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PSYCHOLOGY OF EXERCISE AS A FOUNDATION FOR DETERMINING THE BENEFITS OF EXERCISE FOR THE MENTAL HEALTH OF THE MODERN INDIVIDUAL

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Abstract: The modern lifestyle unfolds in a stressful environment, and scientific research on stress reduction methods provides valuable insights that can enhance the quality of life. One method that stands out based on research is exercise. In this paper, we analyze the benefits of exercise for the modern individual. The field that addresses this topic is Exercise Psychology, a distinct and independent scientific discipline, highlighting its significance in contemporary society. Special attention is paid to explaining the relationships between concepts such as exercise and mental health. The aim of this paper is to demonstrate the mental benefits of exercise for the modern individual.

Keywords: Mental health, psychology, sport, exercise

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Introduction

In today's fast-paced society, exercise and mental health are becoming increasingly important aspects of maintaining a high quality of life and well-being. The constant challenges, stresses, and demands of modern life often lead to difficulties in preserving mental health, which in turn affects the overall well-being of the adult population. As science increasingly recognizes the connection between exercise and mental health, research into this complex relationship has intensified. Beyond the positive relationship between exercise and mental health, a wide range of benefits from exercise for the modern individual have been identified.

Exercise psychology is defined as "the study of psychological factors underlying participation and persistence in physical activity programs" (Anshel et al., 1991, p. 56). Lox, Martin, and Petruzzelle (2003, cited in Anshel, 2006) define exercise psychology as "concerned with (a) the application of psychological principles to the promotion and maintenance of physical activity/exercise during leisure time, and (b) the psychological and emotional consequences of physical activity during leisure time" (p. 5). Lox, Ginis, and Petrucello (2020, p. 6) emphasize that exercise psychology integrates two fields: psychology and exercise sciences, and it is concerned with (1) applying psychological principles to the adoption and maintenance of exercise behaviors and (2) understanding the psychological consequences of exercise. These authors highlight that, aside from the strong connection between sports psychology and general psychology as well as sports sciences, exercise psychology is often present in rehabilitation settings, such as injury recovery, heart attacks, strokes, cancer, diabetes, and AIDS treatment, thus positioning it as a "sister" field to rehabilitation psychology. In addition, it is closely related to health psychology and behavioral psychology.

Brehem (2014) emphasizes that exercise psychology is most closely linked to sports psychology, from which it originally emerged. Exercise psychology differs from sports psychology primarily in terms of the population it addresses—athletes versus regular exercisers—the type of physical activity—sports versus exercise—and the goals of the activity—improving health and fitness versus achieving optimal sports performance and competitive success. Both fields aim to explain, describe, and predict participant behavior.

According to Berger, Pargman, and Weinberg (2002), exercise psychology examines how exercise can improve mood, reduce stress, serve as a treatment for mental disorders, enhance self-concept and self-confidence, and may lead to positive or negative addiction. Additional benefits of increased aerobic training include reductions in

acute and chronic anxiety, decreased chronic depression, enhanced pain tolerance, and improvements in quality of life. Expanding on this description, Buckworth and Dishman (2002, cited in Anshel, 2006) also mention "psychobiological, behavioral, and social antecedents and consequences of acute and chronic exercise." Antecedents refer to factors that predict who will engage in exercise and form a regular exercise habit, while consequences refer to how exercise (both short-term and long-term) affects mental and emotional processes (Milenković, et al., 2023; Ratković, et al., 2023). This definition also includes the impact of mental skills on exercise performance. For example, positive thoughts such as "I feel good" or "keep going" will result in better endurance than negative thoughts like "I don't like this" or "when will this be over?"

Although research in exercise psychology is growing, a neglected aspect has been the examination of the effectiveness of research outcomes, theories, and models in real-world exercise settings. This article focuses on applying exercise psychology and sports psychology literature to exercise contexts that go beyond theories and research findings.

Given that mental health is highlighted as the key benefit of this analysis, specifically its proven positive association with physical activity, it is essential to define what mental health actually represents. Mental health in adults refers to a state of emotional, cognitive, and psychosocial well-being (Jovanović, et al., 2023; Stojmenović, et al., 2023). It reflects an individual's ability to cope with stress, face challenges, maintain positive relationships, achieve productivity, and contribute to society in an adequate and satisfying way. Mental health is not merely the absence of mental disorders but represents a state in which an individual can function optimally, feel good about themselves and others, and adapt to different life situations.

Research has confirmed that exercise improves mental health (Anshel, 2006). We feel better when we engage in a regular physical activity program, particularly aerobic exercise, which significantly increases heart rate. Aerobic exercise involves engaging in physical activity over a relatively long duration where heart rate remains consistently elevated. Aerobic exercises, as well as resistance training and brisk walking to a lesser extent, have been proven to enhance mood, strengthen self-esteem and self-confidence, reduce depression, and alleviate both chronic and acute anxiety and psychosocial stress, while also promoting recovery from negative life events(Ratković, et al., 2016).

Researchers, educators, and practitioners must understand the psychological benefits of exercise, the reasons some people exercise while others remain inactive, why individuals start exercising but later quit, and what can be done to start and main-

tain a regular exercise regimen, a concept known as commitment or motivation. Moreover, they should offer suggestions on how mental skills can be utilized to improve the quality of exercise. The aim of this paper is to demonstrate the mental benefits of exercise for the modern individual.

Areas of Exercise Psychology as the Basis for Identifying Mental Benefits of Exercise

If mental health professionals want to help clients develop healthy habits, they need to be able to accurately use important terms and concepts. The most crucial concepts in improving a person's health and well-being include enhancing physical fitness through various forms of physical activity, such as exercise. We could define physical activity as any movement that expends energy, while exercise is a specific form of physical activity that is structured and planned, aimed at improving and maintaining physical fitness. These terms have emerged from a combination of the most frequently cited definitions in the literature. Physical activity is generally defined as any bodily movement produced by voluntary muscle contraction that results in energy expenditure, typically measured in kcal (kilocalories) per unit of time. Similarly, physical activity is defined as “any bodily movement produced by the contraction of skeletal muscles that results in a substantial increase in caloric requirements compared to energy expenditure at rest” (ACSM1, 1014, p. 2). Although it is very desirable for everyone to be more physically active, not all forms of physical activity will improve physical fitness and lead to other desirable health outcomes. For example, while engaging in slow walks may be beneficial for reducing stress and recovering from a tiring day, this type of activity cannot be considered exercise and will not improve most health parameters associated with exercise. The more desirable forms of activity, formally referred to as exercise, are those that lead to physical fitness. What does exercise actually represent? Anshel (2006) defines exercise as a subset or type of physical activity consisting of planned, structured, and repetitive body movements that a person engages in to improve or maintain one or more components of physical fitness or health. Exercise can be acute—referring to short-term or single instances of activity—or chronic, performed multiple times over time, preferably several times a week with varying durations. Similar to Anshel, Angela Clow and Sara Edmunds (2002) indicate that physical activity (PA) encompasses all types of bodily movements, while exercise is its subcategory consisting of planned, structured, and repetitive body movements undertaken to promote and maintain components of physical fitness. Physical activity does not always involve exercise. Activities like walking and gardening fall under physical activity but are not

considered exercise, as they are not performed with the aim of improving health and fitness nor in a planned and programmed manner. Physical fitness is a set of attributes that a person has for performing physical activity. It is the ability of the body to function efficiently and effectively and consists of numerous components. Health-related fitness includes cardiovascular efficiency/endurance, body composition (percentage of fat in total body mass compared to muscle tissue), muscular strength, and flexibility. Aerobic capacity represents the maximum capacity of the cardiovascular system to take in and utilize oxygen, also known as VO2 max. Most research demonstrating improvements in the psychological domain, cognitive functioning, and quality of life relates to aerobic forms of physical activity (Anshel, 2000).

Brehm (2014, p. 84) defines the psychological continuum of health, which starts from the most desirable state categorized as a high level of psychological well-being. This state implies good coping skills and a balanced lifestyle, along with a positive mood most of the time. The next category of the continuum is a lower level of psychological well-being, which involves difficulties with negative mood and stress but still a more frequent presence of good mood. Following that is a state in which there are no mental illnesses, but stress and negative mood are present most of the time. After that come the symptoms of depression and anxiety, as well as other mental illnesses, culminating in the state of severe mental illness.

The World Health Organization (WHO) defines health as “a state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity” (according to the Healthy Ageing Evidence Review, 2011, p. 6). This definition reflects changes in the idea of the nature of health that occurred in the mid-20th century and demonstrates society’s concern for the mental health of modern individuals since that time. The focus has shifted from physical health, illness, and disability to a more holistic approach, where health encompasses the whole person: body, mind, and community (Brehm Barbara, 2014). It seems reasonable to assume that both general health and well-being are based on physiological, psychological, and social processes experienced by the individual. The complexity and interconnected nature of these processes make it difficult to isolate specific dimensions of health and well-being and to establish specific relationships with physical activity.

Well-being is a complex and multidimensional concept that refers to the overall satisfaction, happiness, and quality of life of an individual. This term encompasses various aspects of emotional, physical, mental, and social well-being. Defining well-being involves considering multiple factors and dimensions that together contribute to a sense of positive life experience. A general definition of well-being might sound

something like this: Well-being refers to the overall state of satisfaction, balance, and welfare of a person, encompassing their physical, mental, and emotional equilibrium, social connections, productivity, and ability to cope with life's challenges. It is a process in which an individual feels a positive relationship with themselves, others, and their environment, and has the ability to achieve their goals and fulfill their potential.

Convinced that a science can be defined by the content it addresses, Anshel (2006) lists the areas that exercise psychology deals with, identified by Berger, Pargman, and Weinberg (2002), as well as Buckworth & Dishman (2002) based on extensive literature reviews. These areas are:

• Designing specific exercise programs to experience psychological benefits; • Examining positive dependence and commitment to exercise; • Understanding the causes and antecedents of negative dependence on exercise, where excessive physical activity leads to injuries, eating disorders resulting in excessive weight loss, social isolation, exercising while ill, or feelings of depression or anxiety (concern) if any exercise is missed; • Studying psychological predictors (dispositions and personality profiles) of who will and who will not commit to regular physical exercise; • Determining the effects of short-term (acute) and long-term (chronic) exercise on changes in mood states; • Measuring changes in selected personality dispositions due to exercise, such as various dimensions of self-esteem, self-confidence, optimism, and anxiety; • Identifying psychological benefits of regular exercise; • Exercising to improve quality of life; • Prescribing exercise as a means in psychotherapy (e.g., for depression, anxiety, emotional disorders) for specific populations, such as children, the elderly, or individuals with physical disabilities; • Utilizing exercise in rehabilitation contexts (e.g., recovery from injuries, cardiac or pulmonary diseases); • Predisposing factors explaining high-quality exercise, flow states, and peak experiences, and how to facilitate achieving these feelings; • Studying the effectiveness of mental skills that enhance exercise performance; • Examining the efficacy of cognitive and behavioral techniques that promote participation in exercise and commitment to exercise; • Predicting commitment to exercise and dropout from exercise; and • Prescribing exercise as a stress management strategy.

Given that there has been a significant increase in interest in topics related to exercise psychology over the past 40 years, that a large number of studies have been conducted, and that the body of scientific knowledge has been enriched, along with numerous manuals and books printed for exercise psychologists and other professionals in the fitness and exercise domain, there remains an evident need to explore and fully understand the psychological (personal), social, and situational

factors contributing to exercise, barriers to non-exercise, and strategies that can make it more appealing and effective. The reasons are understandable, as the population of individuals of all ages with excessive weight, the number of sedentary or physically inactive and unhealthy individuals, and the percentage of people with various mental disorders (e.g., anxiety, depression, dementia) is increasing daily. Summarizing the areas that exercise psychology studies and explains, Anshel (2006) identified the following six:

1. Motivation for exercise
2. Commitment to exercise and the tendency to abandon it
3. Use of cognitive and behavioral strategies that promote participation in exercise
4. Strategies that encourage exercise performance
5. Ways in which exercise affects mood and psychological well-being, and
6. Effective leadership in exercise.

According to Lox et al. (2020, p. 5), the benefits of physical exercise on physical and social conditions are: Physical benefits (reduces the risk of morbidity and mortality; decreases the risk of developing diabetes, hypertension, colon cancer, and heart disease; enhances the ability to perform activities of daily living; aids in weight control); Psychological benefits (improves cognitive functions; reduces depression, anxiety, and general negative moods; increases overall positive mood; enhances body image, self-esteem, and self-concept); Social benefits (provides opportunities for social contacts and relationships; improves social functioning; increases social inclusion and participation; facilitates the integration of exercisers into their peer groups; mental health as a key benefit of exercise).

Review of Literature on the Mental Benefits of Exercise

In addition to physiological benefits, Cox (2011) highlights an abundance of literature supporting the claim that regular exercise positively impacts an individual's psychological well-being. This emotional enhancement manifests through the reduction of negative emotional states such as anxiety and depression and the increase of positive aspects like self-confidence, strength, and general well-being. These consistent findings have led many mental health professionals to promote physical activity as an effective treatment for improving mental health. In some cases, exercise has shown similar effectiveness to psychotherapy and antidepressants in treating emotional disorders (Babyak et al., 1999, 2000; Faulkner & Biddle, 2004; Nicoloff & Schwenk, 1995). Research by Cox, Thomas, Hinton, and others (2004) provides

evidence suggesting that relatively intense bouts of aerobic exercise may surpass moderate bouts in reducing anxiety. This finding is also supported by a meta-analysis conducted by Wipfli and colleagues (2008).

Similarly, resistance exercise is also associated with positive psychological effects (Arent, Alderman, Short & Landers, 2007; Arent, Landers, Matt & Etnier, 2005; Bartholomew, 1999; Dionigi & Cannon, 2009). Regarding the intensity of resistance exercise, Arent, Landers, et al. (2005) found that moderate-intensity resistance training (around 70% of maximum load) outperformed low and high-intensity training in increasing positive affect and reducing negative affect, including anxiety. Cox (2011) also points out that older adults enter a new phase of life where they transition from caregiving roles to focusing on their own happiness and health. In this context, participation in exercise programs helps them become happier, form social connections, and develop a sense of pride and ownership over their fitness routines (Bidonde, Goodwin & Drinkwater, 2009). Like younger adults, physical activity brings psychological and physiological benefits to older adults (Arent, Landers & Etnier, 2000; Dionigi, 2007; Lampinen, Heikkinen & Ruoppila, 2000). Besides improving positive affect and reducing anxiety, physical activity also has potential benefits in preserving cognitive functions that typically decline with age (McLafferty, Hunter, Wetzstein & Bamman, 2000; Shay & Roth, 1992).

While much of the research focuses on depression, the positive effects of regular exercise have also been observed in individuals suffering from anxiety (Petruzzello et al., 1991), panic disorder (Martinsen, Raglin, Hoffart & Friis, 1998), and schizophrenia (Faulkner & Sparkes, 1999). Regarding schizophrenia, which often presents a therapeutic challenge, Faulkner and Sparkes (1999) provided promising results. In a study involving three patients with chronic schizophrenia, improvements were observed in reducing auditory hallucinations and enhancing sleep patterns associated with exercise.

Individuals who exercise regularly and maintain high fitness levels are less sensitive to the negative effects of life stress (Mihić, et al., 2023). This hypothesis is supported by research conducted by Brown (1991) and others. Brown's study is particularly interesting as it included objective measurements of physical fitness and health. He explored the interactive relationship between life stress, physical fitness (measured via a cycling ergometer), and the number of visits to the university health center (illness). Physical fitness acted as a shield against illness during periods of high stress, while less physically fit individuals appeared more vulnerable to high stress. Additionally, Legrand and Heuze (2007) found that the frequency of exercise and persistence might be important in alleviating depression symptoms, with exercise

three to five times a week significantly reducing depression compared to exercising once a week. Moreover, Fruhauf et al. (2016) discovered that outdoor exercise, compared to indoor, induced more positive feelings, excitement, less fatigue, and reduced depression symptoms in individuals with depression. The authors suggest that these positive feelings and increased energy may lead to heightened physical activity.

It is also worth mentioning a study involving an often overlooked group—prisoners—which found that moderate-intensity cardiovascular exercise and resistance training for at least one hour per week over a nine-month period significantly reduced depression symptoms compared to a non-exercising control group. It also decreased anxiety and hostility levels (Battaglia et al., 2015). Consistent findings on the moderate relationship between exercise and depression are evident in other studies, including several narrative reviews (e.g., Mutrie, 2001) and empirical studies (e.g., Dunn et al., 2005).

Cox (2012) suggests that the endorphin hypothesis postulates that exercise is linked to the production of brain chemicals that have a "morphine-like" effect on the exercising person, reducing pain and inducing a general sense of euphoria. According to this hypothesis, a morphine-like substance provides a positive moderating effect on mood and emotions. This effect has been popularly termed the "runner's high." As with neurotransmitter release (the amine hypothesis), research confirms that intense endurance exercise leads to the release of three types of endogenous opioids into the bloodstream, with endorphins being one type (Cox, 2021).

B. Brehem (2014) states that most successful athletes will affirm that sports and physical activity can profoundly impact self-concept and self-esteem. Self-concept refers to how people perceive or define themselves, including the roles they play in family, social, and professional life. This encompasses people's ideas about their strengths and weaknesses, character, and life achievements.

Self-esteem can enhance stress resilience and is linked to numerous positive health variables, such as better cardiovascular and immune responses to acute stress (O'Donnell et al., 2008). Sports and physical activity can have both positive and negative effects on self-esteem. Success clearly creates a better feeling than failure, and human self-esteem is often boosted when people feel competent in any valued area, including physical activity.

Self-confidence refers to how capable people feel in performing well in a given situation. It is situation-specific, though a general sense of confidence in one’s abilities contributes to positive self-esteem. A key concept contributing to confidence, especially in the realm of physical activity, is self-efficacy. This is the belief in one's

ability to successfully accomplish a specific task. The stronger an individual's self-efficacy, the more likely they are to persist in the face of obstacles. For example, those with strong walking self-efficacy are likely to stick to their walking routines despite bad weather or other challenges.

Conclusion

Based on the presented analysis, it can be concluded that exercise has positive effects on modern individuals. The benefits of exercise are numerous, ranging from physical, health-related, and aesthetic to social and mental. The goal of this paper was to demonstrate the mental benefits of exercise based on the available literature. In this context, the psychology of exercise was identified as the basis for locating the benefits of exercise, with a key focus on the mental health improvements that modern individuals gain through physical activity. Several benefits were highlighted, such as the reduction of anxiety and stress, major problems in modern life.

According to the research reviewed, physical activity can reduce stress and anxiety. During exercise, the body releases hormones like endorphins, which act as natural painkillers and mood enhancers. Regular exercise can regulate neurotransmitter levels such as serotonin and dopamine, which are associated with feelings of happiness and satisfaction. This can improve overall mood and reduce depression. A third key benefit identified is the increase in self-confidence, as achieving physical goals and progress in exercise can boost self-esteem. Additionally, cognitive function improvement is another advantage, as exercise can enhance concentration, attention, decision-making ability, and creativity. This can lead to better coping with everyday challenges.

Moreover, exercise aids in the prevention and support of depression treatment. Physical activity is often used as a complementary treatment for depression, both in prevention and support of therapy. Regular exercise can help reduce depression symptoms, improve overall well-being, and decrease the risk of cognitive decline. Increasing evidence suggests that exercise can reduce the risk of cognitive deterioration and neurological diseases such as Alzheimer's and Parkinson's disease. Finally, exercise helps improve sleep quality by reducing insomnia and helping establish healthy sleep patterns.

In conclusion, the results of this literature review fully support the statement made by Robert Butler, a physician at the National Institute on Aging, who said in the 1980s: "If exercise could be packaged into a pill, it would be the most prescribed and beneficial medicine in the world."

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