the work of Vancampfort and

colleagues provides a robust foundation for the use of MBIs in mental health care by consolidating high-quality evidence [46].

A recent RCT by Castellote-Caballero and colleagues [47] specifically analysed the effectiveness of a yoga-based intervention on stress, emotional well-being, state anxiety, and trait anxiety in university students. This 12-week study involved 129 university students, with 65 in the yoga group and a control group. The study was conducted in Spain, involving university students from the University of Jaén and the University of Atlantico Medio. The experimental group engaged in yoga training twice a week for 60 minutes each session. The primary outcome, stress, was measured using the PSS. Secondary outcomes included emotional well-being, assessed by the Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS), and anxiety, measured through the State–Trait Anxiety Inventory (STAI). Findings showed that participation in the yoga group led to statistically significant improvements in perceived stress (d=0.44), emotional well-being (d=0.47), state anxiety (d=0.38), and trait anxiety (d=0.80) compared to the control group [47].

However, while this study provided valuable insights, its findings' broad applicability might be constrained by the distinct attributes of the study population. Nevertheless, this study represents a significant step in understanding yoga's role in improving university students' mental health.

2.4.3.4 Group-based vs. individual physical activity and their impact on mental health

The mode of physical activity, whether performed individually or in a group, significantly influences its psychological effects. The context of physical activity is a key determinant of these outcomes, as group-based exercise has been shown to foster a sense of social connectedness and provide therapeutic benefits through its social component [48].

In a notable non-randomised, controlled study involving 69 medical students, Yorks and colleagues [48] explored how participation in structured group fitness classes impacted perceived stress and quality of life. Participants in these classes engaged in 30-minute sessions, averaging 1.55 classes per week over 12 weeks. Compared to a control group engaging in individual or self-directed physical activity, the group-exercise participants demonstrated a statistically significant decrease in perceived stress and an increase in

physical, mental, and emotional quality of life. These findings underscore the added value of shared physical activity experiences, particularly in high-stress populations [48]. However, the study was limited by a relatively small sample size and self-selection into study groups, which may have introduced selection bias and limits the generalisability of the findings.

Evidence from larger-scale research provides a broader perspective on the relative effects of group-based and individual physical activity formats. A recent meta-analysis by Kritz [49] comparing individual and group-based physical activity interventions across psychosocial, functional, and health-related outcomes found that both approaches can be effective for promoting physical activity and supporting mental well-being. While small advantages for group-based interventions were observed for certain outcomes, particularly for programmes described as “true groups”, overall differences between group-based and individual formats were generally small and, in many cases, not statistically significant.

Overall, the reviewed evidence indicates that neither group-based nor individual physical activity formats can be considered universally superior for mental health outcomes. Instead, both approaches appear to have potential value, supporting the inclusion of a range of physical activity formats within mental health interventions to accommodate differing contexts and intervention designs.

2.5 Current treatment options

While traditional treatments for mental health conditions—such as pharmacotherapy and various forms of psychotherapy—remain foundational, they are not without limitations. Many individuals face challenges accessing or adhering to these modalities due to stigma, cost, or side effects. In recent years, there has been growing interest in complementary and non-pharmacological approaches, including physical activity. A landmark umbrella review by Solmi et al. [50] strongly reinforces this shift in perspective. The researchers synthesised data from 113 meta-analyses covering over 1,000 original studies and 97 distinct mental health outcomes, including depression, anxiety, ADHD, PTSD, and schizophrenia. Their findings revealed consistent, moderate-to-strong evidence for the efficacy of physical activity—especially aerobic and resistance-based exercise—as a transdiagnostic intervention. Importantly, they advocated for the integration of exercise into formal mental health care

pathways, not only as a preventative strategy but also as an active component of treatment. This positions physical activity not merely as a lifestyle choice, but as a clinically relevant, scalable, and cost-effective tool for mental health management [50].

2.6 Evidence for the effects of physical activity on mental health

2.6.1 Impact of physical activity on students' mental health

Having discussed the underpinning mechanisms and different types of physical activity that benefit mental health, it is important to explore the growing empirical evidence that validates physical activity as a key component in mental health promotion—especially within the university student population.

A comprehensive systematic review and meta-analysis by Huang et al. [12], including 59 studies, robustly demonstrated that physical activity interventions are effective in reducing symptoms of anxiety, depression, and stress among undergraduate students. While acknowledging considerable heterogeneity across the included studies and a high risk of bias in some, this review firmly supports the potential of structured physical activity programmes to enhance mental health in university settings, simultaneously calling for more robust intervention design and implementation in future research to better understand their effectiveness [12]. However, despite its valuable insights, this review also highlights a key challenge: the need for more robust intervention design and implementation to truly understand the effectiveness of physical activity programmes on mental health outcomes. This suggests that while we know physical activity helps, there's still a need for studies that carefully design and report the specifics of these interventions.

Complementing these findings, Donnelly and colleagues [51], in their systematic review, further highlighted the efficacy of physical activity interventions in improving the overall mental health and quality of life for students in higher education. This review, which included 58 studies utilising varied methodologies, found that physical activity was effective in improving the mental health and quality of life of students in higher education [51]. However, despite its valuable insights, this review also points to a critical gap: it identified a notable lack of studies specifically focusing on the implementation and feasibility of physical activity interventions in higher education settings. This suggests that while there is evidence of

effectiveness, there's still a significant need to understand how these programmes can be practically delivered and sustained within university environments. Furthermore, Li and Huang [52], through their systematic review focusing on college students, corroborated these positive associations, identifying clear positive correlations between physical activity and psychological well-being, including enhanced self-esteem, alongside negative correlations with depressive symptoms [52].

Collectively, these high-level evidence reviews and direct empirical studies consistently underscore the significant benefits of physical activity interventions for student mental health, while also pointing to the ongoing need for methodological improvements to solidify the evidence base and elucidate optimal intervention strategies.

2.6.2 University-based (campus-based) supervised physical activity interventions for improving mental health

The importance of supervision and structured support in exercise interventions is increasingly recognised for promoting mental health. Lederman and colleagues [53], in their review on embedding exercise into routine mental health care, outlined key strategies for effective physical activity programmes. These strategies include supervision by qualified professionals, individualisation of interventions to meet specific needs, and the incorporation of behaviour-change techniques. Such well-designed and supported programmes are considered crucial for successful implementation in mental health care [53]. Given the previously discussed evidence on the positive impact of physical activity on student mental health, it is important to now focus on supervised interventions. These structured programmes may enhance adherence and provide greater psychological benefits.

One illustrative example of a structured, supervised intervention is the MINDFIT student therapeutic running group, evaluated by Gurung and colleagues [54], in the United Kingdom. The intervention consisted of 10 weekly, 2-hour sessions, combining a structured exercise regimen based on the UK's 'Couch to 5K' initiative with one hour dedicated to psychoeducation sessions at the end of each session. The study employed a mixed-methods design, collecting both quantitative and qualitative data. A total of 28 students were triaged onto the weekly programme. Participants' symptoms of depression and anxiety were

measured using the PHQ-9 and GAD-7 respectively, alongside the Short Warwick-Edinburgh Mental Well-being Scale (SWEMWBS) and the PSS-10. Findings indicated statistically significant reductions in symptoms of depression ($p < 0.001$), anxiety ($p < 0.001$), and stress ($p < 0.001$) across the intervention duration. In addition, thematic analysis of qualitative data revealed three main themes: “Creating a safe community”, “Making progress”, and “Pathways to success” [54]. The study demonstrated the importance of consistent and empathetic communication, particularly through weekly text messages, in fostering a sense of community and enhancing participant engagement and retention. Although the small sample size may limit the generalisability of the quantitative findings, the richness of the qualitative data provides meaningful insights that can inform future programme development and implementation. Additionally, the study was impacted by external challenges, notably the COVID-19 pandemic, which disrupted data collection for one group and may have influenced overall participation and outcomes.

In a similar university-based study, de Jonge et al. [55], evaluated a 6-week, one-on-one, supervised physical activity intervention designed to support the mental health of post-secondary students with mild to moderate mental health problems in Canada. Each weekly session lasted 60 minutes, consisting of 30 minutes of behaviour change coaching (goal-setting, planning, etc.) and 30 minutes of self-paced physical activity. Participants ($n = 68$) were referred by campus mental health services. The programme demonstrated significant reductions in symptoms of anxiety, depression, and psychological distress as measured by the MHI-38. To explore the acceptability of the intervention, semi-structured interviews were conducted with 11 participants and analysed thematically. The qualitative findings highlighted the value of individual tailoring, privacy, supportive supervision, and the structure of the intervention. Overall, the results support the acceptability and effectiveness of personalised physical activity programmes as low-intensity psychological interventions for students experiencing mild to moderate mental health concerns [55]. One important consideration in evaluating this study is that participants were students who had already sought help for their mental health, suggesting a level of motivation and openness to psychological support. As such, the intervention’s relevance and applicability to students who face significant barriers to help-seeking—or who are less inclined to access mental health services—remains uncertain. Moreover, the sample was predominantly female, which raises concerns about the

generalisability of the findings. Future research should aim to recruit more gender-diverse and larger samples to enable broader conclusions. A further limitation acknowledged by the authors is that while students were encouraged to engage in one to two additional physical activity sessions per week outside the intervention, the type and intensity of these activities were not measured. This lack of data makes it difficult to isolate the specific effects of the intervention on mental health outcomes.

A study by Malagodi et al. [56], revealed that despite strong evidence supporting the positive impact of physical activity on mental health, two-thirds of UK public universities offer no physical activity-based interventions to enhance student mental health and wellbeing. Of the 125 responding universities (out of 143), only 36% (45 institutions) provided such programmes, totalling 54 interventions. Specifically, among the 103 universities surveyed in England, only 40 offered physical activity interventions, while just 3 of 14 in Scotland, 1 of 7 in Wales, and 1 of 2 in Northern Ireland did so. These interventions, typically delivered in-person over 6 to 12 weeks by fitness trainers or lifestyle coaches, focused on behaviour change techniques such as instructing how to perform activities (61%), restructuring the environment (54%), and behavioural goal-setting (46%), but paid less attention to motivational barriers. These findings, coupled with the study's recommendations, highlight the urgent need for universities, including York St John University, to integrate physical activity interventions into routine student support services to improve mental health. This necessitates designing studies to assess the feasibility and accessibility of such programmes as part of standard university offerings [56].

Herbert [57] explored the impact of low- to moderate-intensity physical activity and exercise interventions on the mental health and well-being of university students through the Anem Fit&Well research project. The key findings, derived from a detailed analysis of five distinct exercise interventions, highlight their effectiveness. These studies, focusing on university students who frequently exhibit high sedentary behaviour (averaging 7.5 hours of sitting per day), revealed significant levels of depression and anxiety. Aerobic exercise interventions, conducted three times weekly for six weeks, effectively reduced depressive symptoms and perceived stress, while a single 30-minute yoga session improved emotional processing, body awareness, cognition, and cardiac function, underscoring the immediate benefits of short

exercise bouts. Notably, the study investigated whether such interventions could serve as primary prevention and promote mental health among students not yet experiencing clinical mental health conditions, a point of particular relevance to our study, as we aim to examine the effects of exercise interventions on students with mild to moderate mental health symptoms. The results indicate a positive correlation between regular physical activity and enhanced mental health, particularly for emerging adults. However, variability in intervention effectiveness based on duration and intensity showed that shorter interventions (e.g., two weeks) had limited impact. This variability, coupled with the high prevalence of mental health challenges among students, underscores the need for tailored, supervised on-campus physical activity programmes. Therefore, conducting feasibility studies in universities to assess the feasibility, acceptability, fidelity, and preliminary effects of such interventions is crucial for designing accessible and effective programs that address students' mental health needs while promoting active lifestyles Furthermore, given that this study was conducted prior to the COVID-19 pandemic, and substantial evidence indicates that students' mental health has been significantly adversely affected by the pandemic, there is now an even greater need for newer studies focusing on students with mild to moderate mental health challenges, making such research increasingly critical [57].

2.7 Feasibility and acceptability of physical activity interventions among students: definition, purpose, and relevance

2.7.1 Feasibility

Feasibility studies serve as essential initial steps in the development and evaluation of health interventions, particularly before proceeding to large-scale RTCs. Feasibility studies are pieces of research done before a main study to answer the question "Can this study be done?". They are used to estimate important parameters that are needed to design the main study [58]. These studies fundamentally ask whether something can be done, if it should be proceeded with, and if so, how. This early-stage evaluation helps identify potential challenges in various aspects such as recruitment, retention, or intervention fidelity, thereby allowing for necessary adjustments before significant resources are committed to a definitive trial. In the context of physical activity interventions for mental health, feasibility studies are vital for understanding the nuances of implementation within specific populations and settings [59, 60].

The Moving Together programme by Danielsen et al. [21], was a preliminary single-group pre-post-trial in Norway assessing the feasibility of a 10-week group exercise intervention for 13 university students aged 20–39 with self-reported mental health challenges. Feasibility was evaluated through recruitment, retention, adherence, and adverse events. Mental health and physical fitness were measured using validated tools: depressive and anxiety symptoms with the Hopkins Symptom Checklist-25 (HSCL-25), well-being with the Warwick-Edinburgh Mental Well-being Scale (WEMWBS), life satisfaction with the Satisfaction with Life Scale (SWLS), cardiorespiratory fitness via a 20-metre shuttle run test (VO2max estimation), and muscular strength/endurance through maximum modified push-ups in 40 seconds and sit-ups in 30 seconds. Preliminary findings showed a significant 20% reduction in anxiety and depression symptoms ($p = 0.008$), with non-significant improvements of 21% in well-being and 16% in life satisfaction. However, no participant completed all 19 planned sessions, though 80% attended at least 50% of sessions. The study demonstrated that a tailored group exercise programme is safe, acceptable, and feasible, potentially serving as a complement to talk therapies for improving students' mental health and physical fitness [21].

A key strength of the intervention was the mid-term evaluation after the first phase, which sustained participants' motivation and gathered feedback. This proactive approach shows attention to engagement in long-term interventions. Additionally, personalised reminder messages from the coach enhanced adherence, with 80% of participants attending at least half the sessions. This strategy could inform future programme design. However, the study has limitations affecting generalisability. First, no participant completed all 19 sessions, with lower morning session attendance prompting a switch to afternoons, indicating adherence challenges despite supportive measures. Second, the small sample (13 students) and mostly female participants limit applicability to broader populations, especially males. While sufficient for feasibility, the sample size restricts generalisability of outcomes like reduced anxiety and depression, improved well-being, and life satisfaction. The lack of a control group further requires cautious interpretation of effects. Additionally, limited details on implementing individualised exercises in a group setting or utilising university resources hinder replication of supervised university-based programmes. In conclusion, the study shows a supervised university exercise programme is feasible, safe, and potentially effective.

However, larger trials with diverse samples and more details on adherence and university resources are needed [21].

These examples underscore how feasibility studies provide foundational data, revealing key components for successful programme delivery and identifying potential areas for refinement before wider implementation, emphasising the importance of understanding real-world applicability, particularly in dynamic environments like university campuses where student needs and logistical considerations are unique.

2.7.2 Acceptability

Acceptability is a multi-faceted construct that reflects the extent to which people delivering or receiving a healthcare intervention consider it to be appropriate, based on anticipated or experienced cognitive and emotional responses to the intervention and defined as a measure of programme satisfaction, which also includes views of programme effectiveness and programme appropriateness [61].

Acceptability can be assessed using various methods. For instance, objective measures of behaviour, such as dropout rates, all-cause discontinuation, reasons for discontinuation, and withdrawal rates, can be used. Additionally, self-report measures are employed, which include responses to hypothetical scenarios, satisfaction measures, attitudinal measures, reports from individuals on their perceptions of and experiences with the intervention, and open-ended interview questions [61].

Although physical activity interventions for university students have gained attention in recent years, few studies have explored their acceptability among students. de Jonge et al. [55], investigated the acceptability of an on-campus physical activity program designed to support post-secondary students' mental health. Through semi-structured interviews with 11 students (71% female, 63% undergraduate, mean age 23), they explored perceptions of the programme's appropriateness (e.g., "Can you discuss your thoughts on referring students to physical activity programs for mental health and well-being purposes") and effectiveness of the program (e.g., "Can you discuss whether your expectations and needs were met throughout the program?"). Data were analysed using a combined inductive and deductive thematic analysis. Students reported the programme as acceptable and effective, valuing its

design and perceived mental health benefits. They viewed it as a holistic approach to improving mental health concerns [55].

However, few studies have explored the acceptability of on-campus physical activity programmes designed to support university students' mental health. This scarcity of research highlights a significant gap in the literature. Given the critical role of acceptability in designing student-centered programmes and ensuring their long-term sustainability, future studies should employ systematic methods and validated frameworks to comprehensively investigate the dimensions of acceptability, thereby facilitating the development of more effective programmes to enhance students' mental health.

2.8 Barriers and facilitators to engagement in university settings

Engagement in on-campus physical activity programmes designed to support university students' mental health is influenced by a range of barriers and facilitators**.** Skinner and colleagues [62] conducted a qualitative study to explore factors influencing participation in exercise among participants of a university-based Exercise Referral Scheme (ERS) for mental health. Semi-structured interviews captured the experiences of seven university students with mental health difficulties. The "Healthy Minds" programme, a 12-week ERS at the University of Bristol, is designed for students facing mental health challenges. Data were analysed using reflexive thematic analysis, generating twelve themes organised by the COM-B model, which describes the interaction of Capability, Opportunity, and Motivation in driving specific behaviours. In this study, the target behaviour was exercise. Themes were categorised as follows: 1. Capability (experience and knowledge, anxiety, skills, and physical fitness and health); 2. Opportunity (accessibility, time, social support, and subjective norm); 3. Motivation (planning and routine, goal setting, benefits of exercise, and enjoyment). The researchers confirmed that the success of university-based exercise programmes for mental health improvement depends on several factors: Programmes must be flexible and tailored to students' time constraints, academic commitments, and physical abilities. Access to diverse exercise options enhances enjoyment and accommodates individual preferences. Instructors should facilitate participation by teaching skills and boosting confidence in sports environments. Providing social opportunities for participant interaction and raising awareness through university mental health services increase motivation and accessibility. These

strategies enhance students' capability, opportunity, and motivation to engage in exercise [62].

2.9 Conclusion and summary of the literature review

Based on existing research, there has been a notable increase in mental health challenges, especially mild to moderate issues like depression and anxiety, among university students. Addressing this has led to many efforts aimed at improving their mental well-being, with numerous studies exploring this subject in recent years. This body of research has particularly focused on the use of university-based physical activity programmes as a promising intervention. However, despite strong evidence supporting the positive impact of physical activity on student mental health, a study by Malagodi et al. [56] found that two-thirds of UK public universities do not offer PA-based interventions to improve student mental health and well-being [56]. This situation highlights the need for new studies to examine the feasibility and accessibility of integrating such programmes into standard university mental health services. To prepare for a broad intervention targeting students, it is therefore crucial to first conduct a feasibility study.

2.10 Aims and objectives of the study

This study aims to examine the feasibility, acceptability, fidelity, and preliminary effects of a supervised on-campus physical activity programme tailored for university students with mental health challenges. Findings will contribute to the development of scalable, structured interventions that support mental well-being in higher education settings.

Objectives:

1. To assess the feasibility of implementing a supervised physical activity programme on a university campus, focusing on recruitment, retention, and adherence among students experiencing mental health difficulties.
2. To evaluate the acceptability of the programme from the perspectives of participants, instructors, and other key stakeholders involved in programme delivery and implementation (e.g., wellbeing staff and programme organisers), including factors such as programme structure, accessibility, and overall user experience.

3. To investigate the fidelity of programme delivery, i.e., the extent to which the intervention was delivered consistently as planned in terms of structure, content, and professional supervision.
4. To explore the preliminary effects of the programme on physical and mental health outcomes using validated measures.

2.11 Gaps in the literature and rationale for the current study

Despite growing evidence supporting the mental health benefits of physical activity for university students, several gaps remain in the literature. First, while systematic reviews have demonstrated that physical activity can reduce symptoms of depression and anxiety among students, few studies have specifically explored supervised, campus-based physical activity programmes tailored to students with mild to moderate mental health challenges, leaving a gap in understanding their practical implementation in university settings. Second, there is a scarcity of mixed-methods studies that combine quantitative outcome data (e.g., on mental health and physical activity levels) with qualitative insights into acceptability and participant experiences, particularly in the UK university context. Finally, the feasibility of integrating such programmes into routine university services, including recruitment, retention, and fidelity of delivery, remains underexplored, especially in smaller universities with limited resources.

2.12 Contributions to the existing body of knowledge

By employing a mixed-methods approach, this study will provide insights into the feasibility, acceptability, and fidelity of the programme, as well as its preliminary effects on physical and mental health outcomes. The results of this feasibility study will be valuable, adding practical insights to the current body of knowledge. Given the increasing prevalence of mental health challenges among university students, this study addresses the need for accessible, cost-effective, and evidence-based interventions. The findings will have practical implications for university wellbeing services, offering evidence on how to implement physical activity programmes within higher education settings.

Chapter 3: Methods

In this chapter, an overview of this study is presented. Following this, a detailed step-by-step breakdown of the methods used is provided. This encompasses a thorough examination of essential elements, including ethical considerations, criteria for participant eligibility, procedures for recruitment and assessment, the supervised exercise programme itself, and the evaluation framework.

3.1 Overview of the study

This is a mixed-methods exploratory prospective cohort study, combining both quantitative and qualitative research approaches. The quantitative component includes two key phases: baseline assessment and exit assessment. The qualitative component is limited to the exit phase, during which semi-structured interviews were conducted with the participants and programme staff.

At the baseline assessment, we collected demographic information and administered standardised mental health questionnaires, including the MHI (Appendix C), PHQ-9 (Appendix D), and ReQoL-10 (Appendix E). In addition, physical assessments were conducted in the lab, measuring stature, body mass, resting heart rate, resting blood pressure, 30-second chair rise performance, handgrip strength, and YMCA submaximal cycle test VO2max estimation (Appendix F). Participants were also provided with an Axivity AX6 accelerometers to objectively measure their physical activity data over a consecutive 7-day period. Each participant received a comprehensive Exercise for Wellbeing participant handbook (Appendix A) specifically designed for this study, which served as a core component of the behavioural intervention during the 6-week intervention phase. This handbook guided participants through understanding the benefits of physical activity, setting personal goals, developing action and coping plans, and self-monitoring their activity levels through weekly diaries. Throughout the 6-week intervention phase, participants attended structured physical activity sessions, during which attendance, session type, and RPE were recorded. At the exit assessment, all baseline tests and measurements were retested, including re-distribution of the accelerometer for another 7 consecutive days. Additionally, qualitative data was gathered through recorded interviews with participants, focusing on their experiences of the

programme. One-on-one semi-structured interviews were conducted face-to-face with student participants following completion of the programme, during the exit session. In addition, members of staff were also interviewed (Appendix G). Interviews were conducted to explore participants' perceived acceptability, feasibility, and fidelity of the programme. The interview questions were designed to explore participants' experiences of the programme, including perceived benefits and challenges, barriers and facilitators to engagement, and suggestions for improvement. The researcher used techniques such as open-ended questions to encourage in-depth sharing, probing to seek clarification and new avenues for exploration, and paraphrasing to confirm understanding. Listening, paraphrasing, and probing techniques were also used to establish rapport and create an environment in which participants felt comfortable, relaxed, and listened to [63]. The full semi-structured interview guides are provided in Appendix G. Interviews were audio-recorded and transcribed verbatim, with any identifying information removed.

3.2 Intervention description

The physical activity programme was conducted over a 6-week period, with participants attending one session per week. Each session lasted 60 minutes and include a variety of physical activities such as walking, aerobic exercises, resistance training, balance work, and stretching. Participants were allowed to choose their own level of intensity. The sessions were group-based, with a maximum of 10 students per group, and were supervised by a qualified exercise instructor. In addition, a member of the wellbeing team was present at each session to provide mental health support to students. Each session also incorporated physical activity behavioural strategies, including goal setting, action planning, identifying barriers and enablers, and introducing cues or prompts for encouraging self-directed physical activity. Sessions were tailored by the instructor, with adaptations made as necessary to accommodate individual participants' needs and abilities. Participants were encouraged to remain physically active outside of the supervised sessions as well.

The 'Exercise for Wellbeing' participant handbook (Appendix A) was developed based on the content of the handbook used in the SPACES study [64] and refined in collaboration with the in-house design team[64]. Behavioural strategies are reinforced through the handbook (Appendix A) which supports participants in applying techniques such as setting personal

targets for physical activity (e.g., weekly aims, monthly and yearly goals), planning how to achieve these goals (e.g., action plans and 'if-then' plans for overcoming barriers), and self-monitoring their progress using structured weekly diaries. The handbook also provided guidance on safely increasing physical activity and offers a variety of ideas for incorporating exercise into daily routines, both at home and within the community. In addition to the handbook, participants were provided with a post-programme leaflet to support their continued engagement (Appendix B).

While each weekly session maintained its general structure and was planned, a detailed breakdown of a "Week 2" session is provided below as a representative example of the typical workout structure used across all sessions.

Week two: The 60-minute session commences with a 5-minute warm-up, utilising various cardio machines such as running machines, exercise bikes, rowers, and cross-trainers, allowing participants to choose a light intensity. The main workout consists of 12 circuit-based exercises, performed for 40 seconds of work followed by 20 seconds of rest, with three rounds of the entire circuit. Examples of exercises include step-overs, mountain climbers, kettlebell swings, battle ropes, box squats, leg extensions, seated cable row downs, lat pull downs, running machine, bike, wall sit, and rower. This session, consistent with all other weekly sessions, concluded with a cool-down phase, mirroring the warm-up with cardio machines, followed by stretching. The Rate of Perceived Exertion (RPE) was checked during the warm-up, after each round of the workout, and at the end of the cool-down to monitor participant intensity and well-being. RPE was recorded at each supervised session using using the Borg CR10 scale[65]. This overall structure was consistent across all six sessions. This structured approach, combined with varied exercises, ensured engagement of multiple muscle groups and cardiovascular systems and facilitated adherence.

An initial wellbeing assessment was conducted by the university's Wellbeing Team, and a member of the team was present during all supervised sessions to provide immediate emotional or psychological support where needed. Students were also able to book additional one-to-one wellbeing appointments at any point during the programme. A follow-up wellbeing review was conducted at the end of the six-week period.

In addition, the researcher attended all supervised exercise sessions in an observational

capacity. The researcher did not lead or deliver exercise sessions and was not involved in providing mental health support.

3.2.1 Participant support, ongoing care, and post-trial provisions

To improve adherence to the intervention and encourage consistent attendance, the student wellbeing team followed up with participants who missed sessions without prior notice. This approach was intended to support engagement and ensured participants remained connected to the programme.

Throughout the study, participants continued to receive their usual care, and no treatments or forms of care were prohibited. As the programme neared completion, participants were provided with information about other physical activity opportunities they could access independently on a self-pay basis. Finally, to support participants in maintaining their active lifestyle beyond the study period, each individual receives a comprehensive Exercise for Wellbeing: What Next? Leaflet at the conclusion of the 6-week intervention (Appendix B). This leaflet provided practical advice and information on various accessible and affordable physical activity opportunities, including online resources, local community groups, and on-campus facilities, thereby reinforcing the long-term sustainability of the behavioural changes fostered during the programme.

3.2.2 Participant timeline

Baseline testing took place within 1-2 weeks of study enrolment. Intervention delivery commenced within 1-2 weeks of baseline testing. Follow-up assessments were completed within 1-2 weeks of intervention completion.

It should be noted that, due to the researcher joining the project shortly after service delivery had commenced, baseline laboratory and accelerometer assessments were not available for all participants. Importantly, the researcher was fully involved in all subsequent data collection, intervention delivery support, and follow-up assessments, and no data were collected by third parties in the researcher's absence.

3.3 Study setting

The study was conducted at a single university in Northern England, specifically: York St John University, Lord Mayor's Walk Campus, York, England. In the 2024/25 academic year, 9,975 students were based at this campus, 1,851 (19%) of whom had declared that they had a mental health condition on enrolment.

3.4 Sample size

The aim was to recruit all students who used the physical activity service within the 6-month study period. Given that the service had a maximum capacity of 10 students at any one time, the maximum potential sample size over six months was approximately 40 participants.

A sample size of 20-40 participants was considered suitable for an initial evaluation focusing on feasibility, acceptability, fidelity, and preliminary effects; however, fewer participants than anticipated completed the programme, with full details reported in the Results section.

3.4.1 Eligibility criteria

Inclusion criteria:

- Student enrolled at York St John University
- Age 18 years and over
- Undertaking a course which requires attendance at York St John University's Lord Mayor's Walk Campus
- Presenting to the student wellbeing team with mild-to-moderate mental health concerns* and expressing an interest in enhancing their mental health and daily functioning

*Mild-to-moderate mental health concerns are defined as students experiencing symptoms of poor mental health (e.g., feeling depressed or socially isolated, prolonged stress and anxiety, academic decline) that make their daily life more difficult but maintain daily functioning [55].

Exclusion criteria:

- Unwilling or unable to provide written informed consent
- Unable to attend (or to participate in) the scheduled physical activity sessions
- Unsuccessful physical activity clearance using the Physical Activity Readiness Questionnaire (PAR-Q+)

3.4.2 Recruitment

The service was advertised to York Campus students via posters (Appendix H), flyers and communications via email, social media and the YSJ app. Interested students were asked to self-refer to the student wellbeing team who managed access to the service. Eligibility criteria were assessed and eligible students were provided details of the concurrent research study and were asked to provide written informed consent (Appendix I). Students could decline the study (i.e., the additional assessments) but still undertake the physical activity programme, however it was not anticipated that many students would decline.

3.4.2.1 Procedural adaptation during recruitment

During the recruitment phase, regular review meetings involving the wellbeing team, exercise delivery staff, and the research team identified lower-than-anticipated consent rates for participation in the research component of the study. In response, a procedural adaptation, introduced as a non-financial participation incentive, was implemented to support recruitment to the research arm of the study. Students who provided informed consent and completed the initial six-week programme in accordance with the scheduled sessions were offered access to an additional six weeks of supervised physical activity at no additional cost. This adaptation was implemented as a pragmatic strategy to enhance engagement with the research component, while simultaneously maintaining equitable access to the core physical activity service for all students.

3.5 Risk assessment

In accordance with ethical guidelines and university policies for health-related research, a comprehensive risk assessment was conducted for all aspects of this study to ensure the safety and well-being of participants. This process systematically identified potential physical, psychological, and data-related hazards across all measurement procedures and intervention components. Specifically, detailed risk assessments were performed for anthropometric measurements, automated blood pressure readings, supervised gym-based exercise training, muscular strength and endurance testing, one-to-one interviews, and the YMCA submaximal cycle test. To mitigate identified risks, several strategies were implemented: rigorous screening procedures, including the PAR-Q+, ensured participant suitability for physical activities. All exercise sessions were supervised by qualified instructors, with a focus on individualised adaptation and participant-led intensity to minimise physical injury. The presence of a wellbeing team member during sessions provided crucial mental health support, addressing potential psychological distress or social anxiety. Furthermore, strict protocols for data management and confidentiality were in place to protect participant information. Procedures for identifying, reporting, and managing any adverse events (as outlined in relevant ethical approvals- Appendix (J) were established, and participants retained the right to withdraw from the study at any time without consequence. These measures collectively aimed to create a safe, supportive, and ethically sound research environment.

3.6 Data management

Case report forms were used to record all the information required from the protocol. Essential documentation which individually and collectively permitted evaluation of the conduct of the study and the quality of the data produced were kept within a Study Master File. The sponsor will ensure that this documentation is retained for a minimum of 5 years after the conclusion of the study and a minimum of 10 years in electronic format in accordance with the guidelines on Good Research Practice. Paper data will then be disposed

of securely and electronic data will be anonymous of identifiable information. All study-related information was stored securely at York St John University. All electronic records were stored on a password-protected server. All participant data were identified by a coded identification number to maintain participant confidentiality.

3.6.1 Confidentiality

Data were handled in accordance with the Data Protection Act 2018, GDPR legislation, the latest Directive on Good Clinical Practice, and local policy.

3.7 Outcomes

We evaluated the service over a 6-month period. Routinely collected data allowed for a detailed exploration of feasibility, acceptability, fidelity, and preliminary effects; factors which were proposed to influence the sustainability and scalability of healthcare interventions [66]. The following were determined:

- Rates of referral, eligibility, recruitment and retention
- Reasons for ineligibility, non-recruitment, and early withdrawal
- Participant characteristics (including age, sex, mental health status)
- Rates of attendance
- Reasons for non-attendance
- Rates of missing data
- Reasons for missing data
- The extent to which the intervention was delivered as planned (assessed via class observations and interviews with participants and physical activity instructors)
- Number and type of adverse events
- Change from entry to exit in physical activity and health-related outcomes
    - Physical activity outcomes were assessed using a wrist-worn accelerometer worn for seven consecutive days at baseline and follow-up. Accelerometer data were processed to derive average acceleration (mg), intensity gradient, and time spent in moderate-to-vigorous physical activity (MVPA), calculated using both 5-second and 1-minute bout durations.

- Health-related outcomes included health-related quality of life (ReQoL-10 a validated measure of mental health–related quality of life, with higher scores reflecting better wellbeing [67]), depression (PHQ-9, a validated measure of depressive symptom severity in adult populations, with higher scores indicating greater levels of depression [68]), mental health (38-item Mental Health Inventory (MHI) assesses psychological wellbeing and distress, with higher scores indicating better mental health status [69]) resting blood pressure, estimated maximal oxygen uptake (via submaximal cycle testing), grip strength, 30-second sit-to-stand test.

  These outcome measures were selected to comprehensively capture changes in mental health, cardiovascular health, and physical function, as they are commonly used, validated, and sensitive indicators in exercise-based intervention studies and appropriate for the study population.
- Participant feedback, assessed via one-to-one interviews and an exit survey (including satisfaction ratings, the acceptability of intervention measure [70], barriers and facilitators of engagement, and ideas for improvement)
- Barriers and facilitators of implementation, from the perspective of the service delivery team and university managers, assessed via one-to-one interviews.

Prior to statistical analysis, raw accelerometer data were processed using standard procedures. Non-wear periods were identified and excluded, and valid wear days were retained for analysis. Accelerometer outputs were summarised to derive average values across the monitoring period for each physical activity variable. Questionnaire data were scored according to published guidelines and prepared for statistical analysis.

3.8 Data analysis

This study involved a mixed-methods approach to data collection and analysis, in order to understand participant and programme staff experiences of the programme, alongside any changes in quantitative indicators. Analyses were conducted using Microsoft Excel and SPSS (version 31). Descriptive statistics (e.g., frequency, percentage, mean, SD, 95% CI) were used for all quantitative indicators of feasibility, acceptability, fidelity and preliminary effects. Pre-to-post changes in quantitative outcome measures were assessed using Wilcoxon Signed-

Rank Tests.

Interviews with participants, trainers and the YSJ Wellbeing Team involved in programme organisation and delivery were recorded, transcribed and analysed using a reflexive thematic analysis approach, as described by Braun and Clarke [71]. This process, involved the six systematic phases of data familiarisation, coding, searching for themes, reviewing themes, defining and naming themes, and producing the report, was conducted iteratively [71]. To enhance methodological rigour, the development and refinement of codes and themes were discussed with the second supervisor, who acted in a critical friend role throughout the qualitative analysis process [72, 73]. This approach ensured that the analysis was challenged and refined through critical dialogue, thereby strengthening the credibility of the findings. Several strategies were used to enhance the trustworthiness of the qualitative findings. Credibility was supported through verbatim transcription of interviews and close engagement with the data during coding and theme development. Themes were derived inductively from the data and are illustrated with participant quotations in the Results section. Transferability was addressed by providing a detailed description of the study context and participant characteristics. Dependability was supported through a transparent and systematic analytic process, following the six phases of reflexive thematic analysis. Confirmability was enhanced by grounding interpretations in the data and maintaining a clear audit trail from raw data to final themes [74].

These qualitative findings were used to substantiate and potentially explain some of the quantitative findings around the programme's feasibility, acceptability and fidelity. Ultimately, these quantitative and qualitative findings were used to inform and improve future larger scale studies on student mental health and campus physical activity provision.

3.10 Ethics approval and consent to participate

Ethical approval for this study was initially granted by the Research Ethics Committee of the School of Science, Technology and Health on 27 February 2025, under reference number ETH2425-0237. Subsequently, an amendment was submitted and approved on 4 March 2025, under reference number ETH2425-0311, to allow for the retrospective recruitment of participants (Appendix J). This amendment was necessary to include individuals who had already engaged with the programme. All participants were provided with detailed

information about the study and asked to give written informed consent prior to participation. All participant names used in this report are pseudonyms. Any identifying information has been altered to protect participants' anonymity.

3.11 Study registration

The study was prospectively registered on clinicaltrials.gov on 13 March 2025 (ClinicalTrials.gov ID: NCT06874699).

Chapter 4: Results

This chapter presents the findings from the feasibility study of an on-campus supervised physical activity programme for university students experiencing mental health challenges. In line with the study aims, results are reported in relation to feasibility (including recruitment, retention, attendance and assessment completion), acceptability (participant feedback and satisfaction), intervention fidelity (adherence to the protocol and any necessary adaptations), and preliminary signals of effect on mental health outcomes and selected physical health/physical activity indicators. Quantitative findings are presented first, covering participant flow and completion, participant characteristics, intervention delivery, and pre-to-post change in selected outcomes, followed by qualitative findings from semi-structured interviews analysed using thematic analysis. Finally, an integrated summary table synthesises quantitative and qualitative findings across the four key study objectives and provides a transition to the Discussion chapter.

4.1. Student recruitment and flow through the service and study

Figure 3 summarises the flow of students into the service and through the research study. Between January 2025 and July 2025, a total of 18 students were screened for and subsequently joined the on-campus physical activity programme. All 18 students (100%) commenced the supervised exercise sessions as part of the service. Of these, 11 students (61%) also provided informed consent to participate in the research study, allowing their data to be collected for research purposes, while the remaining 7 students (39%) chose not to take part in the research component but continued with the exercise sessions. The reasons for non-participation appeared to include paperwork aversion, reluctance to commit to a six-week structured programme, and competing academic pressures. A smaller number expressed low interest in the study or provided no reason for their decision.

Among the 11 students who consented to the study, six completed all six weeks of the supervised physical activity programme. One student attended four sessions before withdrawing from the study, and three students attended only two sessions before discontinuing. Additionally, one student attended only the initial well-being assessment and did not proceed with baseline assessments or commence the intervention.

Regarding assessment completion, three of the six students who completed the intervention provided full datasets, including baseline and exit questionnaires, laboratory assessments, and accelerometer wear. The remaining three completers provided baseline and exit questionnaire data; however, their laboratory assessments and accelerometer data were not available, and one of these participants did not complete the exit mental health questionnaire.

All six student participants who completed the intervention also completed a post-intervention interview. In addition, six members of staff involved in programme delivery and organisation completed qualitative interviews. Among participants who completed the programme, the time between baseline and follow-up assessments ranged from six to ten weeks, with a mean duration of 7.7 weeks.

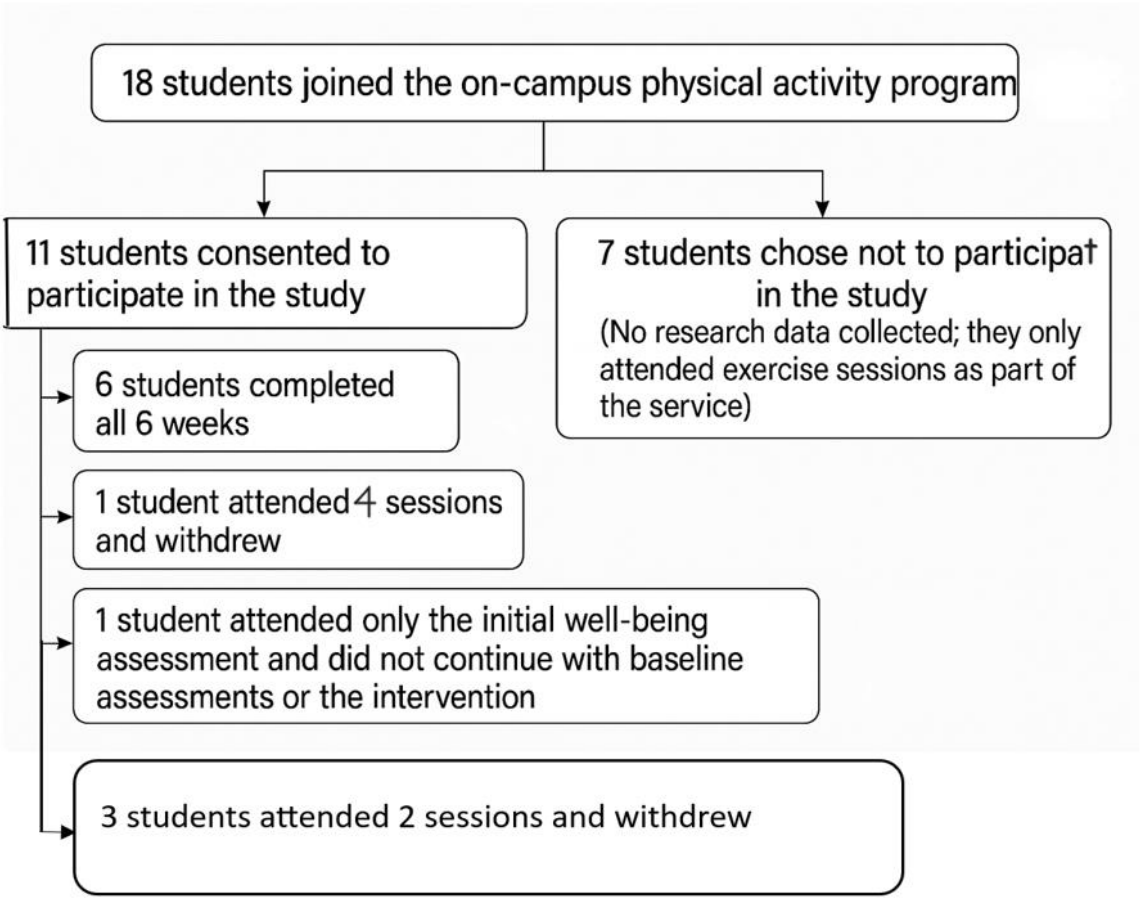


Figure3 : summarises the flow of students into the service and through the research study, providing an overview of recruitment, participation, and completion rates.

4.1.1 Participant characteristics

The characteristics of the students who consented to participate in the study (n=11) are summarised in Table 1. The mean age of participants was 19.6 (SD=7.3) years, with ages ranging from 19 to 42 years; ten participants were within the typical university age range, and one was a mature student. Most participants were female (n = 8; 72.7%), and their ethnicity was predominantly White British (n = 10; 90.9%). All students were enrolled as undergraduate students at the time of participation. There was notable variation in mental health presentations at baseline. Anxiety-related conditions were the most common, withfour participants reporting general anxiety and social anxiety difficulties. The average Mental Health Inventory score(Global score) was 42.46 (SD=10) among those who completed the assessment.

It is important to clarify that differences in sample sizes across variables arose due to incomplete assessment attendance. While questionnaire measures (e.g., PHQ-9) were completed by all 11 participants, only six students attended the baseline laboratory assessment. Consequently, laboratory-derived variables such as blood pressure, body mass, and other physiological indicators are reported for six participants, with missing data reflecting non-attendance at laboratory assessments rather than incomplete questionnaires.

Table 1: Participant characteristics at service entry

Age, years, median Range	n=11	 19.6 19-42
Gender, n (%) Male Female Other	n=11	 2 (18.2%) 8 (72.7%) 1 (9.1%)
Ethnicity, n (%) White British Other	n=11	 10 (90.9%) 1 (9.1%)
Level of study, n (%) Undergraduate Postgraduate	n=11	 11 (100%) 0
Living arrangement, n (%) Independent Residence With family	n=6	 4 (66.7%) 1 (16.7%) 1 (16.7%)
Mental health conditions, n (%) Depression Mania, hypomania, bipolar or manic-depression Social anxiety or social phobia Feeding or eating disorder	n=6 *	 1 1 4

Low mood		1 2
Body mass index, kg/m^2	n=6 Mean ± SD	24.1 ± 2.9
Resting heart rate, bpm	n=6 Mean ± SD	76 ± 13
Resting blood pressure, mmHg Systolic Diastolic	n=6 Mean ± SD	 127 ± 7 83 ± 8
30-s chair rise performance	n=6 Mean ± SD	Mean: 12 ± 2
Dominant handgrip strength, kg	n=6 Mean ± SD	Mean: 28 ± 6
Estimated maximum oxygen uptake, ml/kg/min	n=6 Mean ± SD	Mean: 31 ± 4
ReQOL	n=11 Mean ± SD	Mean: 23 ± 4
PHQ-9	n=11 Mean ± SD	14 ± 3
Mental Health Inventory Global score** Psychological distress Psychological wellbeing Depression/Behavioural-Emotional Control Anxiety Positive Affect Feelings of Belonging Cognitive Function	n=11 Mean ± SD	 42 ± 10 44 ± 12 38 ± 10 46 ± 12 39 ± 14 36 ± 11 44 ± 17 47 ± 15
Accelerometer outcomes Mean? Average acceleration, mg Intensity gradient Time in MVPA, 5s bouts, (min) Time in MVPA, 1min bouts (min)	n=6 Mean ± SD	 25.44 ± 7.52 -2.44 ± 0.25 102.58 ± 41.96 90.54 ± 42.30

*Some students reported multiple issues, so the total number of mental health records exceeds six

**MHI, Global score (score range 0 to 100) higher score indicates a better level of mental health

4.1.2 Intervention delivery

Across the six-week supervised physical activity programme, each participant was offered one supervised exercise session per week. Because students were enrolled into the programme on a rolling basis, individual intervention periods commenced at different times between February and June 2025. Attendance across the 11 students who consented to the study ranged from zero to 6 sessions (see Figure 4). Six participants (54.5%) attended all six sessions, one attended four sessions, and the remaining participants attended between zero and two sessions. Overall, engagement with the intervention varied, reflecting individual circumstances.

Several reasons were reported for missed sessions or for discontinuing the programme. These included scheduling conflicts with academic commitments, particularly after the Easter break, illness such as prolonged flu symptoms (including one student who had initially planned to participate but was unable to attend the baseline laboratory assessment due to ongoing illness), high study workload, and reasons that were not reported.

In addition to the supervised exercise sessions, all students received wellbeing support as part of the intervention. Behavioural support materials were intended to be provided through a structured handbook; however, due to delays in approval and production, the handbook was only available to three participants towards the end of their programme. Although not available during the research phase, the handbook is now routinely provided as part of the ongoing service.

All supervised exercise sessions were delivered as planned in terms of structure and content, with no deviations from the protocol. One student had a pre-existing shoulder injury, and their exercises were modified accordingly to ensure safe participation without compromising the integrity of the overall programme delivery.

Across the programme, participants reported RPE values between 1 (*very light effort*) and 8 (*very hard effort*), with individual mean scores ranging from 4.3 to 6.2 (*moderate to somewhat hard effort*). For most participants, RPE scores tended to decrease over the six weeks, while for others they remained relatively stable.

No exercise-related adverse events occurred during the programme. There was one instance in which a participant felt unwell for approximately ten minutes during a session; with support from the Wellbeing Team, they recovered promptly and completed the remainder of the session without further difficulty. Importantly, this episode was not related to the exercise or training session itself but was instead associated with the participant's own emotional state and a personal matter.

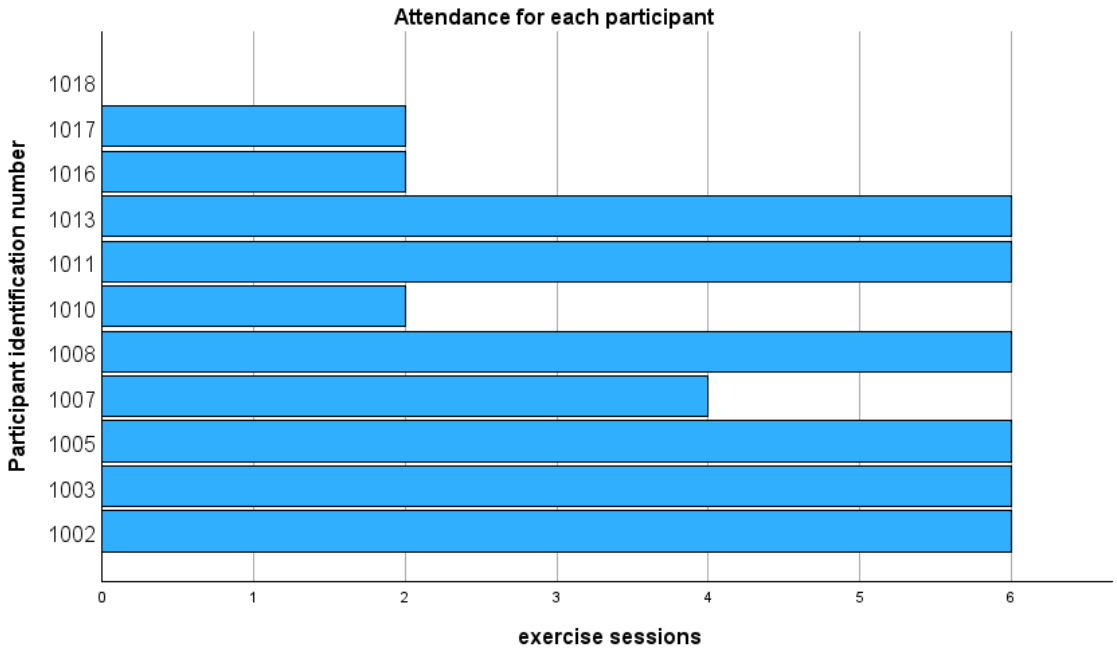


Figure 4: Number of sessions attended by each participant over the six-week programme. Each bar represents attendance for an individual participant.

4.1.3 Behavioural, fitness and health outcomes

Only three participants completed the accelerometer wear-periods and laboratory assessment visits at both baseline and follow-up. Therefore, the use of inferential statistical tests was deemed inappropriate for all related outcome measures. Instead, tables have been used to present the baseline and follow-up data for the three 'completers' (Tables 2-4).

Table 2: Baseline and follow-up data for participant 1005, 42 years old, female, having history of mania, hypomania, bipolar or manic-depression

	Baseline	Follow-up
Body mass, kg	75.2	77.9
Resting heart rate, bpm	90	94
Resting blood pressure, mmHg		
Systolic	127	120
Diastolic	89	80
30-s chair rise performance	11	12
Dominant handgrip strength, kg	28	31
Estimated maximum oxygen uptake, ml/kg/min	31.0	50.3
ReQOL	28	29
PHQ-9	13	6
Mental Health Inventory		
Global score	56.8	73.1
Psychological distress	62.7	81.8

Psychological wellbeing	44	48
Depression/Behavioural-Emotional Control	52.3	86.1
Anxiety	46.6	76.6
Positive Affect	48.5	57.1
Feelings of Belonging	26.6	26.6
Cognitive Function	40	33.3
Accelerometer outcomes		
Average acceleration, mg	21.50	23.02
Intensity gradient	-2.84	-2.80
Time in MVPA, 5s bouts, (min)	67.33	49.38
Time in MVPA, 1min bouts (min)	42.87	23.14

Completed 6 sessions and 1 session behavioural support

Table 3: Baseline and follow-up data for participant 1011, 31 years old, female, having history of depression, anxiety and feeding and eating disorder

	Baseline	Follow-up
Body mass, kg	64.5	62.7
Resting heart rate, bpm	79	83
Resting blood pressure, mmHg		
Systolic	125	112
Diastolic	93	82
30-s chair rise performance	9	10
Dominant handgrip strength, kg	26	29
Estimated maximum oxygen uptake, ml/kg/min	32.1	24.1
ReQOL	19	28
PHQ-9	13	9
Mental Health Inventory		
Global score	27.5	42.5
Psychological distress	30.9	48.1
Psychological wellbeing	18	26
Depression/Behavioural-Emotional Control	40	52.3
Anxiety	30	50
Positive Affect	20	25.7
Feelings of Belonging	13.3	26.6
Cognitive Function	53.3	60
Accelerometer outcomes		
Average acceleration, mg	15.85	11.08
Intensity gradient	-2.57	-2.62
Time in MVPA, 5s bouts, (min)	69.23	34.91
Time in MVPA, 1min bouts (min)	61.28	26.28

Completed 6 sessions and 1 session behavioural support

Table 4: Baseline and follow-up data for participant 1013, 20 years old, Identified as female, having history of low mood

	Baseline	Follow-up
Body mass, kg	65.7	65.4
Resting heart rate, bpm	52	48
Resting blood pressure, mmHg		
Systolic	142	112
Diastolic	82	86
30-s chair rise performance	11	12
Dominant handgrip strength, kg	39	35
Estimated maximum oxygen uptake, ml/kg/min	36.3	38.1
ReQOL	24	35
PHQ-9	11	19
Mental Health Inventory		

Global score	43.1	50
Psychological distress	47.2	52.7
Psychological wellbeing	34	44
Depression/Behavioural-Emotional Control	36.9	56.9
Anxiety	66.6	30
Positive Affect	34.2	37.1
Feelings of Belonging	33.3	46.6
Cognitive Function	73.3	63.3
Accelerometer outcomes		
Average acceleration, mg	35.67	33.26
Intensity gradient	-2.29	-2.39
Time in MVPA, 5s bouts, (min)	168.45	155.3
Time in MVPA, 1min bouts (min)	152	138.49

Completed 6 sessions and 1 session behavioural support

Six participants completed the ReQOL and PHQ-9 questionnaires at baseline and follow-up. Five completed the MHI at both timepoints with summary data presented in Table 5. Pre-to-post comparisons revealed that following the six-week programme, participants experienced statistically significant improvements across several mental health outcomes. This positive change was observed in the ReQOL score (p=0.027), the MHI Global score (p=0.043), and in MHI subscales measuring Psychological Wellbeing, Psychological Distress, and Depression/Behavioural-Emotional Control (all p=0.043). Furthermore, these findings are reinforced by the statistically significant reduction in the severity of depressive symptoms reported on the PHQ-9 (p=0.027), although changes in subscales such as Anxiety and Cognitive Function did not reach statistical significance.

Individual-level changes in mental health scores from baseline to follow-up among participants with complete data are illustrated in Figure 5.

Table 5: Changes in mental health outcomes from baseline to follow-up analysed using the Wilcoxon Signed-Rank Test.

Outcome	Baseline Median (IQR)	Follow-up Median (IQR)	Z	p	Direction of change
ReQOL*	23	29	-2.207	0.027	↑
PHQ-9**	13	8.5	-2.207	0.027	↓
Mental Health Inventory***					
Global score	43.1	50	-2.023-	0.043	↑
Psychological distress	46.3	51.8	2.023	0.043	↑
Psychological wellbeing	40	48	-2.023	0.043	↑
Depression/Behavioural-Emotional Control	43.07	56.9	-2.023	0.043	↑
Anxiety	36.6	46.6	-0.677	0.498	↑

Positive Affect	40	40	-2.032	0.042	↔
Feelings of Belonging	46.6	46.6	-1.857	0.063	↔
Cognitive Function	43.3	50	-0.271	0.768	↑

*ReQOL-10 scores range from 0 to 40; higher scores indicate a better recovery quality of life (better mental health).

**PHQ9 scores range from 0 to 27; higher scores indicate greater severity of depressive symptoms (poorer mental health).

***Mental Health Inventory (MHI) scores range from 0 to 100; higher scores indicate a more favorable (better) mental health status.

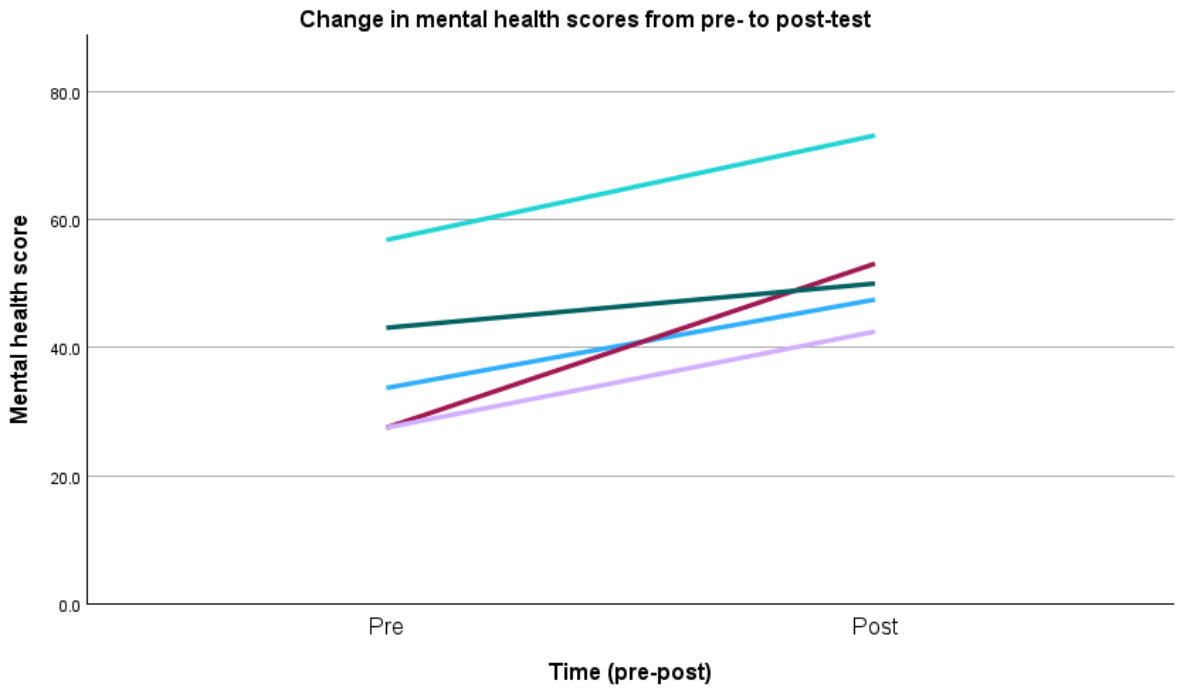


Figure 5: Individual changes in mental health scores(Global score) from pre- to post-intervention.

**Lines represent individual participants who completed assessments at both baseline and follow-up*.

4.1.4 Participant feedback

4.1.4.1 Quantitative

Service feedback responses were recorded for 6 participants. The responses to the bespoke Likert scale questions and the Acceptability of Intervention Measure items are summarised in Tables 6 and 7, respectively.

Table 6: Frequency of responses to Likert scale questions on the exit evaluation form

Question How would you rate your experience with…	**Very poor**	**Poor**	**Fair**	**Good**	**Excellent**
… the recruitment process?	0 (0%)	0 (0%)	0(0%)	2 (33.3%)	4 (66.7%)
… the assessment sessions?	0 (0%)	0 (0%)	0 (0%)	3 (50%)	3 (50%)
… the exercise sessions?	0 (0%)	0 (0%)	0 (0%)	2 (33.3%)	4 (66.7%)
… the physical activity support?	0 (0%)	0 (0%)	0 (0%)	2 (33.3%)	4 (66.7%)
… the programme overall?	0 (0%)	0 (0%)	0 (0%)	1 (16.7%)	5 (83.3%)

Table 7: Frequency of responses to Acceptability of Intervention Measure items on the exit evaluation form.

Question	**Completely disagree**	**Disagree**	**Neither agree nor disagree**	**Agree**	**Completely agree**
The Exercise for Wellbeing programme meets my approval	0 (0%)	0 (0%)	0 (0%)	1 (16.7%)	5 (83.3%)
The Exercise for Wellbeing programme is appealing to me	0 (0%)	0 (0%)	0 (0%)	1 (16.7%)	5 (83.3%)
I like the Exercise for Wellbeing programme	0 (0%)	0 (0%)	0 (0%)	2 (33.3%)	4 (66.7%)
I welcome the Exercise for Wellbeing programme	0 (0%)	0 (0%)	0 (0%)	1 (16.7%)	5 (83.3%)

4.1.4.2 Qualitative

4.1.4.2.1 Overall Acceptability and Experience

Overall, participant feedback indicated a high level of acceptability and a consistently positive experience of the programme. Responses suggested that the programme was perceived as relevant, safe, and helpful, with participants expressing confidence in the structure, delivery, and support provided. All participants reported that they would recommend the programme to others in similar circumstances.

4.1.4.2.2 Facilitators and Positive Features

Participants identified several factors that supported engagement, based on responses from the exit questionnaire. These included the value of a structured weekly routine, a supportive and non-pressurising trainer, the flexibility to take breaks when needed, and personalised support such as exercise adaptations and the presence of wellbeing staff. Session timing was also described as convenient, and the overall atmosphere was characterised as friendly and safe.

4.1.4.2.3 Barriers and Obstacles to Engagement

Reported obstacles were mainly personal rather than procedural. The most common barriers related to physical and health issues, including injuries, illness, and fluctuating physical health. Some participants also reported low motivation, anxiety, explaining that there were days when they "did not want to attend," although they typically enjoyed the sessions once they arrived. No major procedural barriers were identified; students did not report difficulties with recruitment, assessments, or staff interactions, and a small number simply wrote "none."

4.1.4.2.4 Suggestions for Improvement

Participants reported few suggestions for improvement, indicating that the programme generally met their needs. The only specific recommendation was to offer an additional session day, as some students may be unable to attend sessions scheduled on Wednesdays. Additional comments were brief but positive, with participants describing the programme as helpful and beneficial. Notably, one participant reported that participation in the programme reduced their alcohol-related socialising.

4.2 Qualitative findings (thematic analysis)

Qualitative data were generated through semi-structured interviews with six student participants and six members of staff involved in the programme. Thematic analysis of these interviews addressed the study's objectives of feasibility, acceptability, and fidelity, assessing preliminary effects and resulted in the development of three overarching themes. These

themes were: (1) engaging in physical activity under academic and psychological pressure; (2) feeling safe enough to try: trust, flexibility, and person-centred care; and (3) from participation to personal change. The themes and their respective sub-themes are presented below

4.2.1 Theme 1: Engaging in physical activity under academic and psychological pressure

This theme captures how students attempted to engage in a supervised physical activity programme while navigating substantial academic, psychological, and structural pressures inherent to university life. It also reflects the key facilitators and operational conditions that enabled or constrained participation, thereby directly informing the feasibility of delivering such an intervention within a university setting.

4.2.1.1 Psychological and motivational barriers

A primary challenge to engagement was rooted in internal psychological barriers. Participants frequently described difficulties overcoming low motivation, depressive inertia, and anxiety about exercising. This initial hurdle, requiring significant effort to overcome inertia, was described by students. One student (Bex) noted: “I think motivation is the main one. Where you're, like, debating, if I actually wanted to do it. But then once I started, I felt more, like I wanted to come along every week.”

4.2.1.2 Academic and life pressures

Engagement was routinely disrupted by external, systemic pressures inherent to the university setting, with attendance patterns aligning with academic commitments. Students and staff noted that the intensity of exams, deadlines, and holiday breaks frequently compromised participation. This predictable challenge, specific to the university calendar, was confirmed by staff: One staff member (Mia) explained:

In terms of coinciding with exams, there was a drop off when there was exam deadlines and a lot of work stress... I also noticed around Easter, nobody tried. Turned up again, they all went home for Easter, or they were doing other things that, again, is quite common, quite normal.

4.2.1.3 Facilitators of engagement

Despite the challenges, several structural and social components successfully facilitated engagement. The on-campus location and the presence of peers helped normalise participation and reduced anxiety around exercising in a gym setting. The small-group format and collaborative delivery between the exercise instructor and wellbeing staff were seen as key strengths, enabling students to feel supported while allowing the instructor to focus on session delivery. The routine established by the fixed schedule was highly valued, offering necessary structure, as described by one participant (David):

So it was quite good to have, like, a structured time where I had to attend, you know. So it was just every the same time, every week …and I'm glad that it was a group so it wasn't just focused on me."

The logistical convenience and group privacy further facilitated attendance: Evy noted the practical and psychological benefit: "super close to where I usually go for my classes. I prefer the group session because I don't like having a bunch of attention on me. I do things worse when people are watching me."

4.2.1.4 Recruitment and operational constraints

From a delivery perspective, staff generally described the programme as highly feasible to run within existing university resources, noting that the sessions were well organised, predictable, and straightforward to deliver. Lucas confirmed the ease and economy of operation: "I think the exercise sessions were well organised... So, it's an easy service to deliver to get the results ...whereas this is in terms of economics, it's relatively cheap to run and comparable to all the other services". William further attested to the overall feasibility: "I thought it was very feasible".

However, operational feasibility was consistently strained by administrative and structural limitations. The qualitative findings provided insight into the moderate recruitment rate into the research component, indicating that reluctance was not related to the exercise programme itself but rather to the complexity of the research administration and time commitment. Mia explained the perception of research burden:

I think when you're first telling them about shit, I think people sort of switch off a little bit when they find out there's going to be a lot of paperwork. You know, it's like we know ourselves; we can be put off by that.... I think that's why some of them didn't take up the research side.

4.2.2 Theme 2: Feeling safe enough to try: trust, flexibility, and person-centred care

This theme captures how the programme's person-centred delivery fostered psychological safety, trust, and comfort, enabling students to engage with physical activity despite vulnerability and anxiety. It reflects the high acceptability of the intervention and the fidelity of its implementation, highlighting how non-judgmental practice, instructor adaptability, and the active involvement of wellbeing staff ensured that core programme components were delivered consistently while remaining responsive to individual needs.

4.2.2.1 Emotional Safety and Group Format Comfort

The programme demonstrated high acceptabilitywith qualitative findings highlighting the perceived psychological safety and non-judgmental atmosphere as the key drivers. The small-group format and the presence of peers were crucial in reducing the barrier of gym intimidation.

Participants consistently described the group setting as less intense and providing psychological protection from being watched. Bex further reinforced this reduced pressure:

I think if it was just me and an instructor, it would feel really intense. Yeah. It was it felt a lot less intense because there was a lot of us, and it didn't feel like anyone was watching me because we were all focused on our own our own things.

Emilia elaborated on the positive internal shift: "I just sort of realised that not everyone's looking at me. I'm okay. They're doing their own thing, so I'll do my own thing. But I think I would have been a lot more nervous if it was just a one to one..."

The group format also successfully fostered social connection and reduced anxiety through peer presence, as Lucy noted: “I got to know the people in the group… which made it less scary.”

Staff also recognised the value of the group setting in minimising social anxiety and maximising comfort for students. Jacob noted the importance of relative anonymity for students, stating: “A lot of students would find it quite intense having one-to-one sessions with a fitness instructor. In a group people can be a little bit anonymous and just get on with it without all the attention being on them.” Additionally, staff affirmed the potential for social gains: William stated: “We kind of see the potential value of people socialising during the sessions, so being able to meet other students who you may have not met before and potentially build new friendships and contacts.”

4.2.2.2 Instructor adaptability and high protocol adherence

The programme demonstrated high overall fidelity, with all core components delivered as planned, apart from the participant handbook, which came in too late for some students. Fidelity was maintained alongside flexibility in session delivery, allowing the instructor to tailor exercises in response to students’ physical capacity, energy levels, and momentary health needs. This approach enabled the programme to remain structured while accommodating individual differences.

This adaptability was evident in the instructor's response to fluctuating physical needs, as one student (Emilia) noted. "When I was ill and injured, the exercises were adapted so that they were still safe for me to do." Despite this flexibility, the programme maintained high structural integrity, with staff (Lucas) confirming: “I think the exercise sessions were well organised. So, there was a clear theme to every session.”

4.2.2.3 The role of wellbeing staff

The collaborative staffing model, involving both the exercise instructor and the Wellbeing staff, was critical for achieving both high acceptability and fidelity. The presence of the Wellbeing team was crucial for reducing perceived risk and providing emotional support. This dual role—emotional and logistical—was frequently cited by staff and students.

One staff member (John) highlighted the benefit of staff involvement in the session: “If you need her, she would also come up and check on you if you'd taken a break and stuff like that. But I also found it nice that she wasn't just like sat there just watching everyone...she was somewhat joining in with the programme.”

Furthermore, staff confirmed the practical benefit of having multiple roles represented. Mia, a member of the wellbeing staff, noted that having wellbeing support was "a good thing to have, and probably was reassuring for (instructor) because then he could just concentrate on… his job and his classes, rather than worrying that there was a group of students with some mental health issues…”

4.2.2.4 Behavioural strategies

The final sessions included a behavioural-support component (structured handbook) to encourage continued physical activity outside the supervised sessions. Student accounts suggested that this structured tool was perceived positively as an external prompt to increase accountability. One participant (Evy) described the value of having an external structure, noting that “this is just like a more structured way of doing that,” and that having something resembling “homework” could increase accountability: “if I have that pressure, then I would definitely do it.” However, participants also acknowledged the challenge of maintaining activity independently, even with external support; for example, Evy reflected that “it would have to be a thing where I really, really actively force myself to keep it up.” Another participant (Emilia) viewed the handbook positively as a motivational aid, describing it as “a really lovely idea” that encouraged her to try to remain active beyond the supervised sessions. Overall, participants described structured behaviour-support tools as potentially helpful when framed as optional and supportive, although maintaining independent engagement remained challenging.

4.2.3 Theme 3: From participation to personal change

This theme captures the early perceived impacts of participation in the programme, illustrating how engagement in supervised physical activity translated into psychological, physical, behavioural, and social change. It encompasses improvements in mood and anxiety,

enhanced confidence and resilience, perceived gains in physical fitness, shifts in daily functioning and lifestyle behaviours, and varied experiences of social connection.

4.2.3.1 Mood improvement and anxiety reduction

Participants consistently reported improvements in their immediate mood, overall energy levels, and anxiety symptoms, linking physical activity directly to psychological benefits. The benefits spanned symptomatic relief and immediate mood enhancement. One student (Evy) noted a direct impact on anxiety symptoms: "I think it helps with my anxiety, because sometimes I have like, a lot of trouble breathing, so like doing exercises that helps with, like, cardiovascular, like, just like strengthening, like physically almost seems to help."

The immediate psychological boost after completion was also consistently reported. Another student (John) directly linked the sessions to feeling better mentally: "I found that I did feel myself, like mental health being better after the sessions, and I was definitely sleeping better. Oh yeah, after that, so it was helping, definitely".

Emilia described the sense of achievement: "I did feel more cheerful having done it, because you feel like you've achieved something. Going to the class and doing the thing... you do feel like a little bit of achievement because you've done it".

4.2.3.2 Confidence, pride, and resilience

Beyond symptom reduction, participants described positive changes in how they viewed themselves and their abilities, particularly in relation to self-efficacy, pride, and resilience. This included a growing confidence in physical capabilities and shifts in self-perception regarding exercise and daily life management often leading to decisions about sustained activity.

Lucy highlighted the shift in self-perception and enjoyment, having “I have noticed an improvement with exercising Mental health and how I actually quite enjoy going to the gym and stuff, which I wouldn't have known beforehand”. This increased self-efficacy often led to concrete action toward continued activity; for example, Emilia“decided to join the gym afterwards". David connected the programme to resilience in time management: “now, having done exercise, uni work and my job at the same time concurrently, I feel more confident in being able to do that and not feel like I'm sort of spreading myself too thin”. This confidence

extended to resuming and enjoying previous exercise activities: “Oh yes, I think I'm going to get back into like running and stuff, because I enjoy It.” Bex gained a strong sense of pride, particularly concerning physical progress: “In the sessions, would always feel proud of my progress and, like, proud of what I was able to do. Especially because I wouldn’t have been able to do that, like, last year”.

4.2.3.3 Physical fitness gains

Participants frequently reported tangible improvements in their physical capacity, stamina, and energy over the six-week period. These gains were perceived as validating and motivating. Bex reported increased physical capacity: “I have more endurance now”. John noted subtle improvements in strength: “I was just noticing little bits slowly, with my physical health, I realised I was getting just a little bit stronger and stuff like that”.

Emilia commented on specific results despite injury limitations: “I thought (instructor) was great in terms of coming up with alternative things that I could do with my bottom half, which is now very lean”.

4.2.3.4 Social belonging and support

While socialisation was not uniform across all participants (some did not interact with peers), the group format successfully fostered a sense of relatedness and supportive presence for those who engaged socially.

Bex highlighted the mutual support and camaraderie: “I think it helped, like with like friendships. We all got very friendly with each other and it felt very supportive because we were all supporting each other...making little jokes and laughing with each other”.

Lucy noted the comfort of having peers: “I got to know the people who were doing it, so that was quite good. Because I felt like I knew people, I was, like, a bit scared”.

4.2.3.5 Reduced harmful behaviours and lifestyle change

The programme facilitated early positive changes in lifestyle patterns, including improved sleep and the replacement of passive or harmful coping mechanisms with constructive activity.

The most frequent lifestyle changes concerned the establishment of healthy routines and improved sleep quality. John emphasised the improvement in sleep: “Well, one of the main benefits I saw was definitely the improvement in my sleep schedule. Being able to actually like, stay asleep a little bit longer and fall asleep, which is one of the main problems I was having there”. Lucy confirmed the physical mechanism behind better rest: “I felt, like, more tired at the end of the day, which means I can sleep better. She noted:

I found out about it in one of my well-being sessions… I have a tendency to go off late at night. And that's not good. So, they asked if I wanted to do this to see if it would, like, limit me going off walking, which it has done.

Furthermore, students reported gaining a valuable structure for future adherence to physical activity: Bex highlighted the behavioural structure gained: “I liked the routine that it brought. And, I think it's showed me that having a routine is really, really helpful when feeling better about yourself.”

Staff feedback confirmed the systemic nature of these changes, including the cessation of harmful coping mechanisms. Mia highlighted a dramatic shift in one student's habits: “One of them had quite poor lifestyle choices related to alcohol, and she's completely turned that around now. She stopped drinking, and she said that the exercise actually helped her feel better about herself, and it gave her another focus, rather than drinking”.

4.3: Integration of quantitative and qualitative findings

Quantitative and qualitative findings were considered together to examine areas of convergence across feasibility, acceptability, fidelity, and preliminary effects. Overall, quantitative indicators of service uptake, research consent, attendance, and retention were reflected in qualitative findings describing engagement, delivery processes, and contextual barriers. Qualitative findings also helped to contextualise quantitative data by highlighting

academic pressures, health-related challenges, and structural factors influencing participation. Across domains of acceptability and fidelity, high quantitative ratings aligned with interview accounts describing positive experiences, perceived safety, and consistent programme delivery. With respect to preliminary effects, perceived improvements in wellbeing and functioning reported in interviews were broadly consistent with observed quantitative trends, although interpretation is limited by the small number of participants with complete pre–post outcome data. An integrated summary of the quantitative and qualitative findings is presented in Table 8.

Table 8: Integrated Summary Table (Quantitative + Qualitative)

Objective	Key Quantitative Findings	Key Qualitative Findings	Interpretation
Feasibility	- Research consent rate among service participants (61.1%) - Service uptake: 18 students accessed and commenced the programme - Retention rate (54.4%) * - Mean Attendance (4.2 out of 6) ** - Incomplete pre–post data across all outcome measures (72.7%) ***	- Psychological and motivational barriers (e.g. injury, illness, low motivation) - Academic pressures and assessment deadlines - Structural constraints (referral process, fixed mid-morning session time) - Engagement facilitators: predictable weekly structure, on-campus location, wellbeing staff presence - Staff perceived the programme as manageable within existing university resources	- Feasible recruitment to the research study among service users; acceptable attendance - Engagement vulnerable to contextual and individual barriers - Missing data limited quantitative confidence - Programme feasible but influenced by contextual factors
Acceptability	- 83.3% selecting “Excellent” - 66.7–83.3% chose “Completely agree - 100% recommend to others” ****	- Sessions described as enjoyable, helpful, and beneficial - Psychological safety and comfort within a non-judgmental environment - Supportive trainer and presence of wellbeing staff enhanced feelings of safety - Staff perceived programme as safe and valuable	- Both quantitative ratings and interview data indicate high acceptability of the programme among those who took part
Fidelity	- 100% of sessions delivered with core components implemented as planned;	- Sessions described as well organised, predictable, and consistently delivered - Clear instructions and structured session format reported by staff	- High fidelity to the planned intervention - Sessions delivered largely as intended

	- behavioural support was not delivered initially but introduced later - appropriate adaptations made where required	- Exercise adaptations made in response to injury, fatigue, or anxiety - Adaptations perceived as supportive and intentional, rather than deviations from the intervention	- Adaptations were intentional, supportive, and aligned with participant needs
Preliminary Effects	- Preliminary trends towards improved mental health outcomes - No adverse events reported	- Perceived improvements in mood, confidence, energy, sleep, and daily functioning - Increased willingness to engage in physical activity - Reports of improved routines and lifestyle structure - Indications of healthier routines and lifestyle changes	- *Converging quantitative and qualitative findings suggest potential preliminary benefits* - Findings should be interpreted cautiously due to the small number of complete quantitative cases - Qualitative data provided stronger support for perceived improvements in wellbeing and functioning

*****Retention: 6/11 participants (54.5%) completed all six sessions of the programme.

**Attendance patterns among consented participants varied, with 3/11 attending two sessions, 1/11 attending four sessions, and 1/11 not attending any sessions. Mean attendance across participants was 4.2 out of 6 sessions (approximately 70% of possible sessions).

*** Complete pre–post datasets, including questionnaire, laboratory, and accelerometer measures, were available for 3/11 participants (27.3%)

**** All ratings of recruitment, assessment, sessions and support on the exit questionnaire fell into “Good” or “Excellent”, with 83.3% selecting “Excellent”. On acceptability items, 66.7–83.3% chose “Completely agree”. All participants indicated they would recommend the programme to others in a similar situation

Chapter 5: Discussion

5.1 Summary of key findings

The aim of this study was to evaluate the feasibility, acceptability, fidelity and preliminary effects of a six-week supervised physical activity programme for university students experiencing mental health difficulties using a mixed-methods research design. Overall, the findings indicated that the intervention functioned as a highly acceptable support service and was operationally feasible, with a high degree of fidelity in delivery.

The programme achieved high levels of acceptability among both students and staff. This was underpinned by a strong sense of psychological safety, the non-judgmental nature of the small group-based format, and the concurrent presence of wellbeing and exercise staff. Together, these elements enabled students to focus on participation rather than performance, and to engage with physical activity in a manner that was responsive to their mental health needs.

Findings related to feasibility were more mixed. Although the programme was deliverable in practice, engagement was strongly influenced by the psychological effort required for students to overcome internal barriers, as well as by the competing demands of the academic calendar. Recruitment to the research component (61.1%) was more limited than service uptake, highlighting the distinction between the high acceptability of the wellbeing service itself and the perceived burden associated with research participation.

The absence of data on the number of students formally referred to or offered the programme limits firm conclusions about service-level recruitment success. The programme was delivered with high adherence to the planned design, and necessary procedural adaptations—such as recruitment-related adaptations and person-centred exercise modifications—served to strengthenthe integrity of the intervention.

Despite these challenges, quantitative analyses demonstrated statistically significant improvements in depressive symptoms PHQ-9, ReQoL-10, and MHI. These gains were strongly supported by qualitative accounts describing increased confidence, improved sleep, and enhanced functional resilience. However, objective outcomes related to physical activity and physical fitness were inconclusive, largely due to the small sample size and a high degree of

missing data. Consequently, larger-scale and longer-term studies with increased sample sizes are required to draw more definitive conclusions and to enhance the generalisability of these findings.

5.2 Feasibility

5.2.1 Overview of feasibility and student engagement

The first core objective of this study was to assess the operational feasibility of the programme and the factors influencing student engagement. The quantitative results relating to recruitment to the research component (61.1%) and programme retention (54.5%), when integrated with qualitative insights, indicate that feasibility was influenced by a range of interacting factors. Notably, student engagement was shaped by psychological barriers, disruption from academic pressures, and systemic constraints related to both the delivery of the programme and the research procedures.

5.2.2 Engagement and attendance feasibility

Retention and attendance patterns further illustrated the practical feasibility challenges associated with delivering a supervised physical activity programme to students experiencing mental health difficulties. Qualitative accounts from students highlighted that psychological barriers, such as low motivation, anxiety, and difficulty initiating activity, often made attending sessions challenging—even when the sessions themselves were experienced positively. Students repeatedly reported that the greatest hurdle was not the exercise itself, but rather overcoming what can be described as 'depressive inertia' and anxiety about entering the gym space. This suggests that the mental effort required to initiate activity (or the 'activation energy') was the most significant obstacle to sustained attendance. Therefore, attendance variability appeared to reflect fluctuating levels of motivation and anxiety rather than any dissatisfaction with the programme itself.

This personal struggle with initiation aligns with findings by Skinner et al. [62], who identified that for students with mental health challenges, internal barriers like anxiety, low energy, and

lack of motivation often significantly hinder their actual capability to engage in exercise. They also highlight a clear gap between students' motivation to engage in physical activity and their perceived ability to initiate and sustain participation. While students recognised the value of exercise and expressed a desire to be active, internal barriers such as anxiety, low energy, and feeling overwhelmed often limited their practical capability to translate intention into action. It can therefore be inferred that this aligns closely with the present findings, where attendance variability reflected not a lack of interest, but the significant psychological effort required to initiate activity.

The retention rate observed in the present study (54.5%) closely aligns with the 54% research completion rate reported by Jeftic et al. [75] in their evaluation of a similar university-based exercise service. This consistency suggests that moderate retention is a common challenge when conducting research with student populations experiencing mental health difficulties, reflecting the inherent challenges of conducting research within university settings and periods of heightened academic and personal demands, rather than deficiencies in programme feasibility.

5.2.3 Procedural adaptation for research recruitment

To support recruitment to the research component, a pragmatic procedural adaptation was introduced during the study. While this strategy may have contributed to increased engagement among some participants, it also highlights the challenges of recruiting students experiencing mental health difficulties into research alongside service provision. These findings underscore the importance of flexible and ethically appropriate recruitment strategies in feasibility studies conducted within real-world university settings.

5.2.4 Academic and structural constraints on feasibility

Feasibility was vulnerable to the structural rhythms of the university calendar. Academic pressures, including coursework deadlines and examinations, were described as primary disruptors of attendance. This interpretation is supported by the observed programme completion and attendance patterns, whereby only six of the eleven consented participants completed all six sessions, alongside qualitative interview data in which participants and staff

linked non-attendance to academic workload and competing academic priorities. Similar structural and logistical constraints have been reported in other feasibility studies, where academic workload, scheduling conflicts, and competing priorities were identified as major barriers to participation in physical activity interventions among university students [21, 62].

Importantly, existing literature suggests that students experiencing mental health difficulties may be particularly vulnerable to these academic pressures. Poor mental health has been shown to adversely affect academic performance, motivation, and persistence in higher education. For example, Thorley [33] reported that students with mental health problems were significantly more likely to experience academic disruption, with a 210% increase in university drop-out rates among this population between 2009/10 and 2014/15. Within this context, it is plausible that students managing mental health difficulties may experience heightened concern about academic outcomes, particularly during examination periods. Such concerns may amplify anxiety and perceived pressure, making it more difficult to prioritise engagement in supportive interventions.Consequently, increased academic stress during peak assessment periods may contribute to reduced attendance or temporary disengagement from the programme, as a result of competing academic demands and heightened psychological strain [62]. This interpretation highlights how feasibility in university-based interventions is shaped not only by programme design, but also by the broader academic and psychological context in which students are situated.

5.2.5 Programme design features supporting feasibility

Despite these challenges, several facilitators supported engagement when students were able to attend. The fixed weekly schedule provided structure and routine, which many students described as motivating and grounding. The on-campus location reduced practical barriers to attendance, while the group-based format functioned as a social buffer, helping to normalise the gym environment and reduce anxiety for those who were hesitant to exercise alone.

These findings align with the work of Yorks et al. [48], who provided quantitative evidence for the added value of group-based physical activity in reducing stress compared to individual exercise. Similarly, the current findings are consistent with qualitative evidence reported by Skinner et al. [62], who highlighted the importance of shared experience and social

connection within group-based exercise programmes. Exercising alongside peers who were perceived as being “in the same boat” appeared to foster a sense of support and safety, reinforcing the role of shared experience in facilitating motivation and continued engagement.

5.2.6 Recruitment and operational feasibility

In terms of operational delivery, the programme was perceived by staff as feasible and straightforward to implement within existing university resources. The collaborative delivery model, involving both an exercise instructor and wellbeing staff, was viewed as a key operational strength. This model allowed students to feel emotionally supported while enabling the instructor to focus on session delivery, thereby enhancing both safety and efficiency.

Recruitment into the research component of the programme was 61.1%, with 11 out of the 18 students who commenced the exercise sessions consenting to participate in the research. This rate falls within the range reported in similar feasibility studies, where recruitment is calculated based on students referred to and engaging with an existing wellbeing or exercise service. Danielsen et al. [21] observed an 81.2% enrolment rate, based on 13 out of 16 eligible students referred from talking therapy sessions. While the recruitment rate in the present study is slightly lower than that reported by Danielsen et al., both figures suggest that integrating exercise within existing wellbeing pathways may support willingness to participate in the research component among students accessing such services. These findings reinforce that recruitment success is highly context-dependent and influenced by the specific referral mechanisms utilised within university settings.

In addition to recruitment to the research component, it is important to consider recruitment to the service itself. Over a six-month period, 18 students accessed and commenced the supervised physical activity programme. While this was lower than the initially anticipated study sample of 20–40 participants, interpretation of service uptake requires consideration of the wider wellbeing context. During the same academic year, the York St John University Wellbeing Service supported over 1,000 students through self-referral routes, the vast majority of whom were classified as having mild-to-moderate mental health difficulties. Against this backdrop, uptake of the physical activity programme was relatively limited, but

likely reflects the voluntary and targeted nature of an exercise-based intervention within a diverse wellbeing service offer, rather than a lack of need.

However, qualitative findings indicated that engagement with the research component posed additional challenges beyond participation in the exercise sessions themselves. Recruitment was described as more difficult during busy academic periods, and the fixed mid-morning session time was not suitable for all students. In addition, referral and administrative processes were perceived as time-consuming, with students often discouraged by the amount of paperwork and formal enrolment procedures alongside existing academic pressures. This is consistent with observations by Skinner et al. [62], who noted that administrative complexity and time pressures are significant barriers that can deter students from engaging in research procedures embedded within service delivery. This distinction between engagement with the service and engagement with the research highlights an important feasibility consideration for future trials, where streamlining consent and data collection procedures may improve recruitment without compromising the potential for research insights.

5.2.7 Feasibility of data collection and assessment procedures

The feasibility of data collection was constrained by several practical factors. Data completeness was limited, particularly for laboratory and accelerometer measures, largely due to fluctuating attendance and competing student commitments during the assessment periods. These obstacles highlight the complexity of maintaining clinical rigour and high data fidelity within the dynamic environment of a university campus.

5.2.8 Summary of feasibility findings

In summary, while the programme was operationally feasible, maintaining engagement with the research component proved more challenging, particularly within the context of students' academic and psychological demands. The findings indicate that although the group-based, on-campus design effectively facilitated initial engagement, attendance and continued participation were determine by the psychological effort required by students experiencing

mental health difficulties, as well as to the competing demands of the university calendar. Furthermore, the distinction between service appeal and research burden suggests that future trials must simplify administrative and data collection procedures to improve recruitment and data fidelity.

5.3 Acceptability

5.3.1 Overview of acceptability

The second core objective of this study was to examine the acceptability of the supervised physical activity programme among participating students and staff. Overall, the findings indicate that the programme was highly acceptable to those who engaged with it. Quantitative exit questionnaire data demonstrated consistently positive evaluations, with the majority of participants rating their overall experience as “Excellent” and all participants indicating that they would recommend the programme to others.

These positive ratings were supported by qualitative findings, which highlighted perceptions of psychological safety, emotional support, and appropriateness of the programme for students experiencing mental health difficulties. Together, the quantitative and qualitative evidence suggests that the intervention was experienced as supportive, non-judgmental, and well-suited to students’ needs, providing a strong foundation for its acceptability within a university wellbeing context.

5.3.2 Psychological safety and the non-judgmental environment

A central aspect of the programme’s acceptability was the strong sense of psychological safety reported by students. Qualitative findings indicated that the intervention was experienced as non-judgmental, supportive, and emotionally safe, which was particularly important for students with levels of social anxiety. The small-group format appeared to reduce feelings of gym-related intimidation, allowing participants to engage in physical activity without fear of being observed or evaluated.

Students described the sessions as enjoyable and appropriate to their needs, emphasising the absence of pressure to perform and the reassurance that taking breaks or adapting exercises was acceptable. This supportive atmosphere appeared to reduce anxiety and encouraged continued engagement, even among students who initially felt apprehensive about attending. The findings suggest that emotional safety was a key mechanism underpinning acceptability, enabling students to focus on participation rather than performance.

These findings can be contrasted with those reported by Skinner et al. [62]. In their qualitative study, fear of being judged by others and discomfort with exercising in crowded or unfamiliar environments were identified as key barriers to participation among students experiencing mental health difficulties. Participants described anxiety related to being observed, performing exercises incorrectly, and feeling out of place in busy gym settings, all of which reflect a lack of perceived emotional or psychological safety. The importance of the exercise setting in influencing feasibility and participant engagement has also been highlighted in methodological guidance for physical activity interventions, which emphasise that intervention settings should be accessible and must not create barriers to participation [76]. In the present study, the use of a private gym setting was a deliberate choice to mitigate these environmental barriers and foster a sense of psychological safety. By contrast to the barriers noted by Skinner et al. [62], the creation of a non-judgmental and emotionally safe setting—particularly through small-group delivery in a private space—may play a crucial role in reducing fears of evaluation and enhancing acceptability among students with elevated social anxiety.

5.3.3 Acceptability of the group-based format

The group-based delivery format emerged as another vital component to programme's acceptability. Students consistently reported that participating in a small group reduced feelings of self-consciousness and anxiety associated with exercising, particularly in comparison to one-to-one sessions or independent gym use. Exercising alongside peers with similar mental health challenges appeared to normalise participation and reduce fears of being judged, making the experience feel less intimidating and more approachable.

The group format also allowed students to maintain a degree of anonymity while still benefiting from social presence, which was particularly important for those with elevated social anxiety. Rather than feeling observed or evaluated, participants described being able to focus on their own activity while drawing reassurance from the shared experience of others "in the same position". This balance between social connection and personal space appears to have enhanced comfort and willingness to engage, thereby strengthening overall programme acceptability.

This supportive social dynamic can be understood through the concept of 'relatedness' within Self-Determination Theory (SDT), helping to explain why the group-based format was experienced as highly acceptable. As Ryan and Deci [39] emphasise, relatedness is a fundamental psychological need that, when satisfied through a sense of belonging and connection, facilitates the transition from external pressure to autonomous motivation. In this study, the group-based delivery helped to foster a community of mutual support. These findings align with existing literature suggesting that group-based physical activity interventions may offer unique psychological advantages for students experiencing mental health difficulties. Previous studies have demonstrated that group exercise can reduce perceived stress and improve wellbeing more effectively than individual activity, particularly when delivered in supportive and low-pressure environments [48]. Similarly, Skinner et al. [62] highlighted social support and shared experience as important facilitators of engagement in university-based exercise referral schemes.

5.3.4 Acceptability of staff presence and support

One of the key factors underpinning the high acceptability of the programme was its collaborative delivery model, in which a wellbeing and mental health staff member was present alongside the exercise instructor during sessions. Qualitative findings indicate that this dual presence enabled emotional support and physical safety to be addressed simultaneously. While the exercise instructor focused on the correct and safe execution of activities, the wellbeing staff member served as a reliable source of emotional support for students, particularly during the early stages of the programme when anxiety and uncertainty were more pronounced.

This supportive structure led students to perceive the programme not as a generic exercise activity, but as an intervention intentionally designed with their psychological needs in mind. As a result, apprehension about attending sessions was reduced, and an environment was fostered in which students felt comfortable pausing, modifying their level of participation, or seeking reassurance without fear of judgement.

From a broader implementation perspective, the collaborative model involving both an exercise instructor and wellbeing staff appears to be underexplored in the existing literature. While few studies have reported delivery models in which both roles are present simultaneously throughout physical activity sessions, comparisons can be drawn with the MED-WELL programme [77]. In that study, a multifaceted approach was employed whereby healthcare professionals provided educational input followed by instructor-led exercise sessions delivered in a sequential format. In contrast, the concurrent presence of both wellbeing staff and an exercise instructor throughout each session in the present study represents a distinct adaptation to existing models. This approach offered several advantages: the involvement of wellbeing staff appeared to foster psychological safety, while the exercise instructor was able to focus exclusively on technical instruction and physical safety. This clear differentiation of roles may have allowed participants to engage with the intervention knowing that both their emotional and physical needs were being supported by dedicated professionals. The highly positive participant feedback suggests that this integrated delivery model may have contributed meaningfully to the acceptability and feasibility of the programme.

The value of this support was illustrated by an instance in which one student experienced an acute panic response during a session which was not attributed to the exercise component of the programme. The wellbeing staff member responded promptly by providing emotional support and briefly accompanying the student outside the exercise space, allowing time for emotional regulation. The student subsequently returned to the session and continued participating. Importantly, this response prevented the experience from being perceived as a “failure” instead reframing it as a supported moment of resilience. This incident also reassured other participants that professional support would be readily available should difficulties arise, thereby strengthening collective confidence in the programme’s safety. This example demonstrates how embedding wellbeing support within the delivery of physical activity can

enhance programme acceptability by reducing fear of adverse experiences and increasing trust in the intervention.

In addition to emotional support, the exercise instructor's role in adapting activities to individual physical needs further contributed to programme acceptability. For example, one student with a prior shoulder injury was provided with modified exercises to ensure that participation remained safe and manageable, with the instructor regularly checking in throughout sessions. This flexibility reinforced students' confidence that physical limitations would be accommodated without exclusion or undue pressure.

Another important aspect was that the wellbeing staff member was not positioned as a passive observer during sessions. Their active participation in the exercises alongside students was consistently perceived positively and helped reduce feelings of being monitored or judged. This shared engagement contributed to a more equal and relaxed atmosphere and reinforced the perception that sessions were collaborative.

The combined presence of the wellbeing staff member and the exercise instructor played a central role in shaping the programme as a safe, supportive, and appropriate intervention for students experiencing mental health difficulties, thereby contributing substantially to its high acceptability within a university wellbeing context.

5.3.5 Perceived acceptability of behavioural support tools

In addition to the supervised sessions, the programme included a brief behaviour-support component in the form of a structured handbook, which was designed to encourage continued physical activity following the completion of the sessions. Due to the time required for its development and preparation, the handbook was introduced only in the final session and was provided to a limited number of participants. As a result, opportunities for sustained use during the intervention period were restricted, and examination of this component primarily focused on students' perceptions of its potential usefulness rather than on demonstrated behavioural change.

Qualitative accounts indicated that the handbook was experienced as a supportive external structure. One participant highlighted the value of having a more structured approach to maintaining physical activity, noting that the handbook functioned similarly to a form of

“homework” that could increase accountability and motivation to remain active, while simultaneously acknowledging that independent continuation of activity would still require active personal effort. Another participant viewed the handbook positively, describing it as a motivational and reassuring resource and referring to it as a “really lovely idea” that encouraged continued engagement in physical activity following the completion of the supervised sessions. This sense of continuity was further reinforced by the provision of a post-programme leaflet (see 'What Next?' Leaflet, Appendix B), which ensured that students felt supported rather than abandoned as they transitioned from supervised sessions to independent activity.

Overall, these findings suggest that structured behavioural support tools may be perceived as acceptable and potentially valuable when introduced toward the later stages of a short-term intervention and delivered in an optional and supportive manner. This interpretation aligns with previous qualitative research demonstrating that structured programmes incorporating behaviour change strategies—such as goal-setting, planning, and self-monitoring—are perceived by students as helpful for supporting engagement in physical activity and for overcoming symptom-related barriers [55].

It is also important to note that while the research component of this programme has concluded, the service itself continues to be delivered as part of the university’s wellbeing provision. The handbook is currently being used with new students accessing the service, indicating the potential for this behavioural support component to be sustainably integrated into ongoing university mental health services.

5.3.6 Summary of acceptability

The supervised physical activity programme was perceived as highly acceptable to participating students and staff. Quantitative and qualitative evidence consistently highlighted positive perceptions of the programme, which was experienced as supportive, appropriate, and well-aligned with students’ mental health needs. Acceptability appeared to be underpinned by several key mechanisms, including the creation of a psychologically safe and non-judgmental environment, delivery in a small group-based format, and the visible presence of supportive staff addressing both emotional and physical needs. Together, these

elements reduced anxiety about participation, increased confidence, and supported sustained engagement, positioning the programme as a psychologically informed wellbeing initiative within a university context. Ultimately, these findings suggest that for physical activity to be acceptable to clinical student populations, emotional security must be as carefully considered as the physical activity curriculum.

5.4 Fidelity

5.4.1 Fidelity of programme delivery

Findings also indicated a high degree of fidelity in programme delivery. Throughout the six-week intervention period, sessions were delivered consistently and in close alignment with the planned programme structure. All sessions were delivered with the simultaneous presence of both the exercise instructor and a member of the wellbeing team, and session duration was consistently maintained at 60 minutes. Notably, the delivery team—including the lead researcher in their role as study coordinator—were present at every scheduled session, even in instances where no students attended. This continuity reflects a strong commitment to the intervention protocol and highlights staff adherence to maintaining programme integrity.

5.4.2 Consistency and adherence to the planned structure

Staff accounts described the sessions as well organised, predictable, and consistently delivered across the intervention period. Core components of the intervention—including supervised group-based exercise and a clearly defined session structure—were implemented as intended. Session content followed the planned format, comprising a warm-up, main exercise component, cool-down phase, and routine monitoring of RPE. Although specific exercises varied from week to week, the overall session framework remained consistent, supporting continuity and familiarity for participants. This consistency was considered particularly important for maintaining engagement among students experiencing anxiety or fluctuations in mental health, for whom predictability and structure were perceived as supportive. The consistent delivery reported by staff aligns with the importance of evaluating

instructor fidelity in pilot studies, as highlighted by El-Kotob and Giangregorio [76], ensuring that activities are prescribed and demonstrated in accordance with the study protocol.

5.4.3 Fidelity through flexibility and planned adaptation

A key qualitative finding was that high fidelity was achieved not through rigid adherence to a fixed protocol, but through planned, person-centred adaptations. Both students and staff consistently identified the exercise instructor's flexibility as a central strength of the programme. Exercises were routinely modified or substituted to ensure safety, most commonly in response to participants' pre-existing injuries or physical limitations. These adaptations maintained alignment with the underlying principles of the intervention while enabling continued participation and were perceived as a strength of delivery rather than deviations from the intervention model.

By prioritising psychological safety and individual needs over rigid exercise prescriptions, the delivery team preserved the core aims of the programme while remaining responsive to participants' fluctuating capacities. This flexible approach appeared to reinforce, rather than undermine, fidelity by ensuring that essential components were delivered in a manner that was both theoretically consistent and practically appropriate.

Similarly, Danielsen et al. [21] demonstrated that a tailored and supervised exercise approach is highly acceptable among students with mental health challenges. These findings support the necessity of providing professional guidance that can adapt to individual needs, reinforcing the idea that flexibility in delivery is essential for maintaining engagement in this specific population.

5.4.4 Role of staff presence and coordination in supporting fidelity

The consistent presence of both the exercise instructor and the wellbeing practitioner played a key role in supporting fidelity of delivery. Clear coordination between staff ensured that sessions were delivered as planned while allowing for real-time adjustments when required. This collaborative approach supported both physical safety and emotional wellbeing, ensuring that delivery remained closely aligned with the original intervention design. The integration

of professional expertise across physical activity and mental health domains enabled the programme to be delivered with both structure and responsiveness.

Collectively, these findings indicate that the programme was implemented with a high degree of fidelity, characterised by consistent delivery of core components alongside planned and responsive adaptations. This balance between structure and flexibility enabled the intervention to remain faithful to its theoretical and practical foundations while meeting the individual needs of participating students.

5.4.5 Procedural adaptations in behavioural support tools

While the core exercise sessions demonstrated high fidelity, a minor procedural adaptation occurred in relation to the introduction of the participant handbook. Due to development and preparation timelines, the handbook was introduced later than originally planned. To mitigate this, staff placed greater emphasis on verbal delivery of behavioural strategies and goal-setting during supervised sessions. This ensured that the behavioural support component remained active within the intervention, despite a change in the format of delivery.

[78] trial protocol defined intervention fidelity in terms of adherence to core COM-B (Capability, Opportunity, Motivation–Behaviour) intervention targets and the quality of the coach–student working alliance, while the intervention itself was intentionally designed using pragmatic principles that allowed flexibility in delivery (e.g., preference-based training spaces and individualised considerations) [78].Therefore, person-centred adaptations within sessions may represent fidelity to core processes rather than deviation from the intervention, as adaptations in the present study were consistently aligned with psychological safety, engagement, and participant capability.

5.4.6 Fidelity of intervention exposure (attendance and dose received)

While fidelity of delivery and session content were consistently high, fidelity related to intervention exposure was more variable. Attendance across the six-week programme differed between participants, with some attending all scheduled sessions and others attending fewer sessions. As a result, the intended frequency and continuity of exercise exposure were not

consistently achieved for all participants. This variability directly relates to participant fidelity; as noted by El-Kotob and Giangregorio [76], participant fidelity refers to whether individuals complete the prescribed activities as required by the protocol, including the intended frequency and duration. Importantly, when participants attended sessions, the intervention was delivered in full and in accordance with the planned protocol. Variability in attendance therefore reflects differences in participants' exposure to the programme, rather than in the way the programme was delivered. Qualitative findings indicated that inconsistent attendance was largely influenced by contextual factors, including academic pressures, illness, and reduced motivation, rather than dissatisfaction with the intervention itself. Overall, these findings highlight that fidelity in university-based interventions may be constrained by contextual demands on students, even when delivery remains consistent.

5.4.7 Summary of fidelity

The intervention was delivered with a high degree of fidelity, characterised by consistent adherence to the 60-minute session structure and the dual-staffing model. When participants attended sessions, the intervention was implemented in full and in accordance with the planned protocol; however, fidelity related to intervention exposure was more variable, as attendance across the six-week programme was not consistently achieved for all participants. A procedural adaptation occurred in relation to the timing of the participant handbook, which was introduced later than originally planned. Despite this, the continuous oversight provided by the research and wellbeing teams ensured that the core principles of the intervention were maintained, providing a reliable basis for interpreting the study's findings.

5.5 Preliminary effects

5.5.1 Overview

This section briefly examines the preliminary effects of the six-week supervised physical activity programme by integrating quantitative outcome data with qualitative feedback from students and staff. The programme appeared to have positive impacts on mental health, including improvements in mood, reduced anxiety, and increased confidence, while also fostering social benefits such as a sense of belonging and shared experience. Changes in

physical activity and fitness were less consistent, reflecting the challenges of measuring physiological outcomes within a short-term feasibility study. The following subsections provide a more detailed examination of mental health outcomes, perceived psychological and social benefits, and physical activity and fitness outcomes.

5.5.2 Mental health outcomes and psychological wellbeing

The statistically significant reduction in depressive symptoms (PHQ-9, $p = 0.027$) and the corresponding improvement in recovery-related quality of life (ReQOL, $p = 0.027$) suggest potential benefits of the programme. While these changes were statistically significant, interpretation of their practical significance is limited by the small sample size and should be interpreted with caution. These quantitative findings are contextualised by qualitative data, which indicated that a clear, structured weekly routine provided participants with a predictable point of engagement, which some students described as helpful during periods of low mood. Staff interviews further highlighted that collaboration between the exercise instructor and wellbeing staff contributed to the supportive and non-judgmental context in which the exercise sessions were delivered, enabling students to engage with the programme despite initial anxiety. This may have contributed to the positive shifts observed in mental health questionnaire scores.

The findings of the present study are consistent with previous research demonstrating statistically significant reductions in depressive symptoms among university students following physical activity interventions [21, 54, 55]. Importantly, qualitative evaluations, particularly in de Jonge's study [55], highlighted the role of supportive supervision and structured intervention delivery as key mechanisms underpinning improvements in mental health. This closely aligns with the qualitative findings of the present study, in which a supportive, safe, and non-judgmental environment, alongside a clearly structured programme, was consistently emphasised as central to students' positive mental health experiences.

The multifaceted impact of the intervention is further elucidated by findings from the MHI. The statistically significant improvement in the MHI Global Score reflects a dual outcome: a reduction in psychological distress alongside a simultaneous increase in psychological wellbeing. This suggests that the programme extended beyond symptom alleviation and

actively fostered positive mental health. These findings align closely with participant accounts of increased “confidence, pride, and resilience”. The significant improvement observed in the Depression/Behavioural–Emotional Control subscale is particularly noteworthy, as it supports qualitative evidence suggesting that students felt more capable of managing their everyday emotional states through exercise. However, the absence of statistically significant change in the Anxiety and Cognitive Function subscales suggests that while the programme facilitated immediate improvements in mood, more deeply embedded psychological or academic stressors may require longer-term interventions to produce measurable quantitative change. This pattern likely suggests that while mood-based symptoms are responsive to short-term activation, more ingrained psychological traits such as anxiety or cognitive deficits may require a more prolonged intervention period to manifest measurable quantitative shifts. Consequently, future research should explore whether extending the programme duration beyond six weeks yields more robust effects on these stable psychological dimensions. [57]The mechanisms underpinning these psychological gains can be further understood through Deci and Ryan’s Self-Determination Theory (SDT) [39]. SDT highlights that when individuals experience a sense of control over their actions (autonomy), feel capable in their endeavours (competence), and foster connections with others (relatedness), their motivation and overall psychological wellbeing flourish. These theoretical pillars align directly with the qualitative themes identified in the present study, suggesting that the programme's success was rooted in its ability to satisfy these fundamental psychological needs.

5.5.3 Physical fitness and physical activity outcomes

In contrast to the robust psychological gains, the physical and functional outcomes presented a more fragmented picture. As shown in Tables 2–4, these data indicate clinically meaningful, albeit inconsistent improvements. For example, all three participants demonstrated improvements in 30-s chair rise performance, and two participants showed notable reductions in resting systolic and diastolic blood pressure. In addition, one participant exhibited a marked improvement in estimated maximum oxygen uptake (from 31 to 50.3 ml/kg/min), which aligns with qualitative reports of feeling “more energetic” and having “increased functional capacity”. These individual improvements are consistent with the broader trends observed in university-based interventions; for instance, [21]a statistically

significant mean increase of 4.7 mL/kg/min in estimated VO2max ($p < 0.01$) among students, suggesting that structured programmes can indeed facilitate measurable cardiorespiratory gains when sufficient data are captured [21].

Despite these individual gains, a divergence remains between perceived physical benefits and the objective accelerometer data, with a slight reduction in moderate-to-vigorous physical activity (MVPA) observed in two of the three participants. This highlights a mismatch between perceived and device-measured activity: while students reported higher activity levels during interviews, these changes were not captured by our measurement devices. This mismatch is likely related to the timing of the follow-up assessments, which coincided with a period of heightened academic pressure. Staff feedback regarding "academic workload and scheduling conflicts" suggests that students may have reduced incidental physical activity (such as walking to campus) in order to prioritise examinations, even while maintaining their commitment to the supervised exercise sessions. The difficulty in capturing objective progress amidst academic cycles is a known challenge in feasibility studies. While Danielsen et al. [21] successfully demonstrated significant increases in muscular endurance—specifically in modified push-ups ($p = 0.01$) and sit-ups ($p = 0.02$)—the current study's reliance on a smaller n=3 subset highlights the practical obstacles of data collection in high-pressure university settings.

Consequently, the lack of objective statistical significance in physical outcome measures should be interpreted as a reflection of the practical challenges associated with data collection, rather than as definitive evidence of a lack of intervention efficacy. It is also important to consider the structure and dosage of the intervention, which comprised one supervised session per week over a six-week period, as this duration and frequency may be insufficient to elicit detectable physiological changes within objective measures. Similar discrepancies between perceived wellbeing and objective physical markers have been reported in other university-based physical activity feasibility studies; for example, Jeftic et al. [75] observed negligible or inconsistent physiological changes despite significant improvements in mental health outcomes. Taken together, these findings suggest that within short-term, supervised interventions, psychological and functional benefits may emerge earlier than measurable physiological adaptations.

Short-term physical activity interventions may first yield psychological and functional benefits, while measurable physiological adaptations are likely to require a longer intervention duration, greater training dosage, or extended follow-up periods. In this context, future research may benefit from aligning outcome selection and measurement strategies more closely with the primary aims of the intervention. Where mental health improvement is the central focus, greater emphasis may be placed on psychological, behavioural, and functional outcomes, with more intensive physical testing reserved for longer-term studies designed to capture physiological change.

5.5.4 Confidence, functioning, and everyday life impacts

Beyond symptom reduction, the programme's impact on confidence and daily functioning emerged as a central qualitative finding, adding depth and greater explanatory power to the improvements observed in the ReQOL and MHI scores. Participants consistently reported gains in "Confidence, Pride, and Resilience". These psychological shifts translated into tangible impacts in everyday life, with students describing an enhanced ability to manage and navigate the complexities of a busy student lifestyle. This included balancing employment alongside academic responsibilities, adhering to a regular weekly exercise routine, and maintaining overall structure in daily life.

These experiences align with the findings of Li and Huang [52], who highlight a positive correlation between physical activity and self-esteem in college students. They argue that physical activity serves as a vital indicator of well-being by connecting healthy behaviours to a student's daily life functions, thereby fostering a sense of "mastery" and "flow" that enhances subjective well-being. These changes were further reinforced by reported improvements in sleep quality and a greater capacity to sustain a structured routine despite seasonal academic pressures. [62]In the current study, participants identified post-exercise fatigue as a facilitator of better sleep quality, which in turn encouraged continued engagement. Conversely, Skinner et al. [62] reported that post-exercise fatigue acted as a primary barrier to participation for some students, who viewed it as an additional drain on their energy. This discrepancy suggests that the perception of physical fatigue—whether as a restorative aid for sleep or a deterrent to activity—is highly subjective and individually

determined. Such variation underscores the importance of person-centred approaches in university-based interventions and highlights the need for larger-scale studies to better understand the factors that influence how students perceive and respond to the physical demands of exercise. Although such outcomes are largely subjectively perceived and difficult to quantify, their repetition and coherence across participant accounts suggest that they constitute a meaningful component of the programme's overall impact.

Importantly, staff interviews indicated that the programme particularly encouraged one student to take "responsibility for their own behaviour and actions," which coincided with the replacement of harmful alcohol-related habits with a greater focus on exercise and was described as a broader "lifestyle turnaround." This behavioural shift may be understood in relation to autonomy, a core component of SDT [39], which emphasises the importance of individuals feeling ownership over their choices and actions. In this context, engagement in exercise may have provided a more autonomous and self-directed alternative to previous coping behaviours. This interpretation aligns with Li and Huang [52], who highlight intrinsic motivation and experiences of mastery as factors associated with subjective wellbeing among university students.

The intervention also yielded nuanced social outcomes, revealing a spectrum of engagement among participants. For some students, the small-group format acted as a facilitator of social belonging and support, enabling them to form friendships and connect with peers within a safe and shared environment. Staff observed that these interactions were particularly beneficial for students who had previously experienced social isolation related to their mental health difficulties. In line with this finding, Ryan and Deci [39] highlight the critical role of social support in physical activity, suggesting that it can enhance social networks by creating opportunities for interaction and socialisation, particularly in interactive settings such as group-based exercise. Consequently, this support can act as a protective buffer against stress and may prevent the worsening of depressive symptoms. In contrast, other participants reported minimal interaction with peers, instead focusing primarily on their individual exercise routines and personal goals.

This flexibility aligns with the findings of Gurung et al. [54] which emphasised the importance of creating a 'safe community' for students experiencing social anxiety. Their evaluation highlighted that many students avoid mainstream university sport due to social barriers, yet

value environments in which they can engage at their own pace and with reduced social pressure. Specifically, Gurung et al. reported that such programmes foster a sense of belonging and enable participants to 'push their own boundaries' within an understanding, non-judgmental environment, without the emphasis on competition or enforced social interaction. This divergence highlights that the programme's value lies in its flexibility: it functioned as a social bridge for students seeking connection, while simultaneously remaining a low-pressure, individualised space for those who preferred to use physical activity as a private coping strategy. This dual nature of the programme's social impact further reinforces its high acceptability, as it responded to diverse social needs without imposing a mandatory group or social environment on students who may experience social anxiety.

5.5.5 Summary of preliminary effects

The results reveal promising benefits on the mental wellbeing and functional resilience of university students. The alignment between significant quantitative improvements in mood and recovery-related quality of life, alongside qualitative accounts of personal growth, suggests that the intervention's most potent components were its structured yet flexible and reassuring psycho-social environment. While the available physical and activity data remain limited by the small sample size and academic cycles, the subjective gains in energy, confidence, and lifestyle responsibility indicate that the programme met its primary aim of fostering holistic wellbeing.

5.6 Strengths of the study

One of the primary methodological strengths of this study is the use of a mixed-methods design, which enabled convergence between quantitative outcomes and rich qualitative insights. This approach facilitated a more nuanced and in-depth understanding of the intervention's impact on student wellbeing, and the triangulation of data allowed the study to move beyond the mere reporting of outcomes by elucidating the mechanisms through which the intervention was perceived as a beneficial experience. This, in turn, strengthened confidence in the interpretation of the preliminary effects. In addition, the study employed

standardised and validated measurement instruments to ensure the reliability and credibility of the findings. While some university-based studies assessing physical activity have relied solely on self-report methods, such as the study by de Jonge et al. [78], the present research utilised objective laboratory-based assessments alongside accelerometer-derived measures. Although the sample size was small, the inclusion of these precise physiological assessments reflects a commitment to methodological rigour and clinical precision—an approach that is sometimes under-emphasised in feasibility studies.

High-quality programme delivery and clinical oversight represent further important strengths of this study. The collaborative dual-staffing model—comprising the simultaneous presence of a wellbeing professional and an exercise instructor—ensured that both the emotional and physical needs of students were addressed within a safe environment. This was further strengthened by the continuous presence of the lead researcher at 100% of sessions, which ensured high procedural fidelity to the intervention protocol and provided a reliable basis for data interpretation. Such a structure facilitated the development of a strong working alliance between students, staff, and the researcher throughout the study period, contributing to enhanced trust, relational continuity, and active engagement. In addition, the small group-based format functioned as a vital facilitator of psychological safety and relatedness. Exercising alongside peers in a private, non-judgmental environment fostered social support that reduced the sense of intimidation and anxiety commonly associated with traditional gym settings, thereby distinguishing the programme from one-to-one mentoring models.

Finally, the study was strengthened through its responsiveness to real-world needs and the implementation of targeted adaptations, including the modification of exercises in response to injury or fluctuations in participants' physical capacity, as well as adjustments to the timing and mode of delivery of behavioural support materials. These adaptations ensured that the programme remained accessible and usable without compromising its core objectives. The practical success of this approach is clearly reflected in the institutional sustainability of the programme. Unlike many pilot research projects that conclude following data collection, this intervention has remained integrated within the university's wellbeing services and continues to be delivered. According to the findings of Malagodi's [56] study, only one-third of UK universities currently use physical activity as a routine intervention to promote student mental

health; therefore, the integration of this intervention into the wellbeing team's provision represents a particularly notable strength of the present study.

5.7 Limitations

Several limitations should be considered when interpreting the findings of this feasibility study. First, the sample size was small, which limited statistical power and reduced the generalisability of the findings, particularly for objective physical activity and fitness outcomes. This constraint also restricted the use of inferential analyses for laboratory and accelerometer-derived measures. In addition, the absence of a control group represents an important methodological limitation, as it was not possible to determine whether observed changes were due to the programme itself or to other factors.

Regarding the qualitative component, several limitations should also be acknowledged. A key limitation was the inability to interview every participant, and it is possible that additional or differing perspectives may have been missed as a result. In particular, this study did not capture the views of students who chose not to participate or those who dropped out early. Exploring the experiences of non-participants could provide vital insights into barriers to engagement and represents an important avenue for future research.

In addition, the sample was predominantly female, which may limit the extent to which the findings reflect the experiences of male or gender-diverse students and should be considered when interpreting the applicability of the results across the wider student population. One possible explanation for this imbalance is that gender differences in help-seeking behaviour have been reported in previous research [79], with men generally being less likely to seek help for mental health–related concerns. This may have influenced initial engagement with the study as well as willingness to participate in the programme. Future research could explore strategies to improve engagement across genders, such as using more inclusive recruitment approaches, addressing potential stigma associated with help-seeking, and ensuring that programme messaging and delivery appeal to students of all genders.

The study was also limited by its short intervention duration and the absence of longer-term follow-up. The six-week programme length, shaped by the academic calendar, may not have

been sufficient to capture sustained behavioural or physiological changes, nor to assess the sustainability of improvements in mental health outcomes beyond the supervised period. Academic scheduling pressures further influenced attendance and data completeness, contributing to missing data for some assessments. Furthermore, logistical delays led to the late introduction of the participant handbook. Finally, the reliance on a university-based delivery context means that feasibility and engagement were closely tied to the rhythms of student life, which may have affected participation patterns. These limitations are consistent with the exploratory nature of feasibility research and provide important guidance for the design of future, larger-scale studies.

5.8 Implications for practice

The findings of this study suggest that physical activity can function as a meaningful mental health intervention, provided that it is designed and delivered using a psychologically informed approach. From a service delivery perspective, the concurrent presence of wellbeing staff and an exercise instructor represents a key practical implication. This dual-staffing model enables simultaneous responses to both emotional and physical needs and supports safe engagement, particularly for students experiencing anxiety or fluctuations in mental health. In addition, the small group-based format emerged as an important facilitator of relatedness and psychological safety.

Finally, to enhance operational feasibility, educational institutions should remain sensitive to academic calendars and study-related pressures when delivering such programmes. As student engagement is influenced by academic demands and the level of “activation energy” required to initiate activity, support services may increase initial uptake and longer-term commitment by offering flexible participation incentives, similar to the additional six-week block utilised in this study.

5.9 Recommendations for future research

Based on the findings and reflections arising from this feasibility study, several recommendations can be made for future research. First, while the present study successfully

recruited students who were actively seeking mental health support (help-seekers), a substantial proportion of students experiencing mental health difficulties remain disengaged from formal services. Future research should therefore explore recruitment strategies that specifically target non–help-seeking students, in order to broaden the reach and inclusivity of physical activity–based mental health interventions. In addition, the sample in this study was predominantly female, a pattern also observed across several similar university-based interventions. While this may reflect gender differences in help-seeking behaviours, it limits the generalisability of findings across genders. Future studies should prioritise strategies that enhance gender diversity and inclusivity, ensuring that interventions are accessible, acceptable, and relevant to male students and students of diverse gender identities.

Future research could explore students' preferences for physical activity programming, including activity type, delivery format, and level of structure, to inform the design of more flexible and inclusive interventions that support sustained engagement. Incorporating co-production approaches, whereby students are involved in the design of programmes and study procedures from an early stage, may further enhance the relevance and acceptability of future interventions.

In addition to methodological considerations, future research should also examine practical strategies to improve engagement and retention in physical activity–based interventions. More personalised communication strategies may be beneficial. While the present study relied primarily on email communication, the use of personalised weekly text-message reminders or social media–based communication may help strengthen engagement. As demonstrated by Gurung et al. [54] and Danielsen et al. [21], personalised text messaging can enhance empathetic communication and strengthen participants' connection to the programme. In addition, simplifying administrative enrolment procedures—such as reducing the burden associated with paperwork—may help lower barriers to participation in the research component of interventions. Offering greater flexibility in session scheduling, including afternoon or evening options, may also better accommodate diverse student timetables and reduce disruption caused by academic commitments.

Furthermore, given that participants in the present study frequently reported broader impacts on daily life, such as improvements in sleep, daily structure, and confidence. Future research

should consider incorporating a wider range of outcome measures. The inclusion of questionnaires assessing lifestyle changes, self-esteem, and everyday functioning may provide a more comprehensive understanding of intervention effects. However, given that participants also reported the data collection process to be burdensome, future studies should carefully balance the breadth of outcome measurement with participant burden, for example by using brief, validated measures or prioritising key outcomes.

Finally, future studies should aim to recruit larger sample sizes in order to generate more robust evidence of effectiveness. Larger samples would be particularly valuable for obtaining more complete objective data, including accelerometer-derived measures and physiological outcomes, which were limited in the present study due to high levels of missing data. Longer intervention durations and follow-up assessments (for example, one to three months post-intervention) are also recommended to better evaluate the sustainability of observed changes.

5.10 Academic reflections

Prior to undertaking this research, I regarded the evidence supporting physical activity as an effective intervention for improving student mental health as relatively straightforward and self-evident, and I assumed that such programmes could be readily integrated into university wellbeing and support services. I was initially surprised by the limited number of universities that had adopted physical activity as a routine mental health intervention. However, through the process of implementing this study, I was directly exposed to the operational and practical challenges associated with delivering such interventions in real-world settings. This experience highlighted the gap between well-designed theoretical protocols and the realities of implementation within complex university environments, deepening my understanding of feasibility as a dynamic and context-dependent process rather than a simple indicator of success or failure.

Another important reflection relates to the dual identity of the programme as both a wellbeing service and a research study. While students demonstrated strong motivation to

attend exercise sessions for personal benefit, the additional research-related requirements—such as completing multiple questionnaires and attending laboratory-based assessments—were often perceived as an added burden. This highlighted the importance of minimising research burden and simplifying study procedures in future applied research, particularly when working with student populations experiencing mental health difficulties.

This project also provided valuable insight into the challenges and responsibilities of working with a vulnerable population, particularly students experiencing mental health difficulties. My dual role as both researcher and session facilitator, alongside consistent attendance at sessions, enabled close observation of participants' lived experiences and underscored the importance of responsiveness, flexibility, and the creation of psychological safety in applied research. In addition, this was my first experience conducting a mixed-methods study, which significantly broadened my perspective on research design. Integrating quantitative and qualitative findings demonstrated how mixed-methods approaches can generate richer and more meaningful interpretations than either method alone. Overall, this project played an important role in shaping my academic development, strengthening my research skills, and informing my future aspirations to engage in larger-scale mixed-methods research within applied mental health contexts.

5.11 Conclusion

Overall, the programme was highly acceptable to students and staff and was deliverable within the university setting, with strong procedural fidelity and psychologically informed delivery. Acceptability appeared to be driven by psychological safety, the non-judgmental small-group format, and the dual presence of wellbeing and exercise staff, which supported participation and reduced gym-related anxiety.

Feasibility and fidelity findings were more mixed, as engagement was influenced by academic pressures and the activation energy required to initiate attendance, alongside practical barriers related to research burden and data collection. Despite these challenges, the study demonstrated promising preliminary effects, with significant improvements in depressive symptoms, recovery quality of life, and overall mental health, supported by qualitative reports

of improved confidence, sleep, and day-to-day functioning. However, objective physical activity and fitness outcomes were limited by missing data and a small sample, and longer-term outcomes were not assessed.

Taken together, the findings suggest that supervised, psychologically informed physical activity can be a valuable component of university wellbeing provision when designed to prioritise safety, support, and accessibility. Future research should build on these findings by using larger and more diverse samples, reducing research burden, improving data completeness, and incorporating longer intervention durations and follow-up assessments to better understand the sustainability and broader impact of the programme.

References

1. *World Health Organization. (2022). World mental health report: Transforming mental health for all. Geneva: World Health Organization* Available from: https://www.who.int/publications/i/item/9789240049338.
2. Twenge, J.M., et al., *Age, period, and cohort trends in mood disorder indicators and suicide-related outcomes in a nationally representative dataset, 2005–2017.* Journal of abnormal psychology, 2019. 128(3): p. 185.
3. Sheldon, E., et al., *Prevalence and risk factors for mental health problems in university undergraduate students: A systematic review with meta-analysis.* Journal of affective disorders 2021. 287: p. 282-292.
4. Ochnik, D., et al., *Mental health prevalence and predictors among university students in nine countries during the COVID-19 pandemic: a cross-national study.* Scientific reports, 2021. 11(1): p. 18644.
5. Ibrahim, A.K., et al., *A systematic review of studies of depression prevalence in university students.* Journal of psychiatric research, 2013. 47(3): p. 391-400.
6. Alhemedi, A.J., et al., *Depression among university students in Jordan after the COVID-19 pandemic: a cross-sectional study.* Psychology Research and Behavior Management, 2023: p. 4237-4249.
7. Asante, K.O. and J. Andoh-Arthur, *Prevalence and determinants of depressive symptoms among university students in Ghana.* Journal of affective disorders, 2015. 171: p. 161-166.
8. Auerbach, R.P., et al., *Mental disorders among college students in the World Health Organization world mental health surveys.* Psychological medicine, 2016. 46(14): p. 2955-2970.
9. Akram, U., et al., *Prevalence of anxiety, depression, mania, insomnia, stress, suicidal ideation, psychotic experiences, & loneliness in UK university students.* Scientific Data, 2023. 10(1): p. 621.
10. Hakulinen, C., et al., *Mental disorders and long-term labour market outcomes: nationwide cohort study of 2 055 720 individuals.* Acta Psychiatrica Scandinavica, 2019. 140(4): p. 371-381.
11. Penedo, F.J. and J.R. Dahn, *Exercise and well-being: a review of mental and physical health benefits associated with physical activity.* Current opinion in psychiatry, 2005. 18(2): p. 189-193.
12. Huang, K., et al., *Effectiveness of physical activity interventions on undergraduate students' mental health: systematic review and meta-analysis.* Health promotion international, 2024. 39(3): p. daae054.
13. *National Institute for Health and Care Excellence,Depression in adults: treatment and management*. NICE guideline 2022; Available from: https://www.nice.org.uk/guidance/ng222.
14. Stanton, R. and P. Reaburn, *Exercise and the treatment of depression: a review of the exercise program variables.* Journal of science and medicine in sport, 2014. 17(2): p. 177-182.
15. Ströhle, A., *Physical activity, exercise, depression and anxiety disorders.* Journal of neural transmission, 2009. 116: p. 777-784.
16. Heissel, A., et al., *Exercise as medicine for depressive symptoms? A systematic review and meta-analysis with meta-regression.* British journal of sports medicine, 2023. 57(16): p. 1049-1057.
17. Ashdown-Franks, G., et al., *Exercise as medicine for mental and substance use disorders: a meta-review of the benefits for neuropsychiatric and cognitive outcomes.* Sports Medicine, 2020. 50(1): p. 151-170.
18. Schuch, F.B. and D. Vancampfort, *Physical activity, exercise, and mental disorders: it is time to move on.* Trends in psychiatry and psychotherapy, 2021. 43(3): p. 177-184.

19. Guthold, R., et al., *Worldwide trends in insufficient physical activity from 2001 to 2016: a pooled analysis of 358 population-based surveys with 1· 9 million participants.* The lancet global health, 2018. 6(10): p. e1077-e1086.
20. Mahony, R., et al., *Physical activity levels and self-determined motivation among future healthcare professionals: Utility of the Behavioral Regulation in Exercise Questionnaire (BREQ-2).* Physiotherapy theory and practice, 2019.
21. Danielsen, K.K., D. Cabral, and S.H. Sveaas, *"Students Moving Together", Tailored Exercise for Students Facing Mental Health Challenges—A Pilot Feasibility Study.* International Journal of Environmental Research and Public Health, 2023. 20(17): p. 6639.
22. *World Health Organization. (2004). Promoting mental health: Concepts, emerging evidence, practice (Summary Report). Geneva: World Health Organization.*; Available from: https://www.who.int/publications/i/item/9241562943.
23. Keyes, C.L., *The mental health continuum: From languishing to flourishing in life.* Journal of health and social behavior, 2002: p. 207-222.
24. Mason Stephens, J., et al., *The importance of measuring mental wellbeing in the context of psychological distress: Using a theoretical framework to test the dual-continua model of mental health.* Behavioral Sciences, 2023. 13(5): p. 436.
25. Whiteford, H.A., et al., *Global burden of disease attributable to mental and substance use disorders: findings from the Global Burden of Disease Study 2010.* The lancet, 2013. 382(9904): p. 1575-1586.
26. McGrath, J.J., et al., *Age of onset and cumulative risk of mental disorders: a cross-national analysis of population surveys from 29 countries.* Lancet Psychiatry, 2023. 10(9): p. 668-681.
27. *American Psychiatric Association. Diagnostic and statistical manual of mental disorders*. 5th ed. 2013, Washington, DC: American Psychiatric Publishing.
28. *American Psychiatric Association. Diagnostic and statistical manual of mental disorders*. 5th ed., text rev.; DSM-5-TR ed. 2022, Washington, DC: American Psychiatric Publishing.
29. National Institute of Mental Health. *Mental Illness, National Institute of Mental Health*. 2022 15/06/2025]; Available from: https://www.nimh.nih.gov/health/statistics/mental-illness.
30. *Mental Health Information, Statistics, Mental Illness*. 2022; Available from: https://www.nimh.nih.gov/health/statistics/mental-illness.
31. *World Health Organization (WHO), Mental health action plan 2013 - 2020*. 2013; Available from: https://www.who.int/publications/i/item/9789241506021.
32. *World Health Organization(WHO), Mental disorders*. 2022 01 July 2025]; Available from: https://www.who.int/news-room/fact-sheets/detail/mental-disorders.
33. Thorley, C., *Not By Degrees: Not by degrees: Improving student mental health in the UK's universities.* IPPR: London, UK, 2017.
34. Tang, N.K.Y., et al., *Pandemic and student mental health: mental health symptoms among university students and young adults after the first cycle of lockdown in the UK.* BJPsych Open, 2022. 8(4): p. e138.
35. Pereira, S., et al., *University Student Mental Health Survey 2018: A large scale study into the prevalence of student mental illness within UK universities.* Insight Network: London, UK, 2019.
36. Mofatteh, M., *Risk factors associated with stress, anxiety, and depression among university undergraduate students.* AIMS Public Health, 2021. 8(1): p. 36-65.
37. Eisenberg, D.G., Ezra; Hunt, Justin B., *Mental Health and Academic Success in College.* B.E. Journal of Economic Analysis and Policy, 2009. 9(1,40).
38. Caspersen, C.J., K.E. Powell, and G.M. Christenson, *Physical activity, exercise, and physical fitness: definitions and distinctions for health-related research.* Public Health Rep, 1985. 100(2): p. 126-31.
39. Ryan, R.M. and E.L. Deci, *Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being.* American Psychologist, 2000. 55(1): p. 68-78.

40. Kandola, A., et al., *Physical activity and depression: Towards understanding the antidepressant mechanisms of physical activity.* Neuroscience & Biobehavioral Reviews, 2019. 107: p. 525-539.
41. Erickson, K.I., et al., *Exercise training increases size of hippocampus and improves memory.* Proceedings of the National Academy of Sciences of the United States of America, 2011. 108(7): p. 3017-3022.
42. *Healthy Lifestyle/ Exercise*. 30 July 2025]; Available from: https://www.oxfordhealth.nhs.uk/health/lifestyle/exercise/?utm_source=chatgpt.com.
43. Yang, Q., J. Wang, and Y. Lu, *The impact of aerobic exercise on depression in young people: a meta regression and meta-analysis.* Psychology of Sport and Exercise, 2025: p. 102803.
44. Gordon, B.R., et al., *Association of Efficacy of Resistance Exercise Training With Depressive Symptoms: Meta-analysis and Meta-regression Analysis of Randomized Clinical Trials.* JAMA Psychiatry, 2018. 75(6): p. 566-576.
45. Field, T., *Yoga clinical research review.* Complementary Therapies in Clinical Practice, 2011. 17(1): p. 1-8.
46. Vancampfort, D., et al., *The efficacy of meditation-based mind-body interventions for mental disorders: A meta-review of 17 meta-analyses of randomized controlled trials.* Journal of psychiatric research, 2021. 134: p. 181-191.
47. Castellote-Caballero, Y., et al., *Yoga as a therapeutic approach to mental health in university students: a randomized controlled trial.* Frontiers in public health, 2024. 12: p. 1406937.
48. Yorks, D.M., C.A. Frothingham, and M.D. Schuenke, *Effects of group fitness classes on stress and quality of life of medical students.* Journal of Osteopathic Medicine, 2017. 117(11): p. e17-e25.
49. Kritz, M., H. Ridell, and D. Olsen, *Solo or team? A meta-analysis of individual vs. group-based studies on physical activity, functional, psychosocial, and health outcomes.* Research Square, 2025.
50. Solmi, M., et al., *Exercise as a transdiagnostic intervention for improving mental health: An umbrella review.* J Psychiatr Res, 2025. 184: p. 91-101.
51. Donnelly, S., K. Penny, and M. Kynn, *The effectiveness of physical activity interventions in improving higher education students' mental health: A systematic review.* Health Promotion International, 2024. 39(2).
52. Li, R. and R. Huang, *The influence of physical activity on mental well-being in college students: a systematic review.* Frontiers in Psychology, 2025. 16: p. 1573446.
53. Lederman, O., et al., *Embedding exercise interventions as routine mental health care: implementation strategies in residential, inpatient and community settings.* Australasian Psychiatry, 2017. 25(5): p. 451-455.
54. Gurung, J., et al., *An Evaluation of MINDFIT-A Student Therapeutic Running Group as a Multi-Layered Intervention in the United Kingdom.* Nurs Rep, 2023. 13(1): p. 456-469.
55. DeJonge, M.L., et al., *On campus physical activity programming for post-secondary student mental health: examining effectiveness and acceptability.* Mental Health and Physical Activity, 2021. 20: p. 100391.
56. Malagodi, F., et al., *Physical activity interventions to improve mental health and wellbeing in university students in the UK: A service mapping study.* Mental Health and Physical Activity, 2024. 26: p. 100563.
57. Herbert, C., *Enhancing mental health, well-being and active lifestyles of university students by means of physical activity and exercise research programs.* Frontiers in public health, 2022. 10: p. 849093.
58. *National Institute of Health Research. 2020. "Glossary."*. 20 January 2025]; Available from: https://www.nihr.ac.uk/glossary?letter=F&postcategory=−1.
59. Arain, M., et al., *What is a pilot or feasibility study? A review of current practice and editorial policy.* BMC medical research methodology, 2010. 10: p. 1-7.

60. Eldridge, S.M., et al., *Defining feasibility and pilot studies in preparation for randomised controlled trials: development of a conceptual framework.* PloS one, 2016. 11(3): p. e0150205.
61. Sekhon, M., M. Cartwright, and J.J. Francis, *Acceptability of healthcare interventions: an overview of reviews and development of a theoretical framework.* BMC health services research, 2017. 17(1): p. 88.
62. Skinner, G., M. Teychenne, and J. Murphy, *Barriers and facilitators to engaging in a university-based exercise programme delivered to students experiencing mental health difficulties: A pilot study.* Cogent Mental Health, 2024. 3(1): p. 1-29.
63. Miller, C., *Interviewing strategies, rapport, and empathy*, in *Diagnostic interviewing*. 2019, Springer. p. 29-53.
64. Jones, G., et al., *Supporting physical activity through co-production in people with severe mental ill health (SPACES): protocol for a randomised controlled feasibility trial.* Pilot and Feasibility Studies, 2024. 10(1): p. 32.
65. Foster, C., et al., *A new approach to monitoring exercise training.* The Journal of Strength & Conditioning Research, 2001. 15(1): p. 109-115.
66. Klaic, M., et al., *Implementability of healthcare interventions: an overview of reviews and development of a conceptual framework.* Implementation Science, 2022. 17(1): p. 10.
67. Brazier, J., et al., *A systematic review, psychometric analysis and qualitative assessment of generic preference-based measures of health in mental health populations and the estimation of mapping functions from widely used specific measures.* Health technology assessment (Winchester, England), 2014. 18(34): p. vii.
68. Kroenke, K., R.L. Spitzer, and J.B. Williams, *The PHQ-9: validity of a brief depression severity measure.* Journal of general internal medicine, 2001. 16(9): p. 606-613.
69. *Veit, C. T., & Ware, J. E. (1983). Mental Health Inventory (MHI). APA PsycTests. .*
70. Weiner, B.J., et al., *Psychometric assessment of three newly developed implementation outcome measures.* Implementation science, 2017. 12: p. 1-12.
71. Braun, V. and V. Clarke, *Reflecting on reflexive thematic analysis.* Qualitative research in sport, exercise and health, 2019. 11(4): p. 589-597.
72. Smith, B. and K.R. McGannon, *Developing rigor in qualitative research: Problems and opportunities within sport and exercise psychology.* International review of sport and exercise psychology, 2018. 11(1): p. 101-121.
73. Sparkes, A.C. and B. Smith, *Judging the quality of qualitative inquiry: Criteriology and relativism in action.* Psychology of sport and exercise, 2009. 10(5): p. 491-497.
74. Lincoln, Y.S., *Naturalistic inquiry*. Vol. 75. 1985: sage.
75. Jeftic, I., et al., *The Stride program: Feasibility and pre-to-post program change of an exercise service for university students experiencing mental distress.* Psychology of Sport and Exercise, 2023. 69: p. 102507.
76. El-Kotob, R. and L.M. Giangregorio, *Pilot and feasibility studies in exercise, physical activity, or rehabilitation research.* Pilot and feasibility studies, 2018. 4(1): p. 137.
77. Worobetz, A., et al., *A feasibility study of an exercise intervention to educate and promote health and well-being among medical students: the 'MED-WELL'programme.* BMC medical education, 2020. 20(1): p. 183.
78. deJonge, M.L., et al., *One-on-one and group-based physical activity intervention compared to a waitlist control for post-secondary student mental health and social well-being: A 3-arm parallel randomized controlled trial protocol.* PLoS One, 2025. 20(8): p. e0330851.
79. Eisenberg, D., J. Hunt, and N. Speer, *Help seeking for mental health on college campuses: Review of evidence and next steps for research and practice.* Harvard review of psychiatry, 2012. 20(4): p. 222-232.

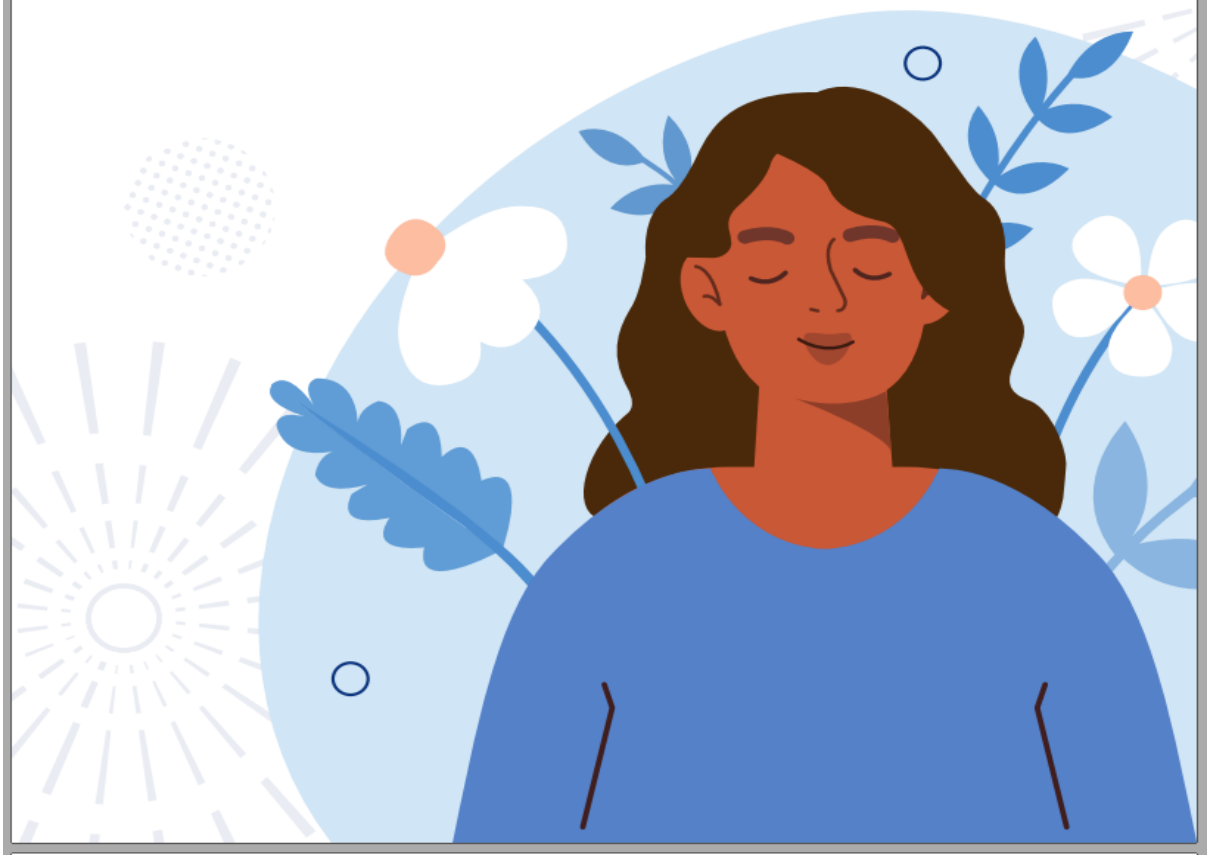
Appendices

Appendix A: participant handbook

Est. 1841 | YORK ST JOHN UNIVERSITY

Exercise for Wellbeing

Participant handbook



Contents

SECTION 1:
Overview of the Exercise for Wellbeing programme

What is the purpose of the Exercise for Wellbeing programme?

The main goal of the Exercise for Wellbeing programme is to help YSJ students who are facing mental health challenges (e.g., depression, anxiety, stress) to become more physically active.

What does the Exercise for Wellbeing programme involve?

Everyone who takes part in the Exercise for Wellbeing programme will receive the following:

1. Weekly group sessions involving supervised physical activity.
   - There will be 6 of these sessions, each lasting up to 1 hour, supervised by a qualified exercise instructor, and involving up to 12 participants.
   - The supervised physical activity will typically include a variety of gym-based exercises for improving aerobic fitness and muscle strength.
2. One-to-one physical activity support with a physical activity advisor at the start and end of the programme.
3. This handbook as a resource to support you in becoming and staying physical active.

Who are your physical activity support staff?

The names and contact details of the physical activity support staff for your programme are shown in the boxes below.

Name:	Contact details:

Name:	Contact details:

SECTION 2:
Worksheets to use in the one-to-one session at the start of the programme

Background information

1. **Health conditions that I have that could benefit from me doing more physical activity:**

2. **Other ways that I could benefit from being more physically active (for example, feel better, opportunity to socialise and make new friends, something to do):**

3. **Health problems I have that could make doing more physical activity difficult for me (for example, some of the health conditions listed for question 1 above, back pain, breathlessness, chest pain, dizziness, weakness):**

4. **Other things that could make doing more physical activity difficult for me (for example, lack of motivation, lack of time, lack of skill, lack of money, don't enjoy physical activity):**

Physical activity

What is physical activity?

Physical activity is defined as any movement produced by the body's muscles that requires energy to be used. It takes many forms, occurs in many settings, and has many purposes (for example, daily activity, active recreation, sport).

Two of the main types of physical activity for improving health are aerobic and muscle-strengthening.

Aerobic activity

Aerobic activity, sometimes called cardiovascular activity, increases breathing rate and makes your heart and muscles work harder. It can be of light, moderate or vigorous intensity and is relative to an individual's fitness level. Therefore, what could be light intensity for a young person (who is very fit and active) could be moderate or vigorous activity for an older adult or a younger individual who is inactive and unfit.

Although activity of any intensity provides health benefits, greater intensity provides more benefit for the same amount of time. Activities need to be of at least moderate-to-vigorous intensity to achieve the full breadth of health benefits.

What counts as moderate aerobic activity?

Moderate activity will raise your heart rate, and make you breathe faster and feel warmer. One way to tell if you're working at a moderate intensity level is if you can still talk, but not sing.

Common examples of moderate intensity activities include brisk walking, riding a bike, dancing, and pushing a lawn mower.

What counts as vigorous aerobic activity?

Vigorous intensity activity makes you breathe hard and fast. If you're working at this level, you will not be able to say more than a few words without pausing for breath.

Most moderate activities can become vigorous if you increase your effort. Common examples of vigorous activities include running, swimming, riding a bike fast or on hills, and sports (for example, football, rugby, netball and hockey).

Muscle-strengthening activity

Muscle strength is important for your overall health and ability to perform daily activities. To get health benefits from muscle-strengthening activities it is important to work all the major muscle groups and to do activities to the point where you need a short rest before repeating.

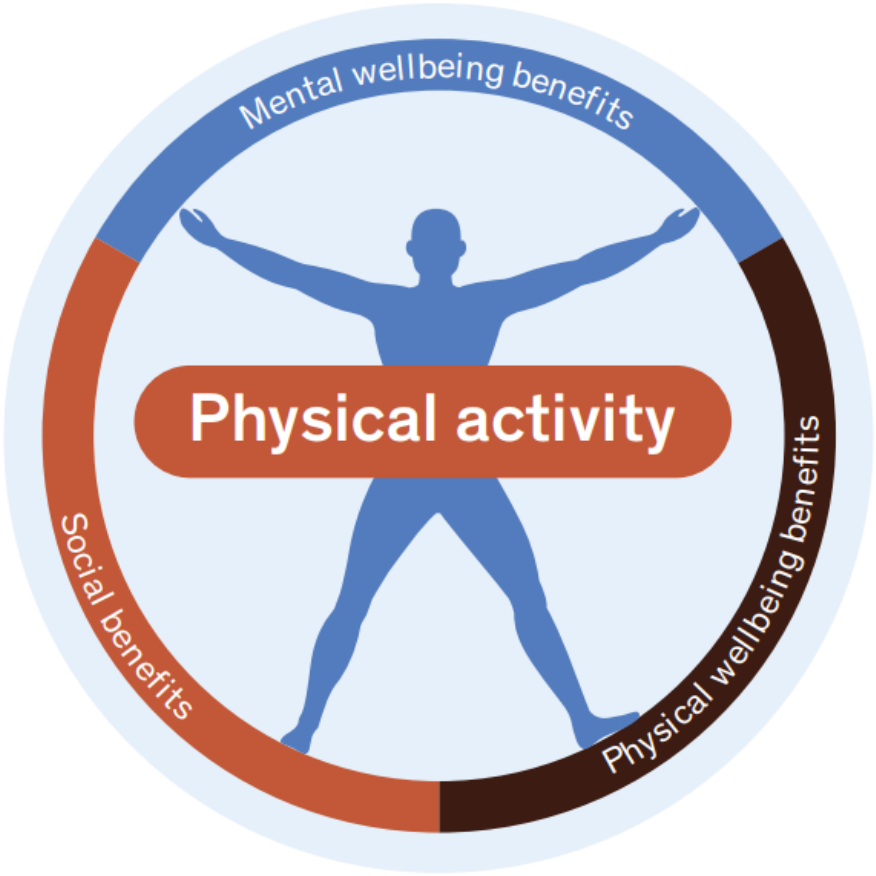
Common examples of muscle-strengthening activities include carrying heavy shopping bags, yoga, pilates, lifting weights, working with resistance bands, doing exercises that use your own body weight (for example, push-ups), and heavy gardening (for example, digging).

What are your current activity levels?

Think about the activity you already do:

What activities do you already do?	**Yes or No:** Please circle	**How long for? Minutes per week**
✔ Walking outside for leisure	Yes / No	
✔ Walking for transport (e.g., to the shops or to the bus stop)	Yes / No	
✔ Cycling	Yes / No	
✔ Jogging	Yes / No	
✔ Swimming	Yes / No	
✔ Gardening	Yes / No	
✔ Strength workouts (e.g., gym)	Yes / No	
✔ Other:	Yes / No	
✔ Other:	Yes / No	
✔ Other:	Yes / No	
✔ Other:	Yes / No	
✔ Other:	Yes / No	

Benefits of increasing physical activity



- ✓ Reduces anxiety, depression and stress
- ✓ Source of enjoyment and happiness
- ✓ Improves cognitive function

- ✓ Opportunity to develop new relationships and social skills
- ✓ Reduces loneliness and social isolation
- ✓ Brings people together from diverse backgrounds

- ✓ Reduces risk of several health conditions, including heart disease, high blood pressure, osteoporosis, diabetes, several cancers and obesity
- ✓ Helps manage several health conditions
- ✓ Improves physical fitness, including endurance, strength, flexibility and balance

Physical activity recommendations

The infographic below shows the amount and type of physical activity adults should be doing to improve their health.

How to increase your physical activity safely

Throughout the Exercise for Wellbeing programme you will be encouraged to increase your physical activity. The way in which you do this will be personal to you, but here are some general tips to help you do this safely.

- ✔ Start low and go slow! This means that you should start where you are at the moment and make changes in a gradual way. The physical activity support staff will help you to set physical activity plans that are achievable and safe.
- ✔ Start by increasing the amount of activity that you already do, like walking, rather than taking up new activities.
- ✔ When trying a new activity, again – start low and go slow – gradually build up the amount and intensity of the new activity over time.
- ✔ Make sure you have any inhalers or any other necessary medication with you.
- ✔ You should wear clothes that are loose and comfortable. Try and avoid wearing clothes that will either get in the way of the activity or increase your risk of injury. Footwear should be supportive (for example, wear sturdy shoes or trainers when walking to reduce your risk of falling over).
- ✔ Have some water with you to drink, especially when doing longer activities and on hot days.
- ✔ Make sure to include a 'warm up' and a 'cool down' when performing more strenuous or new activities. This will help to reduce muscle tiredness and the risk of injury.
- ✔ Avoid or change any activity that causes you pain or discomfort. Don't ignore your body's signals of tiredness, discomfort and pain.
- ✔ If you find that you ache a lot or have body pain after doing activity, you may have done too much too quickly. Rest for a day or so and then try doing slightly less next time.
- ✔ Speak with your physical activity support staff to find out more about how to increase your physical activity safely.

Note: If any physical activities give you chest pain, palpitations, dizziness, or makes you feel faint or fall over, you should stop doing them and tell a healthcare professional.

Your personal benefits from increasing physical activity

Which benefits of physical activity are most important or meaningful to you?

What are the ADVANTAGES and DISADVANTAGES of increasing your activity levels?	
Advantages ('Pros') 👍	**Disadvantages ('Cons')** 👎
• ..... • ..... • ..... •	• ..... • ..... • ..... • .....

Thinking about the disadvantages of increasing your physical activity, consider ways you could potentially reduce them.

Disadvantages of increasing activity levels	Ways of reducing disadvantages
• ..... • ..... • ..... •	• ..... • ..... • ..... • .....

How could you increase your physical activity?

Aerobic activity

How could you start to increase your aerobic activity? Try to include activities that are at least 'moderately intense' (for example, brisk walking). Ask yourself:

- How could I fit extra aerobic activity into my daily routine?
- How could I increase the number and length of aerobic activity sessions that I do?
- How can I make aerobic activity enjoyable and fun?

Ideas for increasing aerobic activity

Muscle-strengthening activity

How could you start to increase your muscle-strengthening activity? Remember, examples include carrying heavy shopping bags, strength training, and heavy gardening.

Ideas for increasing muscle-strengthening activity

Examples of how to build physical activity into your daily routine	
Aerobic activity	**Muscle-strengthening activity**
• Walk/cycle to the local shops • Take the stairs rather than the lift or escalator • Take longer routes when walking places	• Use a basket while shopping instead of a trolley • Do some strength exercises (for example, squats) while waiting for the kettle to boil • Do some gardening

Setting your first goals

Why do you want to take part in the Exercise for Wellbeing programme?

What are your overall physical activity goals for the next year?

It can be useful to break down long-term goals into shorter-term 'mini-goals'.

What are your physical activity goals for the next month?

My action plan

What am I going to do?

Where am I going to do it?

When am I going to do it?

With whom am I going to do it?

What will I record in my diary?

When will I record it?

If-then plans

Make a 'back up' plan to overcome any likely barriers

What might get in the way of doing the actions you have planned – and what can you do about it? Complete the following table to head off any problems.

If	Then
What might get in the way of any of the actions you are planning?	What can you do to help to make sure this does not happen?
Example: If I don't have much energy	*I will pace myself and not worry if I have to cancel something – I can always reschedule if needed.*

The realism check

It is important to check that your plans are realistic, so you are more likely to maintain the changes long term. Ask yourself "Will I still be doing this in a month?". Then say how you would respond to the question on the scale below.

Measuring your confidence with a confidence ruler

On a scale of 1 to 10, how confident do you feel about achieving your physical activity goals for the next month?

Not confident 1 ------ 2 ------ 3 ------ 4 ------ 5 ------ 6 ------ 7 ------ 8 ------ 9 ------ 10 Very confident

If your score is 7 or more:
Excellent – you are confident to pursue your goals

If your score is less than 7:
You may need to reassess your goals, or think of a plan to help you improve your confidence.

Keep track of your progress

It is good to check progress every few weeks to see if your plans need adjusting, or indeed if you want to add new challenges. Use the diaries on the following pages to record any physical activities you do each week.

Checklist

- ✔ Do I know what I am planning to do and when?
- ✔ Do I feel confident that I can achieve these goals?
- ✔ Do I know how to use the physical activity diary?
- ✔ Is there anything else that I would like to discuss with the physical activity advisor?

Date and time of next one-to-one support session

Date and time of next group exercise session

(Please bring this handbook with you to both sessions)

Now give your plan a go over the next few weeks!

SECTION 3:

Diaries for recording physically activity during the Exercise for Wellbeing programme

Week 1:

Use this diary to record any physical activities you do each week. This includes walking and other physical activities (for example, cycling, gardening, swimming, heavy housework, exercise classes).

Write down the type of activity, the amount of effort, and how long you did it for.

Date **This week's aims:**

(How will I move more and sit less this week?)

	Activities
Monday	*E.g. 30 min brisk walk*
Tuesday	
Wednesday	
Thursday	
Friday	
Saturday	
Sunday	

Week 2:

Use this diary to record any physical activities you do each week. This includes walking and other physical activities (for example, cycling, gardening, swimming, heavy housework, exercise classes).

Write down the type of activity, the amount of effort, and how long you did it for.

Date **This week's aims:**

(How will I move more and sit less this week?)

	Activities
Monday	*E.g. 30 min brisk walk*
Tuesday	
Wednesday	
Thursday	
Friday	
Saturday	
Sunday	

Week 3:

Use this diary to record any physical activities you do each week. This includes walking and other physical activities (for example, cycling, gardening, swimming, heavy housework, exercise classes).

Write down the type of activity, the amount of effort, and how long you did it for.

Date **This week's aims:**

(How will I move more and sit less this week?)

	Activities
Monday	*E.g. 30 min brisk walk*
Tuesday	
Wednesday	
Thursday	
Friday	
Saturday	
Sunday	

Week 4:

Use this diary to record any physical activities you do each week. This includes walking and other physical activities (for example, cycling, gardening, swimming, heavy housework, exercise classes).

Write down the type of activity, the amount of effort, and how long you did it for.

Date **This week's aims:**

(How will I move more and sit less this week?)

	Activities
Monday	*E.g. 30 min brisk walk*
Tuesday	
Wednesday	
Thursday	
Friday	
Saturday	
Sunday	

Week 5:

Use this diary to record any physical activities you do each week. This includes walking and other physical activities (for example, cycling, gardening, swimming, heavy housework, exercise classes).

Write down the type of activity, the amount of effort, and how long you did it for.

Date **This week's aims:**

(How will I move more and sit less this week?)

	Activities
Monday	*E.g. 30 min brisk walk*
Tuesday	
Wednesday	
Thursday	
Friday	
Saturday	
Sunday	

Week 6:

Use this diary to record any physical activities you do each week. This includes walking and other physical activities (for example, cycling, gardening, swimming, heavy housework, exercise classes).

Write down the type of activity, the amount of effort, and how long you did it for.

Date **This week's aims:**

(How will I move more and sit less this week?)

	Activities
Monday	*E.g. 30 min brisk walk*
Tuesday	
Wednesday	
Thursday	
Friday	
Saturday	
Sunday	

SECTION 4:
Physical activity diary notes

Based on the activities you have recorded, write down the benefits you have noticed, things you have particularly enjoyed and why, what you are looking forward to doing next time and why, and how you overcame any hurdles you faced and how this made you feel.

Notes:

SECTION 5:
Worksheets to use in the one-to-one session at the end of the programme

Keeping going – Part A

Reviewing your previous goals

This is your final session with the physical activity advisor.

Congratulations on your progress so far!

How did you get on with the goals you set last time? Use your diaries to review what physical activity you have done since the previous meeting.

- What did you try (and what were the goals)?
- Did you find it easy or difficult to achieve? Were the goals realistic?
- What was the impact of the behaviour? What benefits were there?
- What difficulties were there? How did you manage these?
- What have you learned that could be useful when planning future goals?

Now consider your overall progress and achievements throughout the whole programme.

How has your physical activity changed since the start of the programme?

What are the main benefits of the programme that you have noticed?

Going forward, you will need to focus on what will help you to continue to be physically active. Lasting physical activity behaviours are often part of your lifestyle - an automatic behaviour that doesn't require much conscious effort or thinking to get going.

Based on your experiences of the Exercise for Wellbeing programme, what advice would you give yourself on how to achieve your physical activity goals?

Keep going!

Other ways of building lasting behaviours include:

- **Reflections:** Continue to reflect on the reasons why you want to lead a physically active life, and the benefits it brings about.
- **Framing and re-framing:** Continue to think about how you frame a situation or barrier. Could you re-frame how you see this situation or barrier in a more positive way?
- **'If-then' plans:** These can be used to help to remind you to do a particular activity. For example, "If it is a weekday morning, then I will get up by 8am and walk to the shop to buy a paper."
- **Repetition:** Simply by repeating a new behaviour over and over it is more likely to become a habit and will be easier to carry it out in the future.
- **Support:** Are you using the support you can get from friends, family and the community? Positive support and encouragement can help you to keep going with any new behaviour.
- **Reviewing progress, benefits and outcomes:** Remember to look back at what you have already achieved. This will help build your confidence to continue to make changes.

Keeping going – Part B
Becoming your own activity coach

This next section contains a reminder of some of the techniques you have used so far, which you can use in the future to help you to continue to make progress.

Describe the benefits of maintaining or increasing physical activity that are most important to you?

What are the ADVANTAGES and DISADVANTAGES of being physically active?	
Advantages ('Pros') 👍	**Disadvantages ('Cons')** 👎
•	• .....
•	• .....
•	• .....
•	• .....

Try setting some relevant activity goals using what you have learnt and experienced so far.

What are your physical activity goals for the next three months and beyond?

My action plan

What am I going to do?

Where am I going to do it?

When am I going to do it?

With whom am I going to do it?

What will I record in my diary?

When will I record it?

Develop coping plans - try creating some more 'if-then' plans for maintaining good physical activity behaviours and dealing with difficult situations.

If this happens:	Then I will:
If this happens:	Then I will:
If this happens:	Then I will:

What do you think will be the most useful things for keeping you active?

Measuring your confidence with a confidence ruler

On a scale of 1 to 10, how confident do you feel about achieving your physical activity goals for the next 3 months?

Not confident 1 ------ 2 ------ 3 ------ 4 ------ 5 ------ 6 ------ 7 ------ 8 ------ 9 ------ 10 Very confident

If your score is 7 or more:
Excellent – you are confident to pursue your goals

If your score is less than 7:
You may need to reassess your goals, or think of a plan to help you improve your confidence.

Congratulations for completing the Exercise for Wellbeing programme!

Keep going!

SECTION 6:

Physical activity ideas for you to try outside of the supervised sessions

Ideas for aerobic activity

Aerobic activity

Aerobic activity, sometimes called cardiovascular activity, increases breathing rate and makes your heart and muscles work harder. It can be of light, moderate or vigorous intensity and is relative to an individual's fitness level. Therefore, what could be light intensity for a young person (who is very fit and active) could be moderate or vigorous activity for an older adult or a younger individual who is inactive and unfit.

Although activity of any intensity provides health benefits, greater intensity provides more benefit for the same amount of time. Activities need to be of at least moderate-to-vigorous intensity to achieve the full breadth of health benefits.

What counts as moderate aerobic activity?

Moderate activity will raise your heart rate, and make you breathe faster and feel warmer. One way to tell if you're working at a moderate intensity level is if you can still talk, but not sing.

Common examples of moderate intensity activities include brisk walking, riding a bike, dancing, and pushing a lawn mower.

What counts as vigorous aerobic activity?

Vigorous intensity activity makes you breathe hard and fast. If you're working at this level, you will not be able to say more than a few words without pausing for breath.

Most moderate activities can become vigorous if you increase your effort. Common examples of vigorous activities include running, swimming, riding a bike fast on hills, and sports (for example, football, rugby, netball and hockey).

Ideas for aerobic activity at home

Here are some simple aerobic exercises that you could do in your own home. They have been taken from the NHS How Fit website. Please visit the following website to explore other possible exercises: https://www.howfittoday.co.uk/

For each exercise, record your total repetitions and try to add one or two each session.

Seated marching – Level 1

1. Sit halfway to the front of the chair
2. Rest your back on the back rest
3. March your arms and legs as if you were walking, but in a seated position
4. Continue to do this for 30 seconds effort
5. Rest for 60 seconds
6. 3-5 rounds

Squat to seat – Level 2

1. Sit halfway to the front of the chair
2. Fold your arms in front of you
3. Stand up from the chair
4. Then, sit back down again. Control the speed as you lower yourself down towards the chair.
5. Continue to do this for 30 seconds effort
6. Rest for 60 seconds
7. 3-5 rounds

Jog in place – Level 3

1. Find some clear space
2. Jog on the spot
3. Continue to do this for 60 seconds effort
4. Rest for 60 seconds
5. 3-5 rounds

Step ups on low step – Level 3

1. Find a low step
2. Step onto the step with you leading foot, allowing your trailing foot to follow
3. Now step backwards back onto the floor.
4. Alternate between feet each time you step onto the step. (e.g., left foot first, then right foot first etc).
5. Continue to do this for 60 seconds effort
6. Rest for 60 seconds
7. 3-5 rounds

Ideas for muscle-strengthening activity

Muscle-strengthening activity

Muscle strength is important for your overall health and ability to perform daily activities. To get health benefits from muscle-strengthening activities it is important to work all the major muscle groups and to do activities to the point where you need a short rest before repeating.

Common examples of muscle-strengthening activities include carrying heavy shopping bags, yoga, pilates, lifting weights, working with resistance bands, doing exercises that use your own body weight (for example, push-ups), and heavy gardening (for example, digging).

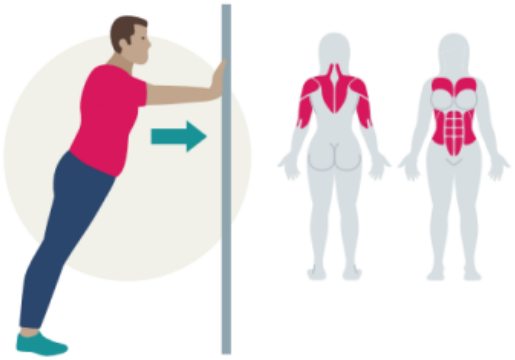
Ideas for muscle-strengthening activity at home

Here are some simple muscle-strengthening exercises that you could do in your own home. They have been taken from the NHS How Fit website. Please visit the following website to explore other possible exercises: https://www.howfittoday.co.uk/

Wall push

1. Stand upright with your feet hip width apart, facing a wall.
2. Take 1-2 steps back from the wall
3. Place your hands on the wall at chest height, keeping your arms straight.
4. Lower your body towards the wall bybending at the elbows – go as close to the wall as you can manage
5. Tighten your stomach, leg and bottom muscles and push through your hands away from the wall to return to the starting position
6. Repeat 5-10 times

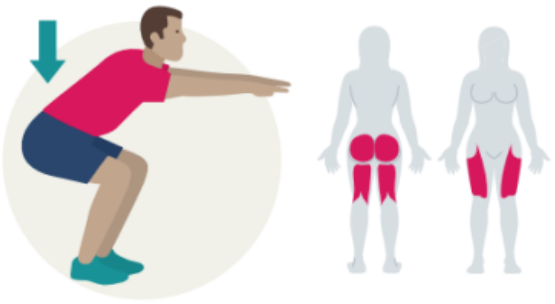
Note: Breath in when lowering yourself, breathe out when pushing away from the wall: try not to hold your breath



Bodyweight squats

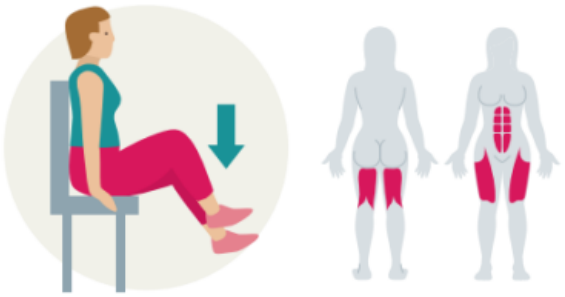
1. Stand with your feet slightly wider than hip width apart
2. Bend your knees and sit back from your hips as if you were going to sit down whilst keeping your head and chest up – reach your arms out in front of you to help you balance
3. Push through your feet and squeeze your leg and bottom muscles to stand up straight
4. Repeat 10-15 times

Note: Breathe in when squatting, breathe out when standing back up: try not to hold your breath at any point.



Seated cycling

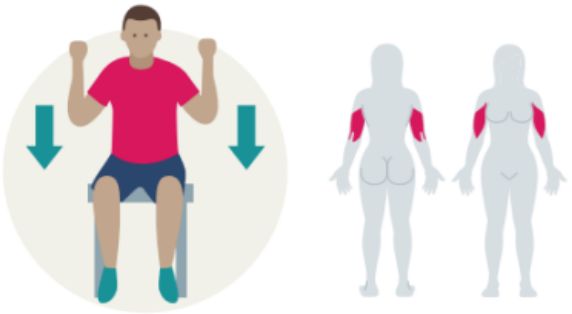
1. Sit halfway to the front of the chair
2. Hold firmly onto the slides or arms of the chair
3. Rest your back on the back rest
4. Lift both of your feet up and bring one knee slowly towards your chest
5. As you lower this leg back down, bring your opposite knee slowly towards your chest
6. Continue to alternate leg in a pedalling-like action, keeping your feet off of the ground
7. Repeat 10-15 times on each side



Seated reach up and pull down

1. Sit upright keeping your back off the back rest throughout
2. Reach your arms up overhead, slightly wider than shoulder width apart
3. Imagine grabbing a bar and pulling it down whilst squeezing your arm and shoulder muscles
4. When you have pulled down, hold here, and squeeze your back muscles for 3 seconds
5. Repeat 10-15 times

Note: To make this exercise more challenging, apply more resistance.



Other ideas for moving more

- **Spectrum Life online portal –** includes digital gym, exercise classes, Pilates, fitness plans, etc. You can log in using your YSJ email. You can log in with your YSJ email here: yorksj.ac.uk/wellbeing-and-welfare/spectrum-life
- **Join the university gym –** You can join the gym for £15 per month. One of our staff members will help you get underway. Further details can be found here: yorksj.ac.uk/wellbeing-and-welfare/ysjactive/gym-and-classes
- **Attend other exercise classes led by YSJActive –** YSJActive facilitate a wide range of exercise classes, so hopefully there is something for everyone to enjoy. Further details can be found here: yorksj.ac.uk/wellbeing-and-welfare/ ysjactive/ysjactive-together
- **Do a free online exercise class -** your physical activity support staff can help you identify suitable classes
- **Walking –** A very inexpensive way to maintain a healthier lifestyle. There a local walking groups, if you prefer to participate with others. York Council run local health walks. For further details please email Peter Helm: yorkhealthwalks@gmail.com
- **Join another local physical activity scheme -** your physical activity support staff can help you find suitable local opportunities
- **Active travel -** try and incorporate physical activity into daily life, such as walking, cycling, or combining with public transport instead of travelling by car
- **Do bitesize chunks of activity throughout the day -** perform short (for example, 2–5 minutes), but frequent, bouts of physical activity throughout the day. Example activities include:
  - Squats while brushing your teeth
  - Walk up and down the stairs several times
  - Press-ups against the stairs
  - Housework
  - Keep moving whilst you wait for the kettle to boil
  - Walk whilst talking on the phone
  - Use a basket whilst shopping instead of a trolley
  - Walk/run/cycle to the local shops
  - Gardening
  - Dancing

Appendix B: post-programme leaflet

Exercise for Wellbeing: What Next?

Thank you for your ongoing participation in the Exercise for Wellbeing program. As you are approaching the end of your 6-week course, we would like to provide you with some advice on maintaining an active lifestyle.

Listed below are a few options to consider:

Spectrum Life online portal – includes digital gym, exercise classes, Pilates, fitness plans, etc. You can log in with your YSJ email here: yorksj.ac.uk/wellbeing-and-welfare/spectrum-life

Home-based exercise - you can copy some of the exercises that you have enjoyed from the course, or there are plenty of online options available. Please speak to your instructor for guidance.

Join the gym - You can join the gym for £15 per month. One of our staff members will help you get underway. Further details can be found here: yorksj.ac.uk/wellbeing-and-welfare/ysjactive/gym-and-classes

Walking – A very inexpensive way to maintain a healthier lifestyle. Each person should aim to complete 10,000+ steps per day. There a local walking groups, if you prefer to participate with others. York Council run local health walks. For further details please email Peter Helm: yorkhealthwalks@gmail.com

Health Improvement Circuits – These group-based exercise sessions are designed for people with mild-to-moderate physical and / or mental health issues. Further details can be found here: yorksj.ac.uk/wellbeing-and-welfare/ysjactive/ysjactive-together

Other exercise classes – YSJActive facilitate a wide range of exercise classes, so hopefully there is something for everyone to enjoy. Further details can be found here: yorksj.ac.uk/wellbeing-and-welfare/ysjactive/ysjactive-together

If you would like any further information, please email Martin Bond, YSJActive Development Officer: **m.bond@yorksj.ac.uk**

Est. 1841 | YORK ST JOHN UNIVERSITY

Appendix C: Mental Health Inventory (MHI)

Mental health inventory from the medical outcome study

SECTION 5: YOUR FEELINGS

These questions are about how you feel and how things have been with you during the past month.

For each question, please circle a number for the one answer that comes closest to the way you have been feeling.

20. How happy, satisfied, or pleased have you been with your personal life during the past month?

(Circle One)

Extremely happy, could not have been more satisfied or pleased 1

Very happy most of the time 2

Generally satisfied, pleased 3

Sometimes fairly satisfied, sometimes fairly unhappy 4

Generally dissatisfied, unhappy 5

Very dissatisfied, unhappy most of the time 6

---

21. During the past month, how often did you feel there were people you were close to?

(Circle One)

Always 1

Very often 2

Fairly often 3

Sometimes 4

Almost never 5

Never 6

22. During the past month, how often has feeling depressed interfered with what you usually do?

(Circle One)

Always 1
Very often.....2
Fairly often.....3
Sometimes.....4
Almost never.....5
Never.....6

---

23. How much of the time, during the past month, did you have difficulty reasoning and solving problems; for example, making plans, making decisions, learning new things?

(Circle One)

All of the time 1
Most of the time 2
A good bit of the time.....3
Some of the time 4
A little of the time 5
None of the time 6

---

24. During the past month, how much of the time have you generally enjoyed the things you do?

(Circle One)

All of the time 1
Most of the time.....2
A good bit of the time.....3
Some of the time 4
A little of the time 5
None of the time 6

25. How much of the time, during the past month, has your daily life been full of things that were interesting to you?

(Circle One)

All of the time 1
Most of the time 2
A good bit of the time 3
Some of the time 4
A little of the time 5
None of the time 6

---

26. During the past month, how much of the time have you felt loved and wanted?

(Circle One)

All of the time 1
Most of the time 2
A good bit of the time 3
Some of the time 4
A little of the time 5
None of the time 6

---

27. How much of the time, during the past month, have you been a very nervous person?

(Circle One)

All of the time 1
Most of the time 2
A good bit of the time 3
Some of the time 4
A little of the time 5
None of the time 6

28. During the past month, how much of the time did you have difficulty doing activities involving concentration and thinking?

(Circle One)

All of the time 1
Most of the time 2
A good bit of the time 3
Some of the time 4
A little of the time 5
None of the time 6

---

29. During the past month, how much of the time did you feel depressed?

(Circle One)

All of the time 1
Most of the time 2
A good bit of the time 3
Some of the time 4
A little of the time 5
None of the time 6

---

30. During the past month, how much of the time have you felt tense or "high-strung"?

(Circle One)

All of the time 1
Most of the time 2
A good bit of the time 3
Some of the time 4
A little of the time 5
None of the time 6

31. During the past month, how much of the time have you been in firm control of your behavior, thoughts, emotions, feelings?

(Circle One)

All of the time 1
Most of the time 2
A good bit of the time 3
Some of the time 4
A little of the time 5
None of the time 6

---

32. During the past month, how much of the time did you become confused and start several actions at a time?

(Circle One)

All of the time 1
Most of the time 2
A good bit of the time 3
Some of the time 4
A little of the time 5
None of the time 6

---

33. During the past month, how much of the time did you feel that you had nothing to look forward to?

(Circle One)

All of the time 1
Most of the time 2
A good bit of the time 3
Some of the time 4
A little of the time 5
None of the time 6

34. How much of the time, during the past month, have you felt calm and peaceful?

(Circle One)

All of the time 1
Most of the time 2
A good bit of the time 3
Some of the time 4
A little of the time 5
None of the time 6

---

35. How much of the time, during the past month, have you felt emotionally stable?

(Circle One)

All of the time 1
Most of the time 2
A good bit of the time 3
Some of the time 4
A little of the time 5
None of the time 6

---

36. How much of the time, during the past month, have you felt downhearted and blue?

(Circle One)

All of the time 1
Most of the time 2
A good bit of the time 3
Some of the time 4
A little of the time 5
None of the time 6

37. How often have you felt like crying during the past month?

(Circle One)

Always 1
Very often.....2
Fairly often.....3
Sometimes.....4
Almost never.....5
Never.....6

---

38. How much of the time, during the past month, did you feel left out?

(Circle One)

All of the time 1
Most of the time 2
A good bit of the time 3
Some of the time 4
A little of the time 5
None of the time 6

---

39. During the past month, how often did you feel that others would be better off if you were dead?

(Circle One)

Always 1
Very often.....2
Fairly often.....3
Sometimes.....4
Almost never.....5
Never.....6

40. During the past month, how much of the time did you forget, for example, things that happened recently, where you put things, appointments?

(Circle One)

All of the time 1
Most of the time 2
A good bit of the time 3
Some of the time 4
A little of the time 5
None of the time 6

---

41. During the past month, how much of the time did you feel that your love relationships, loving and being loved, were full and complete?

(Circle One)

All of the time 1
Most of the time 2
A good bit of the time 3
Some of the time 4
A little of the time 5
None of the time 6

---

42. How much have you been bothered by nervousness, or your "nerves," during the past month?

(Circle One)

Extremely so, to the point where I could not take care of things 1
Very much bothered 2
Bothered quite a bit 3
Bothered some, enough to notice 4
Bothered just a little 5
Not bothered at all 6

43. During the past month, how much of the time has living been a wonderful adventure for you?

(Circle One)

All of the time 1
Most of the time 2
A good bit of the time 3
Some of the time 4
A little of the time 5
None of the time 6

---

44. How much of the time, during the past month, have you felt so down in the dumps that nothing could cheer you up?

(Circle One)

All of the time 1
Most of the time 2
A good bit of the time 3
Some of the time 4
A little of the time 5
None of the time 6

---

45. During the past month, did you ever think about taking your own life?

(Circle One)

Yes, constantly 1
Yes, very often.....2
Yes, fairly often 3
Yes, a couple of times.....4
Yes, once.....5
No, never.....6

46. During the past month, how much of the time have you felt restless, fidgety, or impatient?

(Circle One)

All of the time 1
Most of the time 2
A good bit of the time 3
Some of the time 4
A little of the time 5
None of the time 6

---

47. During the past month, how much of the time have you been moody or brooded about things?

(Circle One)

All of the time 1
Most of the time 2
A good bit of the time 3
Some of the time 4
A little of the time 5
None of the time 6

---

48. During the past month, how often did you get rattled, upset, or flustered?

(Circle One)

Always 1
Very often.....2
Fairly often.....3
Sometimes.....4
Almost never.....5
Never.....6

49. How much of the time, during the past month, did you have trouble keeping your attention on any activity for long?

(Circle One)

All of the time 1
Most of the time 2
A good bit of the time 3
Some of the time 4
A little of the time 5
None of the time 6

---

50. During the past month, how much of the time have you been anxious or worried?

(Circle One)

All of the time 1
Most of the time 2
A good bit of the time 3
Some of the time 4
A little of the time 5
None of the time 6

---

51. During the past month, how much of the time have you been a happy person?

(Circle One)

All of the time 1
Most of the time 2
A good bit of the time 3
Some of the time 4
A little of the time 5
None of the time 6

52. How often during the past month did you find yourself having difficulty trying to calm down?

(Circle One)

Always 1
Very often.....2
Fairly often.....3
Sometimes.....4
Almost never.....5
Never.....6

---

53. During the past month, how much of the time have you been in low or very low spirits?

(Circle One)

All of the time 1
Most of the time 2
A good bit of the time 3
Some of the time 4
A little of the time 5
None of the time 6

---

54. How much of the time, during the past month, have you felt cheerful, lighthearted?

(Circle One)

All of the time 1
Most of the time 2
A good bit of the time 3
Some of the time 4
A little of the time 5
None of the time 6

55. During the past month, how depressed (at its worst) have you felt?

(Circle One)

Extremely depressed.....1
Very depressed 2
Quite depressed 3
Somewhat depressed 4
A little depressed 5
Not depressed at all 6

---

56. How much of the time, during the past month, did you react slowly to things that were said or done?

(Circle One)

All of the time 1
Most of the time 2
A good bit of the time 3
Some of the time 4
A little of the time 5
None of the time.....6

---

57. During the past month, how often did you feel isolated from others?

(Circle One)

Always 1
Very often.....2
Fairly often.....3
Sometimes.....4
Almost never.....5
Never.....6

Appendix D: the Patient Health Questionnaire-9 (PHQ-9)

PATIENT HEALTH QUESTIONNAIRE-9 (PHQ-9)

Over the last 2 weeks, how often have you been bothered by any of the following problems? *(Use "✔" to indicate your answer)*	**Not at all**	**Several days**	**More than half the days**	**Nearly every day**
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself — or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

FOR OFFICE CODING 0 + _____ + _____ + _____

=Total Score: _____

If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

Not difficult at all	**Somewhat difficult**	**Very difficult**	**Extremely difficult**
☐	☐	☐	☐

Developed by Drs. Robert L. Spitzer, Janet B.W. Williams, Kurt Kroenke and colleagues, with an educational grant from Pfizer Inc. No permission required to reproduce, translate, display or distribute.

Appendix E: the Recovery Quality of Life-10 (ReQoL-10)

ReQoL™ Recovering Quality of Life

The University Of Sheffield.

For each of the following statements, please tick one box that best describes your thoughts, feelings and activities **over the last week**.

Over the last week	None of the time	Only occasionally	Sometimes	Often	Most or all of the time
1. I found it difficult to get started with everyday tasks	☐ 4	☐ 3	☐ 2	☐ 1	☐ 0
2. I felt able to trust others	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
3. I felt unable to cope	☐ 4	☐ 3	☐ 2	☐ 1	☐ 0
4. I could do the things I wanted to do	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
5. I felt happy	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
6. I thought my life was not worth living	☐ 4	☐ 3	☐ 2	☐ 1	☐ 0
7. I enjoyed what I did	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
8. I felt hopeful about my future	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
9. I felt lonely	☐ 4	☐ 3	☐ 2	☐ 1	☐ 0
10. I felt confident in myself	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4

	No problems	Slight problems	Moderate problems	Severe problems	Very severe problems
Please describe your **physical** health (problems with pain, mobility, difficulties caring for yourself or feeling physically unwell) **over the last week**	☐ 4	☐ 3	☐ 2	☐ 1	☐ 0

For official use

ReQoL-10 Score = ...

Appendix F: the YMCA submaximal cycle test VO2 max estimation

Protocol

In summary, the participant performs a multistage protocol based on the response to the first stage. The total test may last from 6 to 12 minutes.

1. Give the participant verbal directions explaining the use of the Borg CR10 scale: "Rate your feelings that are caused by exercise using this scale. The feelings should be general, about your whole body. We will ask you to select one number that most accurately corresponds to your perception of your total body feeling. You can use the verbal qualifiers to help you select your RPE number. There is no right or wrong answer. Use any number that you think is appropriate."
2. Take the baseline or resting measures of HR with your participant seated.
3. Adjust the seat height. The knee should be flexed at approximately 5 to 10 degrees in the pedal-down position with the toes on the pedals. Another way to check seat height is to have your participant place the heels on the pedals; with the heels on the pedals, the leg should be straight in the pedal-down position. Have your participant turn the pedals to test for the seat height appropriateness. While pedalling, your participant should be comfortable and there should be no rocking of the hips (you can check on hip rocking by viewing your client from behind). Also, be sure your participant maintains an upright posture (by adjusting the handlebars, if necessary) and does not grip the handlebars too tight.
4. START THE TEST. The YMCA protocol is found at the end of the instructions. The first workload for everyone is 25 W. Ask the participant to pedal at a cadence of 50 rpm. Maintaining 50 rpm throughout the test is essential. The rpm may vary between 48 and 52 rpm; any more variance than this may invalidate the test.
5. Start the clock/timer. It may be best to think of timing each stage (e.g., 3 minutes) rather than the entire test time. Therefore, you may wish to reset the time at the end of each stage.
6. Measure the HR and RPE after 2 minutes into the stage. Record them in the table below.
7. Take another HR and RPE measurement around 3 minutes into the stage.

   Compare minute 2 HR to minute 3 HR:

   A. If there is a difference of within 6 bpm consider the stage finished.

   B. If there is a difference of greater than 6 bpm, continue on for another minute and check HR again. Do not change to the next stage until you have a steady state HR (difference within 6 bpm).
8. After completing the first stage of 25 W, adjust resistance according to the protocol flow diagram. This is a multistage test; the client will perform at least two stages.

   - You need to obtain HR_{ss} from a stage (within 6 bpm)
   - The test requires completion of at least 2 separate stages with HR_{ss} at each stage.
   - Consider for the test results the 3rd minute HR as the HR_{ss}, if it is a steady state (for plotting or

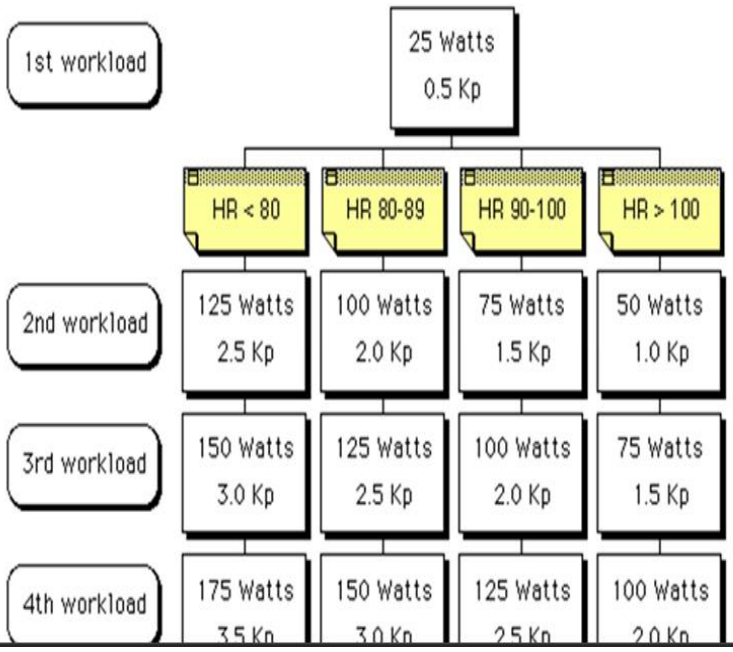
calculations) for that stage.

- These two stages must have HRs between 110 bpm and 85% of age predicted heart rate to be used in the calculation of VO_{2max}.

9. Allow your client to cool down after the last stage of the protocol is complete. Have your client continue to pedal at 50 rpm and adjust the resistance down to 25 W for 3 minutes of cool down or recovery. Take your client's HR at the end of the 3-minute active recovery period. Next, allow him or her to sit quietly in a chair for 2 to 3 minutes to continue the recovery process.

In summary: Essential Procedures: YMCA

- HR_{ss} (within 6 bpm) at each stage
- HR, RPE and power output recorded at each stage
- Need two stages that have HRs between 110 bpm and 85% of age predicted max HR
- Accurate calculation of results using online calculator: https://exrx.net/Calculators/YMCACycle



Age:		Sex:	Body mass:	85% HRmax:	Seat height:
Time (min)		Power output (W)	Cadence (RPM)	HR (bpm)	RPE
Stage 1 (25W)	1	25			
	2	25			
	3	25			
	4*	25			
Stage 2	1				
	2				
	3				
	4*				
Stage 3	1				
	2				
	3				
	4*				
Stage 4	1				
	2				
	3				
	4*				
Active recovery	1	25			
	2	25			
	3	25			

Appendix G: interview guide

7.1 Interview with students

We hope that you are enjoying and benefitting from the Exercise for Wellbeing programme.

Title

On-campus supervised physical activity programme for university students facing mental health challenges: a feasibility study exploring feasibility, acceptability, fidelity and preliminary effects

Background and Purpose

In autumn 2024, York St John University launched a physical activity programme for students facing mental health challenges. The purpose of this project is to evaluate this new service and understand the general experiences of those involved in the study.

Introduction

Thank you for participating in today's interview. The questions I would like to talk about deal with your experience of the On-campus supervised physical activity programme. Some of the things I will discuss ask you to reflect upon yourself and may involve making personal judgments. The interview should take approximately 30-45 minutes.

Your participation is strictly confidential, and your information will be anonymised. Interviews are normally audio-recorded, and this simply provides for accurately keeping track of information. The audio recording will only be shared with the research team and will be subsequently destroyed.

Your participation in this interview is important. However, should you at any time wish to stop or take a break, you may do so without consequence to you, and at any time you should feel free to ask me questions concerning the interview or the study. Do you have any questions about this or anything else before we begin?

Do you agree to be interviewed and for it to be recorded?

Questions

Referral

1. Can you tell me a bit about your experience of the referral process into the Exercise for Wellbeing programme?

1-1 How did you hear about the programme?

1-2 What prompted or supported you to engage?

1-3 Were there any barriers you experienced to the referral process?

1-4 What might you recommend for changing or improving the process itself?

Barriers

2. Were there any barriers you encountered with getting involved with the programme?

2-1 Were there any barriers that prevented you from staying involved?

2-2 Were the times and locations of the sessions convenient for you?

Expectations/Needs

3. What were your initial reasons for getting involved in the programme?

4. What were your expectations for the programming?

5. Can you talk a bit about whether the programme was similar or different to your expectations?

6. Overall, do you feel that your needs were met through the programme?

7. Is there anything that could have been done differently for you?

General Likes/Dislikes

8. Can you tell me about your overall experience of the programme?

8-1What did you like about the programme in general?

E.g., timing, location, length, duration, types of activity, group-based aspect etc

-Probe this and follow up with any relevant points they mention.

8-2 can you tell me about any aspects you disliked?

E.g., timing, location, length, duration, types of activity, group-based aspect etc

-Probe this and follow up with any relevant points they mention.

8-3 Are there any parts of the programme that you would recommend changing?

-Can you tell me a bit more about those?...

8-4 Would you recommend this programme to a friend in a similar situation? Why or why not?

9. Can you talk to me about the trainers providing the programming? Were they effective in delivering the training sessions?

The exercise instructors from YSJActive

The wellbeing officers from the Wellbeing team

Probe/elaborate as necessary

10. Did you feel comfortable and supported during the sessions?

11.What are some of your main take home messages after the 6-week programme?

12. Can you tell me about your experience of this being a group-based programme?

Would you have preferred a different format (e.g., one-on-one?)

-Why or why not? (And probe)

13. some questions about their experiences with behavioural counselling aspects of the programme (Handbook)

14. Do you plan to continue physical activity now that the programme is over?

-Can you tell me a bit more about that?

15. Describe the benefits you feel you have gained from On-campus supervised physical activity programme

- Physical Health benefits?
- Mental Health benefits?
- Social benefits?

16. Describe any negative outcomes or aspects you have experienced?

7.2 Interview with staff (wellbeing team)

Thank you for agreeing to take part in this interview.

Study Title:

On-campus supervised physical activity programme for university students facing mental health challenges: a feasibility study exploring feasibility, acceptability, fidelity and preliminary effects

Introduction:

Thank you for agreeing to take part in this interview.

In Autumn 2024, York St John University launched a supervised on-campus physical activity programme aimed at supporting students facing mental health challenges. The purpose of this interview is to understand your experience as a staff member involved in delivering or supporting this programme.

The interview will take approximately 30–45 minutes. With your permission, the conversation will be audio recorded for research purposes only. Everything you share will remain confidential and anonymised in our reports. You are free to pause or stop the interview at any time, or to skip any questions you are not comfortable answering.

Do you agree to participate and for the interview to be recorded?

Your Role and Involvement

1. Can you describe your role within the wellbeing service or delivery team?
2. How did you become involved in the programme?
3. How was the programme introduced to you, and what kind of preparation or training (if any) did you receive?
4. Did any of your prior experiences influence how you approached your involvement in this programme?

Implementation Experience

5. From your perspective, how did the implementation of the programme go?

6. What were your initial expectations about student participation in the programme? Do you feel the actual number of students who enrolled aligned with those expectations?

7. What were the main challenges you encountered during the process?

8. What aspects of the implementation worked particularly well?

9. Do you think the platforms and methods used to inform students about the programme (e.g. email, posters, word of mouth) were sufficient and effective?

10. Were the initial aims and objectives of the programme clear to you?

11. Did the programme seem realistic or feasible to deliver when you first heard about it?

12. Has your perception of its feasibility changed now that it is being implemented?

13. Have you received any feedback—formal or informal—from students, colleagues in the wellbeing team, or staff in other departments?

14. Were there any barriers or negative aspects related to the materials used (e.g. forms, questionnaires, handbooks)?

16. Were there any general aspects of the overall process you particularly liked?

17. Were there any general aspects of the overall process you particularly disliked?

18. Was there a moment or particular experience during implementation that stood out as especially meaningful or impactful?

19. What are your thoughts on delivering the sessions at the campus gym with a dedicated instructor, and having a wellbeing team member attend the sessions alongside students?

20. What was the role of the wellbeing team member during the sessions, and how do you think it contributed to the students' experience?

21. If the programme were to be scaled up, what aspects would need to stay the same and what should be reconsidered?

Fidelity to Programme Design and Delivery

22. To what extent do you feel the programme was delivered as originally intended?

23. Were any adaptations or changes made during delivery? If so, why and how were they managed?

24. How would you assess the delivery quality of the exercise instructors (e.g., YSJActive) and other staff?

25. In your opinion, did the students receive sufficient support throughout the programme?

26. Were there any barriers that may have affected students' engagement, referral, or continued participation?

27. Do you have any suggestions for improving or changing the referral or onboarding process?

29. In your view, was the referral process to the programme appropriate and straightforward for students? What worked well and what could be improved?

30. Do you think the timing of the sessions was appropriate for students?

31. Do you think the location of the sessions was appropriate for students?

32. Do you think the duration of the sessions was appropriate for students?

33. Did you ever feel there was a conflict between the original design and the real-life needs of the participants?

34. What is your opinion on the mental health screening process that takes place before and after the six-week programme?

35. Were the forms and questionnaires used for screening and assessment easy to understand and apply for both students and staff?

36. Do you think any of the tools or forms used need simplification, clarification, or replacement?

Interdepartmental Collaboration

37. How well did different teams (e.g., YSJActive, wellbeing services, academic departments) collaborate during the project?

38. Do you have any suggestions for improving collaboration between teams?

39. What supported effective collaboration across departments?

40. What hindered effective collaboration across departments?

41. How would you describe the communication between the teams? Was it sufficient, timely, and clear?

42. Did you feel that all teams shared a common vision and understanding of the programme?

Perceived Impact on Students

43. How would you describe the level of student interest or engagement with the programme overall?

44. Did you receive any informal feedback from students or trainers that stood out?

45. What do you feel were the main positive outcomes of the programme?

46. Were any concerns or negative outcomes raised during and after the programme?

48. What do you suggest for enhancing the effect of the programme for students who finished their sessions?

49. Did you notice any change in students' openness to using mental health services after being involved in the programme?

Future Development and Sustainability

50. What recommendations do you have for improving the programme in the future?

51. Do you believe this type of intervention should become a more permanent part of student support services? Why or why not?

52. If there were no constraints (e.g. funding, time, staffing), what would your ideal version of this programme look like?

Personal Reflection

53. Has this experience shifted your views on student wellbeing or mental health support within a university setting?

54. If you had to describe this programme in one word or phrase, what would it be—and why?

Wrap-Up

55. Is there anything else you'd like to add or reflect on regarding your experience with the programme?

7.3 Interview with staff (for exercise instructors and physical activity coordinators)

Study Title:

On-campus supervised physical activity programme for university students facing mental health challenges: a feasibility study exploring feasibility, acceptability, fidelity and preliminary effects

Introduction:

Thank you for agreeing to take part in this interview.

In Autumn 2024, York St John University launched a supervised on-campus physical activity programme aimed at supporting students facing mental health challenges. The purpose of this interview is to understand your experience as a staff member involved in delivering or supporting this programme.

The interview will take approximately 30–45 minutes. With your permission, the conversation will be audio recorded for research purposes only. Everything you share will remain confidential and anonymised in our reports. You are free to pause or stop the interview at any time, or to skip any questions you are not comfortable answering.

Do you agree to participate and for the interview to be recorded?

Role and Involvement

1. Can you describe your role in this physical activity programme for students?
2. How did you become involved in the programme, and what responsibilities did you have during its delivery?
3. Did you receive any specific training or preparation for your role?
4. Have you previously been involved in any programmes that support mental health through physical activity?

Experience of Programme Implementation

5. From your perspective, how did the implementation of this programme go?
6. What challenges did you face during the process?
7. What aspects of the programme delivery went particularly well?
8. Did you initially think this programme was feasible to run as planned? Has your view changed after being involved?
9. During the course of the programme, did you receive any feedback from students, colleagues, or others? If so, what kind?

Design and Delivery of Exercise Sessions

10. How were the physical activity sessions designed? What factors were considered when planning them?
11. In your opinion, were the activities appropriate for the physical and psychological needs of the students?
12. Did you ever have to adjust the exercise plans or intensity during a session? If so, why and how?
13. What do you think about the supervised structure of the sessions? Was it effective? Would you suggest any changes?
14. How was your experience working alongside a member of the wellbeing team during each session?
15. How would you describe the engagement and participation of students throughout the six weeks?
16. What is your opinion about students' attendance consistency? Did most of them attend regularly?
17. Do you have any ideas or suggestions for improving student motivation and retention throughout the six-week programme?

18. Based on your observations, do you think the students were generally satisfied with the sessions? What kind of initial feedback did you receive?
19. Do you think the duration of each session (about one hour) was appropriate? Would you suggest shorter or longer sessions?
20. Was the six-session format suitable for achieving the intended goals of the study?
21. What is your overall impression of the presence of both the programme coordinator/researcher and a wellbeing team member at each session?
22. How did working with students who experience mental health challenges compare with working with students in general?
    - Was it more difficult, easier, or just different?
    - How was communication and building rapport with these students?
23. Was there ever a point during a session when you felt the situation was getting out of control or needed special management?

Data and Assessments

24. What was your role in the initial mental health screening at the start of the programme? How helpful did you find that step?
25. During the sessions, how easy or difficult was it to record the data provided by students (e.g., mood, physical effort)?
26. Were the forms and questionnaires used before and after the programme easy to understand and work with?
27. Was the process of inputting data into the dataset manageable, or was it time-consuming or challenging?
28. Do you think any other types of information should have been collected during the programme?

Teamwork and Collaboration

29. How was your collaboration with other departments such as the wellbeing team or other sports staff?
30. Did you feel all team members shared a common vision and understanding of the programme?

Outcomes and Future Development

31. Overall, what kind of impact do you think this programme had on participating students?
32. Are there any aspects of the programme that you think could be improved?
33. Are there any parts you think should be changed, removed, or expanded in the future?
34. Would you like to see this programme continue in future years? Why or why not?
35. Did this project teach you anything that you think will be useful in your future professional work?
36. Do you have any additional suggestions, feedback, or criticisms regarding the design or delivery of the programme?

Final Wrap-Up

37. Is there anything else you'd like to add or reflect on about your experience with this programme?

7.4 Interview with staff (manager of wellbeing team)

Thank you for agreeing to take part in this interview.

Study Title:

On-campus supervised physical activity programme for university students facing mental health challenges: a feasibility study exploring feasibility, acceptability, fidelity and preliminary effects

Introduction:

Thank you for agreeing to take part in this interview.

In Autumn 2024, York St John University launched a supervised on-campus physical activity programme aimed at supporting students facing mental health challenges. The purpose of this interview is to UNDERSTAND your experience as a staff member involved in delivering or supporting this programme.

The interview will take approximately 30–45 minutes. With your permission, the conversation will be audio recorded for research purposes only. Everything you share will remain confidential and anonymised in our reports. You are free to pause or stop the interview at any time, or to skip any questions you are not comfortable answering.

Do you agree to participate and for the interview to be recorded?

Role and Strategic Perspective

1. Please describe your role within the Wellbeing Team.
2. How did the decision come about for the Wellbeing Team to take part in this programme?
3. At the start of the project, how feasible or deliverable did the programme appear to you?
4. Has your perception of the programme's feasibility changed since implementation began?
5. In your view, how much impact has the university's financial or structural support had on the implementation or uptake of the programme?

Programme Implementation and Monitoring

6. As the programme is still ongoing, how would you describe the implementation process so far?
7. What challenges have you encountered within the Wellbeing Team during implementation?
8. What challenges have you encountered in collaborating with other departments or teams?
9. How satisfied are you with the performance of your colleagues in the Wellbeing Team throughout this programme?
10. Have you received any notable feedback from Wellbeing colleagues or staff?
11. What are your thoughts on the collaboration between the exercise instructors and the Wellbeing staff during the sessions?
12. Do you think the programme structure (one hour per week for six weeks) is sufficient for achieving meaningful outcomes?

Interdepartmental Collaboration

16. How would you describe the collaboration between the Wellbeing Team and other departments (e.g. YSJActive, research team)?
17. What factors helped to support effective collaboration between teams?
18. What barriers or challenges made interdepartmental collaboration more difficult?

Impact and Perceptions

20. Have you received any informal or formal feedback from students or instructors regarding the programme?
21. Were any concerns or negative comments raised during the programme?
22. Were any concerns or negative comments raised after students completed the programme?

Future Planning and Development

23. Would you be interested in continuing this programme in future academic years? Why or why not?
24. What forms of support or resources would be necessary to continue or expand the programme?
25. Which parts of the programme do you think have the most potential for further development or scale-up?
26. If you were to redesign or improve the programme in the future, what specific changes would you make?

Final Reflections

27. Is there anything else you would like to add or reflect on regarding your experience with this programme?
28. Do you have any suggestions for improving programme delivery, management, or staff support in future iterations?

7.5. Interview with staff (supervisor)

Title

On-campus supervised physical activity programme for university students facing mental health challenges: a feasibility study exploring feasibility, acceptability, fidelity and preliminary effects

Introduction

Thank you for participating in today's interview. The questions I would like to talk about deal with your experience of the On-campus supervised physical activity programme. Some of the things I will discuss ask you to reflect upon yourself and may involve making personal judgments. The interview should take approximately 30-45 minutes.

Your participation is strictly confidential, and your information will be anonymised. Interviews are normally audio-recorded, and this simply provides for accurately keeping track of information. The audio recording will only be shared with the research team and will be subsequently destroyed.

Your participation in this interview is important. However, should you at any time wish to stop or take a break, you may do so without consequence to you, and at any time you should feel free to ask me questions concerning the interview or the study. Do you have any questions about this or anything else before we begin?

Do you agree to be interviewed and for it to be recorded?

Background and Role

1. Can you briefly describe your involvement in this programme?

2. What were your initial expectations regarding student engagement and participation before the programme began? How do yoy compare with what actually happened?

3. What were the original goals for the programme? To what extent do you feel they were realistic and achievable?

4. What were the original intended outcomes for the programme? To what extent do you feel they were realistic and achievable

5.Overall, how satisfied are you with the progress and development of the project so far?

Programme Design and Planning

6. How do you evaluate the referral process into the programme?

Was it smooth and efficient in your opinion? Were there any points of confusion, delay, or improvement?

7. Why was this specific type of exercise programme (e.g. group-based, gym-based, supervised) chosen for the intervention?

8. What factors influenced the decision (e.g. accessibility, engagement, mental health benefits, logistical considerations)?

9. How would you evaluate the process of registering the project as a clinical trial? Were there any challenges?

10. How would you evaluate the process of registering in the ethical committee? Were there any challenges?

11. How would you evaluate the process of preparing study materials (e.g., handbooks, informed consent forms, screening tools)? Were there any barriers or lessons learned from that phase?

12. How would you evaluate the collaboration between different parties involved in the design and implementation (e.g., wellbeing team, researcher, sports department)?

13. Were there any expectations you had for this collaboration that you feel were not fully met?

Resource Management and Logistics

14. How did the process of preparing or accessing necessary resources (e.g., lab equipment, information files, dictaphone, accelerometers, interview space) go? Were there any significant issues?

15. How do you evaluate the process of conducting the assessments in the laboratory setting? Are there any observations or comments you'd like to share regarding this part of the process?

16. Was there any issue related to the secure and anonymised handling of student forms and data files that you feel is worth highlighting?

17. When challenges arose—whether from university decision-makers, the student researcher, or the participants themselves—what strategies or approaches proved most effective in managing those issues?

18. What do you feel were the biggest logistical challenges to achieving higher student attendance or retention?

19. Did you encounter any major barriers or obstacles during the planning or implementation phases? How were these addressed or managed?

20. What is your overall evaluation of the programme implementation?

Fidelity and Impact

21. From your perspective, what strategies could help improve student motivation and willingness to participate in the study?

22. What ideas or measures do you think might help reduce participant withdrawal and improve retention throughout the programme?

23. To what extent do you think the programme was delivered as originally designed or intended?

24. Based on your observations or any feedback received, what preliminary impacts—positive or negative—do you think the programme has had on participating students?

25. From your perspective, what are the main benefits that this programme offers to students—physically, psychologically, or socially?

Final Reflections

27. How would you evaluate the overall collaboration and communication between you and the student researcher throughout the course of the project?

28. Is there anything else you would like to share about your experience with the programme or your reflections on its development and delivery?

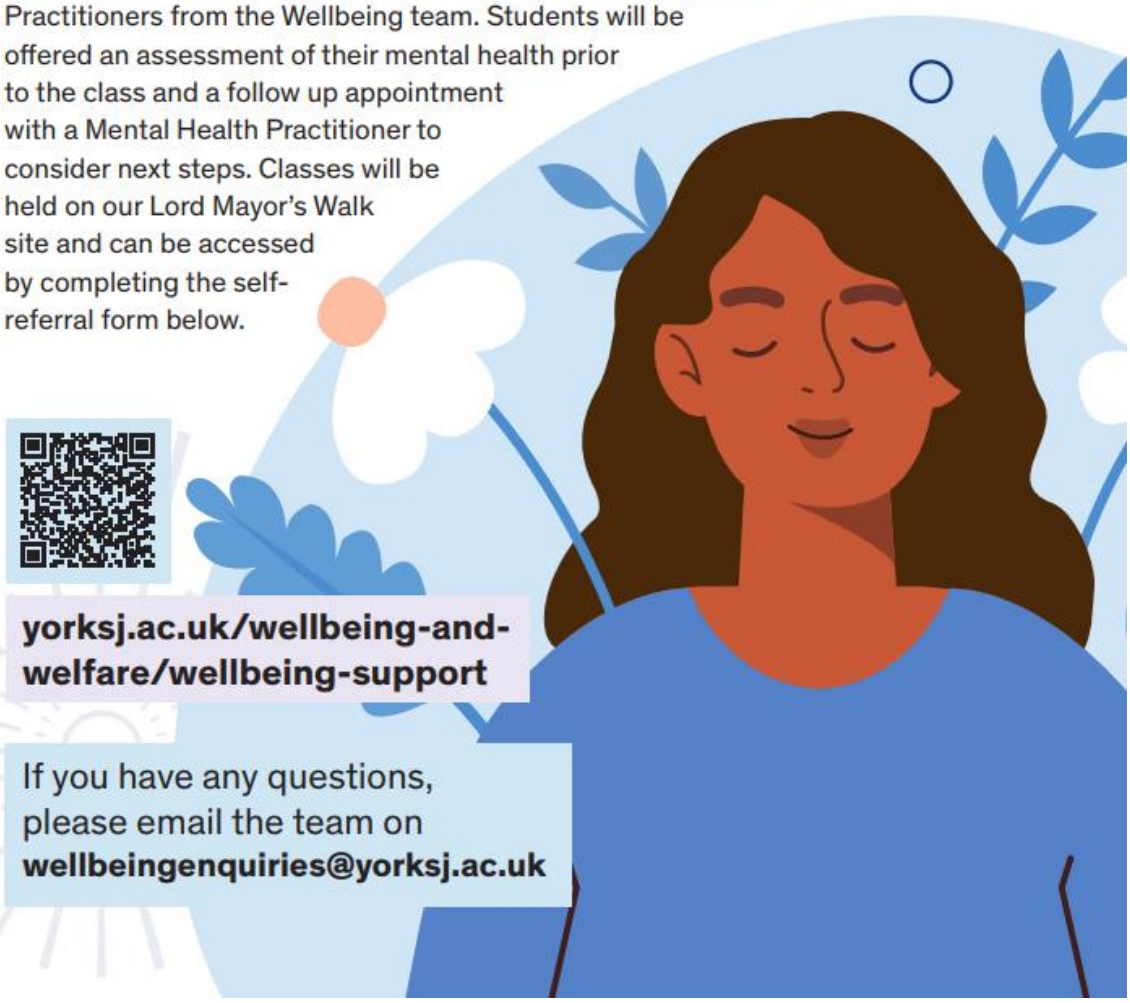
Exercise for Wellbeing

Est. 1841 | YORK ST JOHN UNIVERSITY

From September the Wellbeing team are offering a new 'Exercise for Wellbeing' pathway.

There is strong evidence linking exercise to a reduction in symptoms of depression; therefore, we are offering this as an alternative to our 1 to 1 support.

This 6 week course of exercise classes is aimed at reducing symptoms of depression. The class will be facilitated by colleagues at YSJ Active, who are trained fitness instructors, with support from Mental Health Practitioners from the Wellbeing team. Students will be offered an assessment of their mental health prior to the class and a follow up appointment with a Mental Health Practitioner to consider next steps. Classes will be held on our Lord Mayor's Walk site and can be accessed by completing the self-referral form below.



yorksj.ac.uk/wellbeing-and-welfare/wellbeing-support

If you have any questions, please email the team on **wellbeingenquiries@yorksj.ac.uk**

Participant Information Sheet

Est. 1841 | YORK ST JOHN UNIVERSITY

Title of Project	On-campus supervised physical activity programme for university students facing mental health challenges: a feasibility study exploring feasibility, acceptability, fidelity and preliminary effects
Researcher/Department name and contact details	Mitra Bahrami – Postgraduate Research Student mitra.bahrami@yorksj.ac.uk
University contact details	York St John University, Lord Mayors Walk, York YO31 7EX. Tel: 01904 624624

Part 1: Project Details	
Introduction	We would like to invite you to take part in our research study. Before you decide if you want to take part, it is important for you to understand why this research is being done, and what taking part will involve. Please take time to read this information carefully and discuss it with others if you wish, such as a friend or relative. If anything is unclear or if you would like more information, please contact me (Mitra Bahrami) using the contact details at the end of this document.
What is the purpose of the project?	The aim of this research study is to evaluate an on-campus supervised physical activity programme for university students facing mental health challenges. An increasing number of university students are facing mental health challenges. Research has shown that regular physical activity can benefit several mental health problems. However, few studies have explored physical activity programmes specifically for university students. In autumn 2024, York St John University launched a physical activity programme for students facing mental health challenges. We are conducting a research study of this programme to assess the following: - feasibility, the extent to which the programme can be delivered successfully - acceptability, the extent to which the programme is considered appropriate, satisfactory, or attractive by participants and university staff - fidelity, the extent to which the assessment procedures and physical activity programme were implemented as planned and adaptations were made - preliminary effects, with relation to physical, mental and social health outcomes.
What can I expect?	If you are interested in joining our study, we will confirm that you are eligible to take part and then ask you to complete the consent form below. Once enrolled, you will be offered a 6-week physical activity programme as follows: - There will be one session each week for 6 weeks - The sessions will be delivered face-to-face in an exercise facility on the University's York Campus - 60 minutes per session, including a mixture of physical activities (e.g., walking, other aerobic physical activity, resistance, balance and stretching exercises) - Self-selected physical activity intensity - Group-based (maximum of 10 students per session)

	- Sessions supervised by a qualified exercise instructor and a research student. A member of the wellbeing team will also be present to offer students mental health support, if needed. - Physical activity behavioral strategies incorporated into each session (e.g., goal setting, action planning, exploring barriers and enablers, setting cues or prompts for self-directed PA) - Encouragement to be physically active away from the supervised sessions Before and after the physical activity programme, we will ask you to complete the following short, simple and safe tests of health and fitness: 1. **Height, weight, resting heart rate, and resting blood pressure** 2. **Quality of life and mental health:** using validated questionnaires 3. **30-second chair rise:** how many times you can stand from a seated position in 30 seconds, without the use of your arms or an assistive device 4. **Handgrip strength:** this involves gripping a strength-measuring device as hard as possible; this will be done 3 times for each hand 5. **Submaximal cycle ergometer test:** a multi-stage fitness test that consists of two to four three-minute stages of increasing workload at a pedal rate of fifty revolutions per minute Each assessment session will last 45-60 minutes. At the end of each assessment session, you will be provided with an activity monitoring device to wear continuously on your non-dominant wrist for 7 consecutive days. We would also like to interview you about your experiences of taking part. This interview will last 10-30 minutes and will take place either in-person or by video conference, and recorded with your consent.
Why have I been asked to take part?	You have been asked to take part because you are a student currently enrolled at York St John University, undertaking a course which requires attendance at its Lord Mayor's Walk Campus, are aged 18 years or older, and have presented to the student wellbeing team with mild-to-moderate mental health concerns. You have also expressed an interest in enhancing your mental health and daily functioning.
Is taking part voluntary?	Yes, it is up to you to decide whether or not to take part in this research study. If you do decide to take part you may also change your mind and withdraw from the trial at any time, without giving a reason, by contacting a member of the study team. If you wish to withdraw after undertaking any of the study assessments, any collected, anonymised data will be kept for analysis. Your decision to take part or not, or later withdrawing will also have no impact on your healthcare or academic studies. If you do not want to take part in this study, you do not have to do anything.
Are there any risks?	Physical exercise carries a small risk of discomfort or injury, such as temporary muscle soreness or mild muscle strain. In this study, this risk will be minimised by each session being carefully monitored by a qualified exercise instructor.
What information will be collected?	We plan to collect the following:

	- Your basic characteristics such as age, sex, and details of any health issues - How many physical activity sessions you attend - What you think about the assessment procedures and physical activity programme - Physical activity data, assessed using a wrist-worn activity monitor worn for 7 days continually at the start and end of the programme - Health-related quality of life and mental health using validated questionnaires - Resting blood pressure, aerobic fitness (via a short, sub-maximal cycling test), grip strength, lower-body strength (via 30-second sit-to-stand test).
Who will have access to the information?	During the course of the study, the individuals with access to the full dataset will be the study coordinator (Mitra Bahrami) and two research supervisors (Professor Garry Tew, Dr Garcia Ashdown-Franks). Following study completion, the anonymised final dataset will be made available via York St John University repository, RaYDaR.
Where will the information be stored?	Case report forms will be used to record all the information required from the protocol. Essential documentation which individually and collectively permits evaluation of the conduct of the study and the quality of the data produced will be kept within a Study Master File. All study-related information will be stored securely at York St John University. All electronic records will be stored on a password-protected server. All participant data will be identified by a coded identification number to maintain participant confidentiality. Data will be handled in accordance with the Data Protection Act 2018, GDPR legislation, the latest Directive on Good Clinical Practice, and local policy.
How long will the information be retained?	The sponsor (York St John University) will ensure that this documentation is retained for a minimum of 5 years after the conclusion of the study and a minimum of 10 years in electronic format in accordance with the guidelines on Good Research Practice. Paper data will then be disposed of securely and electronic data will be anonymous of identifiable information.
Ethical information	This study received a favourable opinion from the Research Ethics Committee for the School of Science, Technology and Health (Reference: ETH2425-0237).
What happens next?	If you are happy to take part in this project, please complete the consent form on the next page. If you do not want to be involved in the project you do not have to do anything. **Thank you for taking the time to read this information.** If you have any further questions or concerns about the study, please contact the study coordinator, Mitra Bahrami, at mitra.bahrami@yorksj.ac.uk.

Part 2: Privacy Notice	
All personal information gathered and held by York St John University (detailed in Part 1 of this Participant Information Sheet) is treated with the care and confidentiality required by the UK General Data Protection Regulation (UK GDPR) and the Data Protection Act 2018. For the purposes of processing your personal information, the data controller is York St John University. The University's Data Protection Officer is the University Secretary and Registrar.	
Legal basis for processing your information	UK GDPR Article 6 (a) - the data subject has given consent to the processing of his or her personal data for one or more specific purposes. UK GDPR Article 6 (e) - processing is necessary for the performance of a task carried out in the public interest or in the exercise of official authority vested in the controller.
Additional condition for processing special category data	UK GDPR Article 9 (a) - the data subject has given explicit consent to the processing of those personal data for one or more specified purposes, except where Union or Member State law provide that the prohibition referred to in paragraph 1 may not be lifted by the data subject
Additional condition for processing criminal conviction/offence data	N/A
Your rights in relation to personal data	Under the GDPR, you have a right to: • be kept informed as to how we use your data; • request a copy of the data we hold about you via a Subject Access Request; • update, amend or rectify the data we hold about you; • change your communication preferences; • ask us to remove your data from our records; • object to or restrict the processing of your information • raise a concern or complaint about the way in which your information is being used.
Any questions of concerns?	If you have any questions or concerns about the way we are collecting and using your personal data we request that you contact the University by emailing: gov.compliance@yorksj.ac.uk. You also have the right to complain to the Information Commissioner's Office (ICO) about the way in which we process your personal data. Details can be found at: https://ico.org.uk.

Part 3: Participant Consent (please initial the box if you agree)	Yes	No
(3a) I have read and understood the project details and have been able to ask questions about the project and my questions have been answered to my satisfaction.		
(3b) I consent voluntarily to be a participant in this project and understand that I can refuse to answer questions and I can withdraw from the project at any time, without having to give a reason.		
(3c) I understand what the information I provide will be used for, how it will be stored and how long it will be retained.		
(3d) I give my permission for the information specified in (3e) to be retained by the University after the project has ended so that it can be used for future research and learning.		
(3e) Information to be retained	*All study documentation will be retained for a minimum of 5 years after the conclusion of the study and a minimum of 10 years in electronic format in accordance with the guidelines on Good Research Practice. Paper data will then be disposed of securely and electronic data will be anonymous of identifiable information.*	
Name of Participant		
Signature		
Date		

If you have any concerns, or a complaint regarding this research, please contact Dr Charlotte Haines-Lyon, Chair of the Ethics Committee for the School of Education, Language and Psychology. Email: c.haineslyon@yorksj.ac.uk.
If you have any questions or concerns about the way we are collecting and using your personal data, please contact the University by emailing: gov.compliance@yorksj.ac.uk

Appendix J: ethics approvals

Research Ethics Committee - School of Science, Technology and Health

Outcome of Research Ethics application:

Name: Garry Tew

Reference: ETH2425-0237

Project Title: On-campus supervised physical activity programme for university students facing mental health challenges: a feasibility study exploring feasibility, acceptability, fidelity and preliminary effects

Date: 27/02/2025

Thank you for your recent application for ethical approval in relation to the above-named project.

I am pleased to inform you that the School of Science, Technology and Health Ethics Committee has approved your proposal. This includes the recruitment of existing participants enrolled on the pathway, as detailed in the supporting notes.

Please notify the committee if you intend to make any amendments to the original research as submitted at the date of this approval, including changes to methodology or accompanying documentation. All changes must receive ethical approval prior to commencing any further research.

The Committee would like to take this opportunity to wish you every success with your research.

Chair - Research Ethics Committee - School of Science, Technology and Health

York St John University

Research Ethics Committee - School of Science, Technology and Health

Outcome of Research Ethics application:

Name: Garry Tew

Reference: ETH2425-0311

Project Title: On-campus supervised physical activity programme for university students facing mental health challenges: a feasibility study exploring feasibility, acceptability, fidelity and preliminary effects

Date: 04/03/2025

Thank you for your recent application for ethical approval in relation to the above-named project.

I am pleased to inform you that the School of Science, Technology and Health Ethics Committee has approved your proposal.

Please notify the committee if you intend to make any amendments to the original research as submitted at the date of this approval, including changes to methodology or accompanying documentation. All changes must receive ethical approval prior to commencing any further research.

The Committee would like to take this opportunity to wish you every success with your research.

Chair - Research Ethics Committee - School of Science, Technology and Health

York St John University