(1) Research Abstract

Project Title
Fit but fragile: when exercise starts to harm mental health

Introduction/background (max 200 words)
Exercise is widely known for its physical and mental health benefits. However, increasing participation in fitness culture has also led to concerns about over exercising and exercise addiction. Research indicates that the proportion of regular exercisers at risk has increased from approximately 1.9 - 3.2% in the early 2000s to between 3 - 11.7% in more recent years. Over-exercising occurs when an individual exceeds what their body can safely tolerate; this may involve excessive training volume, unsafe exercise practices, or insufficient nutritional intake to support activity levels. Exercise addiction, by contrast, is a behavioural and psychological condition characterised by a loss of control over excessive behaviour. While it can occur alongside eating disorders, it is important to note that this is not always the case. This paper explores the social, psychological and physiological factors contributing to over-exercising and exercise addiction, including the influence of social media, mental health vulnerabilities, and the potential health consequences of excessive training.

Research objectives (max 100 words)
I conducted this research in order to discover the correlation between excessive exercise/exercise addiction and the negative effects it has on mental health, also to uncover what factors increase people's risk of developing this condition. Including how social media and fitness influencers are potentially encouraging these harmful behaviours by promoting unhealthy habits or spreading misinformation. Alongside this, I intend to raise awareness for this overlooked disorder that affects so many people.

Methods (max 500 words)
Throughout this research I used a mixed qualitative approach in order to explore the link between mental health and exercise addiction. Information was gathered through both secondary research and primary qualitative methods to ensure the findings were both balanced and reliable.

Secondary research involved reviewing previous literature reviews from reputable sites such as the National Health Service (NHS) and the National Institutes of Health (NIH). I had chosen these services due to their strong reputation for being evidence based, peer reviewed and up to date making them highly reliable and accurate. Both qualitative insights and quantitative data from previous studies were referenced to provide a comprehensive understanding of current scientific perspectives on exercise addiction, its psychological impacts and its relationship with mental health conditions such as anxiety, depression and obsessive-compulsive disorder.

Primary research was qualitative in nature and included informal personal conversations with individuals from a range of different backgrounds to gather diverse perspectives. Participants included peers at school, students attending a local karate class and individuals who regularly attended a local gym.

These groups were chosen to represent varying levels of physical activity, allowing for a broader insight into how exercise habits can impact mental health.

Participation was voluntary to maintain ethical standards. The conversations focused on their exercise patterns and how these affect their mental health, also their emotional response to missing a workout.

By combining primary qualitative research with secondary literature – both qualitative and quantitative findings – I had aimed to provide a well-rounded understanding of exercise addiction and its potential impact on mental health.

Results (max 500 words)
Results may be presented in any format the student(s) consider most appropriate, such as graphs, tables, charts, diagrams, or written summaries.

The qualitative findings suggested several patterns among participants. A greater proportion of female participants reported experiencing behaviours associated with exercise addiction during early adolescence compared to male participants, who reported such experiences less frequently. Some participants attributed these behaviours to external pressures, including comments from peers and exposure to social media content.

Several female participants highlighted the influence of fitness influencers and heavily edited images, which they felt contributed to unrealistic body expectations. Many individuals stated that fitness influencers often promote intense workout routines or unrealistic body standards, some participants reported comparing themselves to these online figures, which sometimes made them feel dissatisfied with their own appearance or fitness levels.

Additionally, some individuals involved in competitive sports reported feeling increased pressure to train harder in order to prove their abilities, particularly within environments where gender inequality in sport was perceived. Participants also reported differences in how exercise intensity affected their mental wellbeing. Many described moderate or low-intensity exercise as improving mood and overall wellbeing, whereas excessive high-intensity training was associated with increased stress, fatigue, and negative self-perception.

Several participants reported experiencing negative emotions when they were unable to exercise. These emotions included guilt, frustration, anxiety, or feeling as though they had "failed" in some way. In contrast, individuals who exercised more moderately were more likely to report feeling comfortable taking rest days without experiencing strong negative emotions. Participants who described exercising at higher frequencies, particularly those attending the gym or participating in competitive sports, often reported training most days of the week. Some indicated that they felt pressure to maintain strict training schedules and would feel uncomfortable or dissatisfied if they missed a planned session.

Limitations (max 200 words)

One limitation of this study was that its primary research relied on informal, self-reported conversations which may have included biassed or inaccurate recollections. Additionally, the sample was a small non-random group and focused only on participants from specific settings (school, gym, karate) which may not have equally represented all types of exercisers.

Conclusions and recommendations (max 300 words)

This study shows that exercise addiction is heavily influenced by social, psychological, and physiological factors, including misinformation on social media, compulsive behaviours, and cultural pressures that normalise excessive training. These factors can lead to serious physical and mental health risks, including chronic fatigue, hormonal imbalance, body dissatisfaction, and compulsive exercise behaviours. Exercise addiction is a growing problem that affects many individuals who may be unaware of the risks, highlighting the need for increased awareness and education.

To address these concerns many recommendations could be made.

Firstly, proper education on safe training practices, recovery and proper fuelling along with the risks of over training should become more prominent in schools, gyms and sports organisations.

Secondly, fitness professionals and organisations should promote evidence-based guidance and encourage realistic, sustainable fitness goals rather than extreme transformation narratives.

Thirdly, social media platforms should take greater responsibility in regulating misleading fitness content and promoting qualified professionals.

Finally, increased awareness and early intervention strategies should be implemented within fitness environments to help identify individuals displaying signs of exercise addiction and provide appropriate support or referral to mental health professionals.

(2) Research Discussion

The discussion section of the research may be submitted in any format chosen by the student(s). This may include, for example, a written discussion, PowerPoint presentation, poster, video, podcast, or a combination of formats.

Students are encouraged to consider the nature and methodology of their research when selecting the format for their discussion (for example, research undertaken as a literature review may be best suited to a written report).

The discussion should include a clear summary of the research findings, alongside a comprehensive consideration of the real-world applications and implications of these findings.

The discussion section will carry equal weighting to section 1 (research abstract) in the overall scoring.

Winners will be selected based on the originality of the research and the quality of the project presentation. Full judging criteria is provided below.

If your discussion section is in written format, please complete the box below. If it is provided in an alternative format (such as a PowerPoint presentation, poster, video, podcast, or similar), please attach it to the email when submitting this document.

Discussion (no word limit)
As the world of exercise continues to expand, so do the cases of over-exercising and exercise addiction. Through the review of multiple literature sources, alongside the findings from my own qualitative research, several contributing factors to over-exercising and exercise addiction have emerged. One prominent factor is misinformation, particularly from social media platforms and fitness influencers. This misinformation often includes the promotion of unrealistic body standards, unverified “spot-reduction” techniques , and extreme high-intensity “no pain, no gain” workouts. Such trends are frequently promoted by unqualified individuals rather than trained fitness professionals, increasing the risk of physical injury and adverse mental health outcomes. This issue is especially concerning given that social media content is predominantly targeted towards younger populations. Exposure to stereotypically attractive bodies may encourage young individuals to adopt excessive or unsafe exercise routines, particularly when combined with contemporary diet culture. Repeated engagement in high-intensity or incorrect training methods, alongside restrictive eating behaviours, may contribute to both physical and psychological harm. Furthermore, the use of heavily edited images by influencers can reinforce unrealistic expectations, potentially leading

to mental health issues such as body dysmorphia, low self-esteem, and depression when individuals feel inadequate despite adhering to promoted exercise regimes.

Another factor to exercise addiction is mental health problems such as obsessive-compulsive disorder. OCD and over exercising are linked by compulsive behaviours where exercise becomes a rigid, anxiety driven necessity rather than a healthy habit. Missing a session could lead to a panic or an intense feeling of guilt, not allowing themselves to rest and recover from intense workouts or practices. Exercise addiction and borderline personality disorder can also co-occur, with excessive exercise often acting as a maladaptive coping mechanism for intense emotional pain, impulsivity, or a need for control. While exercise is a positive tool for managing BPD symptoms, it can become compulsive, particularly when driven by a desire for emotional regulation or as a form of self-harm, sometimes linking to underlying eating disorders.

Society also increasingly normalises or overlooks exercise addiction by reframing excessive, compulsive exercise as the pinnacle of health, dedication and beauty. Phrases like “no pain no gain” and “no excuses” are commonly used to celebrate excessive training which masks the potential for physical and mental harm. This, combined with a cultural obsession with achieving an ideal, often unattainable muscular, or lean physique, has blurred the line between healthy exercise and addictive, dysfunctional behaviour.

These factors make it increasingly difficult for individuals to recognise when healthy exercise shifts into over-exercising. Symptoms such as persistent fatigue, prolonged muscle soreness, decreased performance and mood disturbances including irritability and low mood may indicate the development of overtraining syndrome (OTS). The physiological mechanisms underlying these symptoms help explain why compulsive exercise behaviours can become harmful. High-intensity training depletes glycogen stores, and without adequate recovery time the body is unable to replenish energy levels, resulting in chronic fatigue. Elevated cortisol levels caused by prolonged physical stress, alongside reduced testosterone, further contribute to long-term exhaustion and impaired recovery. Excessive training can also alter neurotransmitter activity, leading to central fatigue – a deep, persistent tiredness not resolved by sleep. Repeated micro-tears in muscle fibres, without sufficient healing time, maintain a constant inflammatory state, preventing full muscle repair. This ongoing physical stress may help explain why individuals in my research reported continuing to train despite pain and exhaustion, suggesting a loss of control consistent with addictive patterns.

The psychological features of exercise addiction – salience, mood regulation, tolerance, withdrawal and relapse – demonstrate how exercise may transition from a healthy coping strategy to a compulsive necessity. When exercise becomes the primary method of emotional regulation, particularly for individuals experiencing anxiety or body dissatisfaction, it reinforces a behavioural cycle that is difficult to break. This aligns

with my qualitative findings, where participants described feelings of guilt, anxiety, or distress when unable to exercise. Long-term consequences extend beyond fatigue and injury. Musculoskeletal injuries, reduced bone density, hormonal disruption and conditions such as relative energy deficiency in sport (RED-S) highlight the serious physical risks.

In females, prolonged energy imbalance may contribute to amenorrhea and osteoporosis due to hypothalamic suppression. These outcomes demonstrate that excessive exercise, particularly when combined with restrictive eating, can significantly impact both physical and reproductive health.

Furthermore, what may begin as dedication to sport or gym participation can escalate when identity and self-worth become strongly tied to performance or physical appearance. This shift from commitment to compulsion may increase vulnerability to other maladaptive behaviours, including the potential use of performance-enhancing substances. Research suggests that individuals at risk of exercise addiction are more likely to engage in anabolic steroid use, often driven by pressure to accelerate physical results. Such behaviours carry severe long-term health risks, including cardiovascular complications.

Overall, these findings suggest that exercise addiction is a multifactorial issue influenced by social pressures, psychological vulnerability and physiological reinforcement mechanisms. The increasing normalisation of extreme training within fitness culture may blur the boundary between dedication and dysfunction, particularly among younger populations. This highlights the importance of education, awareness and preventative strategies within gyms, sports clubs and online communities to promote balanced, sustainable approaches to exercise.