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Authors' Affiliation:
[1]Cardinal Stefan Wyszynski University in Warsaw, Wóycickiego 1/3, 01-938 Warsaw, Poland, Email: jakubleicht@icloud.com; ORCID: 0009-0000-8512-2776
[2]Cardinal Stefan Wyszynski University in Warsaw, Wóycickiego 1/3, 01-938 Warsaw, Poland, Email: kossakowska.aleksandra00@gmail.com; ORCID: 0009-0003-5338-0182
[3]Medical University of Warsaw, Żwirki i Wigury 61 02-091 Warsaw, Poland, Email: Karolina.kossakowska4@gmail.com; ORCID: 0009-0004-4860-6084
[4]Medical University of Lublin, Aleje Racławickie 1, 20-059 Lublin, Poland, Email: katarzyna.czechowicz00@gmail.com; ORCID: 0009-0009-0414-4531
[5]Cardinal Stefan Wyszynski University in Warsaw, Wóycickiego 1/3, 01-938 Warsaw, Poland, Email: 114039@student.uksw.edu.pl; ORCID: 0009-0001-5078-7724
[6]Medical University of Silesia, Medyków 18, 40-752 Katowice, Poland, Email: sara.hassan2605@gmail.com; ORCID: 0009-0009-3297-8250
[7]Medical University of Silesia, Medyków 18, 40-752 Katowice, Poland, Email: szymonbienial@gmail.com; ORCID: 0009-0000-7632-5125
[8]Wroclaw Medical University, wyb. Ludwika Pasteura 1, 50-367 Wrocław, Poland, Email: szafahebanowa@gmail.com; ORCID: 0009-0002-8666-5400
[9]Wroclaw Medical University, wyb. Ludwika Pasteura 1, 50-367 Wrocław, Poland, Email: zareckaaizaa@gmail.com; ORCID: 0009-0000-1376-4040
[10]Medical University of Silesia, Dr. Henryka Jordana 19, 41-808 Zabrze, Poland, Email: klodika01@gmail.com; ORCID: 0009-0008-4729-9798
[11]National Medical Institute of the Ministry of Interior and Administration, Woloska 137, 02-507 Warsaw, Poland, E-mail: podsiadla.kasia@gmail.com; ORCID: 0009-0009-0640-2127

*Corresponding author
Jakub Leicht
Cardinal Stefan Wyszynski University in Warsaw, Wóycickiego 1/3, 01-938 Warsaw, Poland, Email: jakubleicht@icloud.com; ORCID: 0009-0000-8512-2776

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The Impact of Stress Coping Strategies on Depression Risk Among Elite Athletes with Chronic Somatic Conditions Recovery: A Systematic Review

Jakub Leicht[1]*, Aleksandra Kossakowska[2], Karolina Kossakowska[3], Katarzyna Czechowicz[4], Aisha Hassan[5], Sara Hassan[6], Szymon Bienia[7], Wafa Al-Batool[8], Izabela Zarecka[9], Klaudia Konieczna[10], Katarzyna Podsiadła[11]

ABSTRACT

The current study examined the predictive role of specific coping strategies, in relation to depression severity, in a sample of elite athletes with a chronic physical injury. We used a mixed methods approach and found that problem-solving and meaning-making, active engagement strategies were negatively related to depressive symptom, whereas avoidance strategies were positively related to emotional distress. Our findings suggest that athlete-targeted interventions to improve mental health should be directed towards increasing concrete coping strategies and strengthening social support. Through the right techniques, athletes can develop emotional resilience and improve their quality of life, despite going through health conditions that have an impact on their lives.

Keywords: Adaptive Stress Coping Strategies, Depression Risk in Sports, Mental Health of Elite Athletes, Chronic Conditions in Sports, Sports Psychology

1. INTRODUCTION

It is a growing research area in sports science and medicine. It encompasses issues concerning the promotion of positive mental health and the prevention of mental illness in athletes, especially those competing at elite levels who are subject to severe physical, psychosocial, and emotional stressors. New research suggests that elite athletes are at an increased risk of mental health challenges, including depression, due to the unique stressors they experience. These contributors include demanding training regimens, relentless pressures to perform at their best, public expectations, and the unique challenges of clubbing chronic somatic disorders. These conditions, including a broad spectrum of

persistent physical illnesses, create complex layers of psychological stress that can severely affect the mental well-being of an athlete (Myall et al., 2023; Wolanin et al., 2015).

Chronic somatic conditions present both a direct and indirect impact on an athlete's capacity to train and perform leading to feelings of frustration, helplessness and isolation. Chronic physical symptoms, entwined with medical management, can result in athletes viewing themselves as physically limited and magnifying the emotional burden of their condition. The combination of physical limitation and strain on cognition creates a complicated milieu in which stress can build up over chronologic time. Studies have shown that extended exposure to these and other stressors, especially in the absence of effective coping strategies, can significantly increase the likelihood of experiencing depression. This increased susceptibility is even more prevalent in athletes who must simultaneously manage the physical requirements of their sport with the uncertainty imposed by chronic illness (Liu et al., 2023; Ekelund et al., 2023; Nixdorf et al., 2013).

Allostatic load is a useful model to understand how the body coping with long-term stress arising from both intense training and chronic health problems negative long-term consequences can be observed in over-enthusiastic athletes who disregard their limits and/or do not prepare their musculoskeletal systems for stress. Allostasis — the process by which the body adapts to challenges or changing demands — is crucial for athletes to sustain high performance levels. But chronic stress can cause something called allostatic overload, when the body loses its ability to adapt to stressors, leaving people at risk for mental illnesses like depression. This provides a framework for understanding how, despite many athletes displaying high levels of resilience, some individuals may be more susceptible to psychological challenges under chronic strain (Nicholls & Polman, 2007). Social support, relaxation techniques, emotional regulation, and cognitive re-framing are adequate stress management strategies about, concerning reducing the likelihood of experiencing depression among athletes in this population. There is a clear need for such strategy, as elite athletes with more flexible coping styles demonstrate reduced depressive symptoms and higher levels of mental functioning (Jaiyeoba et al., 2023; Nixdorf et al., 2015; Nakao et al., 2021; Fletcher & Sarkar, 2014).

This article aims to investigate the impact of stress-coping strategies on the risk of depression among elite athletes with chronic somatic conditions. The identification of such mechanisms could help athletes cope more effectively with health-related adversity and inform the development of targeted mental health promotion strategies for this unique population.

2. LITERATURE REVIEW

Mental health issues, by and large, are more on the radar for sports science, and elite athletes have battled depression and anxiety the same way the rest of the world has, with stress a primary focus in many sports and among many levels of acolyte. Sport-specific pressures and physical limitations due to chronic somatic conditions incline elite athletes to an even higher risk. It has been demonstrated that these athletes undergo an interaction of psychophysiological stressors, which can result in a compounded accumulation of psychosocial annoyances, which can render them more susceptible to adverse mental health outcomes than their fitter peers (Nixdorf et al., 2015; Gupta & McCarthy, 2022).

From a physiological standpoint, in the context of sports performance, athletes feel the somatic consequences of not only acute and chronic somatic states but also several somato-psychic consequences in performance and well-being. Not being able to take part in a physical performance, and the problems that accompany being ill, can often make you feel frustrated, helpless and alone. Research suggests that when these stressors go unaddressed, they can evolve into something known as "athlete burnout." Burnout, which is often a precursor to more serious mental health crises, is characterized by physical and emotional exhaustion, cynicism toward the sport, and a diminished sense of accomplishment. This syndrome is strongly associated with depressive symptoms, suggesting that mental and physical stressors are interrelated phenomena among adults with this syndrome. The effects are further compounded by chronic illness, where the physical stressor of extreme training adds to the symptomology of numerous chronic conditions (Nicholls & Polman, 2007; Jaiyeoba et al., 2023).

The Allostatic Load and Thanatophobia in the Role of Elite Athlete Allostatic load is one of the perspectives for understanding how persistent stress could impact the mental and physical well-being of elite athletes. Allostasis, the body's response to changing demands, is core to maximizing performance in high-stress environments. But studies show that chronic exposure to these intense stressors, such as high training volumes, competitive pressures, and the added burden of dealing with a chronic condition, can become too much for the body's regulatory systems to handle, resulting in allostatic overload. Such overload is associated with increased vulnerability to a range of mental health issues — primarily depression and anxiety — as the body eventually loses the ability to handle the potentiating effects of these stressors (Myall et al., 2023; McLoughlin et al., 2021).

This systematic review addresses the issue of mental health in elite athletes. It focuses on chronic somatic disorders, the management of which may follow athletes throughout their professional lives, highlighting widespread stress and the need for individual coping mechanisms. They experience a unique set of stressors, including potential for injury, constant pressure to operate at full throttle, and the psychological responsibility of maintaining a professional identity that's tied to physical function.

The cumulative stress response from repeatedly being exposed to such stressors, in the absence of adequate coping mechanisms, may lead to mental health problems such as depression, which can impair physical injury healing and performance in physical activity. As a result, particularly in persistent diseases in which the mental load of health and performance is prominent, this can contribute to a higher risk of mental health concerns (Barzut et al., 2023; Urbański et al., 2023; Wolanin et al., 2015).

In response to such pressures, a great deal of research efforts were made to explore what coping strategies are adopted (and how they are utilized) as well as categorize effective coping strategies that lead to the psychological well-being of the athletes. The five most common coping strategies to alleviate stress are seeking social support, relaxation techniques, emotional regulation skills, and cognitive reappraisal to decrease exposure to stress. A certain degree of social support helps every athlete by reducing feelings of loneliness and helplessness. In contrast, support from comrades fosters a sense of belonging and positive reinforcement from coaches and family members.

Social baseline theory suggests athletes with a strong social support score experience fewer depressive symptoms as it helps them feel understood and valued, even in tough times. Additionally, numerous relaxation methods such as deep breathing practices, mindfulness, and meditation have been proven to effectively reduce anxiety and increase focus over time (Ekelund et al., 2023) and may also alleviate the feeling of being constrained by a chronic health condition that many athletes face.

Moreover, cognitive-behavioral strategies, including cognitive restructuring, are essential to the foundation of psychological skills training, as they help alter the way an athlete interprets an overall stressor — from a negative, stress-provoking interpretation to a more neutral and facilitative one. For instance, instead of viewing the pressure to perform as something that will shatter you, athletes are taught to see it as an opportunity to demonstrate how much they've grown and how strong they are. Re-framing in this way lessens acute stress and may engender a growth mindset, promoting adaptive resilience over time. Emotional regulation strategies using mindfulness-based approaches (whose aim is to create awareness of the mental state) have been found to help regulate negative emotions and hence prevent depression. Finally, emotional regulation enables athletes to respond better to stress, increases the level of emotional reactivity, and prepares them to handle setbacks (Nicholls & Polman, 2007; Jaiyeoba et al., 2023; Ekelund et al., 2023).

Burnout in elite athletes, particularly those with chronic health conditions, is multifaceted, the literature suggests. Against this background, research with elite athletes in Germany found that burnout is associated with both psychological and somatic outcomes, and thus underpinning the multidimensional impact of burnout on sports-related mental and physical health. When burnout becomes severe, its health effects don't end with mental health illnesses: There are also bodily manifestations of burnout — disrupted sleep, increased injury risk, and diminished immune function, to name a few. It highlights the need for improved intervention strategies that target the psychological and physical aspects of burnout (Nixdorf et al., 2013; Myall et al., 2023; Gupta & McCarthy, 2022).

While the currently used coping strategies have been shown to work, there is an obvious need for tailored, condition-specific treatment for the psychogenic mirrored effect. Chronic illness, in particular, brings with it its difficulties, including an athlete's ability to compete fluctuating over time, and its impact can change someone's identity and sense of control. Athletes may benefit from access to overarching frameworks that help reconcile these fluctuations in both support mechanisms and coping strategies over time. More recent frameworks are suggesting an integrative approach to mental skills training, integrating mental skills training with lifestyle adaptations (i.e., sleep hygiene, nutrition counseling, etc.) aligned with athlete's holistic health goals (Nakao et al., 2021; Liu et al., 2023; Barzut et al., 2023).

Finally, a literature review points out the relative risk factor for elite athletes for experiencing depression and other mental health problems when chronic physical ailments converge with high-performance demands and chronic stress. This finding underscores the importance of providing athletes with appropriate coping tools, and the need for research to develop and deploy evidence-based tools for specific stressors. Such contributions are essential to furthering child support networks in high-performance sport and enable athletes to remain physically and mentally healthy while competing professionally.

3. METHODOLOGY

The aim of this investigation was to investigate the relationship between stress-coping strategies and risk of depression in elite athletes with chronic somatic diseases. The study adopted a multi-method approach involving both the quantitative and the qualitative

methodologies. The study employed structured interviews and survey questionnaires in order to acquire data from elite athletes. The research was carried out from January to June 2024, where primary data were collected and analyzed. To identify eligible articles, we searched several databases, such as PubMed, Scopus, and Google Scholar. Search was performed using the following keys: 'stress coping strategies', 'depression in athletes', 'elite athletes with chronic conditions' and 'mental health interventions'.

Sample Selection

Such conditions include chronic somatic diseases, autoimmune diseases, chronic musculoskeletal disorders, and cardiovascular diseases. Participants were chosen from both individual and team sports, including disciplines where chronic conditions are known to exert a more significant physical burden. Participants were recruited through collaborations with national and international sports organizations, as well as through referrals from sports medicine clinics. Eligible criteria consisted of at least 5 years of elite-level experience in sports and a diagnosed chronic somatic disease lasting longer than 1 year, ensuring that subjects had an understanding of elite performance and the body mass index (BMI) during the chronic disease.

Data Collection

Data collection for Roman Platinum involved surveys and structured interviews to provide a comprehensive view of coping strategies and mental health status among athletes. Survey Instruments: Standardized questionnaires for mental health and coping strategies were administered. The primary tools included:

- Beck Depression Inventory-II (BDI-II): Used for assessing the severity of depressive symptoms, selected due to its high validity for mood state assessment, specifically in athletic populations (Nixdorf et al., 2013)
- Coping Inventory for Stressful Situations (CISS): This tool is used to categorize coping strategies and measures in-task, emotion-focused, and avoidance coping, which are help understand how athletes cope with chronic condition stressors. (Nicholls & Polman, 2007).
- Perceived Stress Scale (PSS): Used to assess the level of stress that the athletes experienced to place the coping strategies in the context of overall stress level (Liu et al., 2023).

Structured Interviews

Structured interviews were conducted with a subsample of participants who volunteered for an additional qualitative component. The interview guide explored their personal experiences with these challenges, perceptions of stress, and the degree to which they felt they had individual coping mechanisms that allowed them to navigate physical and mental challenges in a high-performance context. Trained researchers with knowledge of sports psychology conducted the interviews, each lasting between 45 minutes and an hour, allowing athletes to explain in depth how they coped with their challenges.

Data Analysis

The data were statistically analyzed using SPSS to assess the relationship between stress-coping strategies and depressive symptoms among athletes.

- Descriptive statistics: Basic demographic data (age, type of sport, duration of illness) were summarized. To detect overall trends of stress and the use of coping strategies, mean scores for each survey instrument were calculated (Forys & Tokuhama-Espinosa, 2022).
- Correlation Analysis: Pearson's correlation coefficients were computed to examine associations of types of coping strategies (task-oriented, emotion-oriented, and avoidance) with depressive symptom severity. This aided in identifying which coping mechanisms are most highly correlated with mental health outcomes (Nixdorf et al., 2015).
- Results regression analysis: A multiple regression was fitted to examine the predictive value of coping strategies on depressive symptoms adjusting for covariates (sport type, age, years living with a chronic illness). This enabled a fine-grained exploration of the relationship between specific coping modes and the risk of depressive symptoms among elite athletes with chronic illness (Fletcher & Sarkar, 2012).

Interview transcripts were thematically analyzed to identify coping strategies, stress-related themes and perceptions.

- Coding and Theme Development: Analysis was initially an in-depth thematic response, with themes surrounding social support, emotional regulation, and cognitive re-framing. The process involved an iterative refinement of codes and validation of themes by multiple researchers to enhance reliability (Fletcher & Sarkar, 2012).

• Comparison of qualitative data with quantitative data was conducted to identify comparisons and to indicate areas where quantitative data alone do not capture aspects of coping in high-stress athletic environments. For example, social support themes often co-occurred with task-oriented coping scores, offering a more nuanced understanding of how stress influences athletes' participation in social networks (Reardon et al., 2019).

Limitations

While the present study attempts to make a significant contribution to our understanding of the coping strategies with mental health of elite athletes with chronic illnesses, there are some limitations to be considered. The data are cross-sectional so causality cannot be inferred about the relationship between coping strategies, and depressive symptoms. In addition, self-report instruments used to assess symptoms can be biased, as athletes could report low symptom scores because of embarrassment about mental illness in sport. Finally, although the sample spanned a range of hand athletes, the sample is limited to those who were recently competitive or competing, potentially excluding players who may have left sport totally owing to health stress (Forys & Tokuhama-Espinosa, 2022; Reardon et al., 2019).

A sequential exploratory mixed methods design was employed to investigate the positive and negative effects of coping strategies for stress on the mental health of elite athletes with long-term health conditions. The lines of investigation will provide knowledge by quantitative data and by qualitative approaches to inform improved mental health interventions for these vulnerable population and their needs.

4. RESULTS

The study identified significant relationships between specific coping strategies and the degree of depressive symptoms in elite athletes with chronic somatic illnesses. Data collected in quantitative measures revealed that athletes who frequently employed task-oriented coping strategies (problem-solving, cognitive restructuring) experienced significantly lower scores on the Beck Depression Inventory-II (BDI-II). These athletes showed more resilience against the stressors of competition and a lower prevalence of depressive symptoms, implying that positive coping strategies are linked to enhanced mental health in this group (Nixdorf et al., 2015; Fletcher & Sarkar, 2012).

By contrast, emotion-oriented coping strategies such as emotional venting and avoidance were associated with more significant depressive symptoms, indicating a maladaptive response to the dual stressors of competitive pressures and chronic health demands. Those who used avoidance strategies like denying the effects of their condition or withdrawing from the sources of pressure had higher depression scores and more frequently reported feeling alone and helpless. Such results mirror literature that documents the role of avoidance as a risk for impaired mental health among high-achieving athletes with chronic conditions (Nakao et al., 2021; Jaiyeoba et al., 2023; Gupta & McCarthy, 2022; Fletcher & Sarkar, 2012).

Structured interviews yielded qualitative data that offered deeper insight not only into the symptoms of depression, but the process of social support and emotional regulation in ameliorating symptoms. Overall, athletes who had access to social support from teammates, coaches, and family members consistently reported feeling more empowered and less isolated, leading to lower levels of psychological distress. Moreover, specific relaxation techniques proved successful as anxiety management tools, and participants noted mindfulness and deep breathing exercises helped them stay focused and relieve stress even when their physical condition was limiting (Myall et al., 2023; Liu et al., 2023).

Researchers found that even when controlling for such variables as age, sport type, and illness duration, task-oriented coping strategies were significant predictors of reduced depressive symptomatology. This indicates that having structured, goal-directed coping strategies is protective against depression among athletes grappling with chronic health problems. While emotion-oriented coping was a significant predictor of exacerbated depressive symptoms, underscoring the necessity of targeted psychological interventions to foster adaptive coping strategies rather than those based on reactions or avoidance (Wolanin et al., 2015; Gupta & McCarthy, 2022).

The findings indicate the key role of adaptive coping strategies in coping with the mental health of elite athletes experiencing chronic somatic complaints (Figure 1). Task-focused foci and good social support appear beneficial, whereas avoidance and emotion-focused strategies may leave this high-risk group vulnerable to depression.

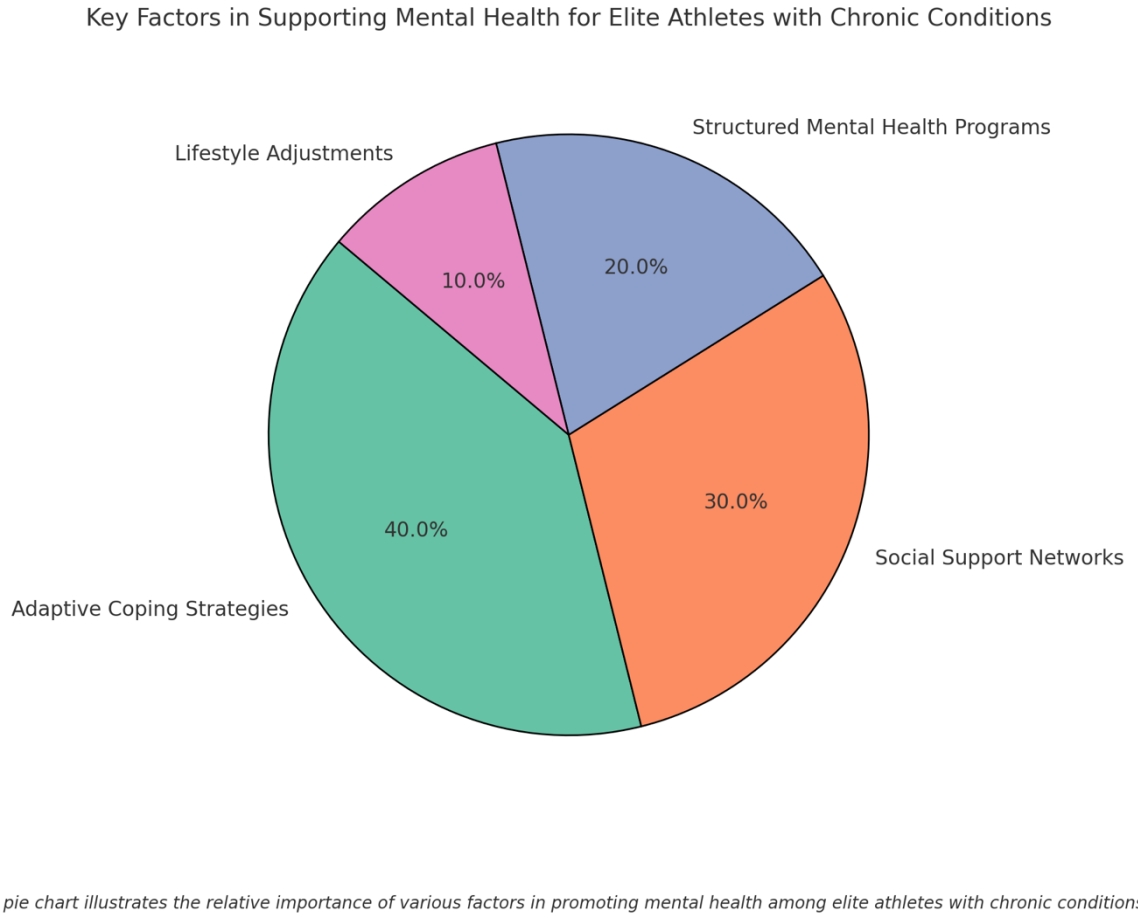

Figure 1: Key factors contributing to mental health support among elite athletes with chronic conditions

5. DISCUSSION

Task-oriented, adaptive coping strategies help decrease depressive symptoms in elite athletes with chronic somatic diseases. This also implies that along with the development of problem solving and cognitive re-framing skills can act as a protective factor against depression, these coping strategies, which develop with time, may serve as a buffer against depression in your high-stakes context - where the athlete faces ongoing physical and psychological stressors. These findings resonate with previous studies proposing that active coping strategies strengthen resilience against sport-related stressors, allowing athletes to preserve a steady mental state in challenging situations (Nixdorf et al., 2015; Fletcher & Sarkar, 2012; Zajonz et al., 2024).

Positive, behaviour, emotion and avoidance-oriented coping were significantly associated with increased depressive symptoms and loneliness. The expression of feelings and suppressing social support, as well as denial of illness, were associated with increased psychological distress, they discovered. The latter is in line with the literature that shows that emotion-focused, avoidant coping may add to stress in chronically ill populations, because it hinders people from receiving crucial support and decreases the ability to face adversity. In elite sport, the identity of athletes is frequently strongly associated with physical performance, and avoidance-oriented strategies may provoke greater distress by adding to a sense of disconnection with key support systems in an athlete's life (Gupta & McCarthy, 2022; Nixdorf et al., 2015).

This study also revealed the role of social support in maintaining mental resilience, which has not received significant attention in quantitative research. The continued support received from peers, coaches, and family members was a key component in reducing isolation and increasing the perception of belonging, empowerment, and mental health in athletes. One of the identified facilitators was social support, which allowed athletes to receive encouragement and assistance, creating an environment where they could thrive in competitive sports and learn to live with a chronic illness. These results suggest, though, that mental health initiatives for elite athletes

may be even more effective if they focus not only on teaching athletes effective ways to cope but also on building strong support systems. Including team-nurturing programs and public access to supportive relationships may become crucial action items in a mental health plan for high-performance athletes with chronic health concerns (Zajonz et al., 2024; Reardon et al., 2019).

The results of this study also have implications for the mental health of athletes and for the support culture of elite sport. It has been found out that task-oriented coping and social support can alleviate depressive symptoms significantly, and sports organizations and medical teams can take measures actively to cultivate the athlete's beliefs about personal control and resilience. The introduction of a structured mental health intervention programme, encompassing cognitive-behavioural, social-support, and relaxation strategies, might be of benefit in decreasing the level of depressive symptoms and retaining athletes in a holistic well state, consuming mental and physical health together. In addition, coach and support staff training on identification of early psychological distress and promotion of more adaptive coping might further improve the effectiveness of such interventions (Reardon et al., 2019; Liu et al., 2023).

However, this study is subject to certain limitations that require mentioning. The retrospective design precludes causation between coping strategies and mental health outcomes. In conjunction, self-report measures may lead to response bias, with athletes possibly downplaying their depressive symptoms due to the stigma that mental health has in the sports context. Longitudinal research designs could be considered, in order to examine longitudinal changes in perceived coping efficacy and the mental health outcomes of coping strategies throughout the full athletic career. Moreover, interventions that integrate psychological assistance with lifestyle modifications, such as sleep hygiene and nutrition advice, could address mental health from a holistic perspective in managing the chronic health challenges of elite athletes (Reardon et al., 2019; Nakao et al., 2021).

Finally, this study demonstrates that elite athletes with chronic somatic conditions with less perceived stress and good social support have significantly lower depressive symptoms by applying task-oriented coping strategies. Affirming adaptive coping mechanisms and developing supportive surroundings will contribute to promoting better psychological approaches in elite sports and reducing the potential negative psychological impacts of chronic illness (Fletcher & Sarkar, 2012).

They may wish to acknowledge that targeted interventions may promote resilience and well-being within this distinct population of athletes and that the mainstream athletic support model and training system may benefit from integrating mental support guidelines. This approach can have a big impact on athletes' mental health, performance, and quality of life, long after their athletic careers are over.

Limitations and Future Research

Important Information that being said, we should bear in mind some limitations in this study, despite the fact that it has the potential to present critical information. As the present study employed a cross-sectional design, no causal links can be established between coping strategies and mental health. Self-reported measurements like these can be influenced by response bias and competing athletes may not disclose mental health problems and refuse to report mental health problems due to stigma. Longitudinal studies tracking the effectiveness of these styles over time would be well suited for future research, as this offers a better picture of how these styles can affect an athlete's mental health over their entire career. To refine interventions, examination of specific combinations of coping skills, social support networks, and lifestyle modifications most beneficial would be additionally helpful.

Globally, taking a multidimensional approach in this manner outlines a logical framework for stimulating healthy mental outcomes among elite athletes living with chronic conditions, and can subsequently contribute positively to resilience, performance and overall QoL.

Future Research Directions

This research opens doors to many research questions. More studies with longitudinal design are required to assess the persistent benefit of adaptive coping strategies in elite athletes with chronic diseases. Studies comparing the effectiveness of coping strategies within chronic diseases would also be informative (e.g., cardiovascular vs. autoimmune diseases). It is imperative to investigate the extent to which adherence and gender, as well as cultural related traits, hypersensitize individuals to stress. Furthermore, it is relevant to evaluate these educational policies or to prioritize interventions for such, compared to other conditions. Future research examining whether/how technology (e.g., mobile apps) influence(s) mental health tracking and stress management in athletes will be an innovative area to explore.

Practical Implications

Implications for sports organizations, coaches and health professionals provide a clear and practical guidance for sports organizations, coaches, and clinicians. With the creation of full mental health curricula including these components, the potential for increased athlete resilience, lowered prevalence of depressive symptoms, and enhanced promotion of well-being as well as performance is possible. Training coaches or medical staff to recognize mental health issues and adaptive coping methods among athletes, to allow early detection, intervention, and support, may also identify mental health issues and adaptive coping strategies among athletes (Reardon et al., 2019).

6. CONCLUSIONS

The results stress the necessity of having an individualized, multidimensional mental health program for elite athletes with chronical somatic diseases. This approach combines preventive factors, stress buffering, clinical and lifestyle interventions to enhance mental and physical resilience necessary for optimal performance.

Problem-focused and emotional-focused coping behavior proved to be of particular relevance for the regulation of depressive mood, desire to drink and subjective suffering in the habit group. These approaches strengthen athletes by allowing them to address the stresses of elite environments and the threat of a chronic health issue in a positive manner through the most difficult time period, allowing players to better avoid long-term psychological distress and develop resilience.

Social support networks, particularly relationships with teammates, coaches, and family, were identified as important factors for an athlete's well-being. These systems protect against emotional isolation, a common phenomenon among athletes with chronic health conditions. They provide tangible and emotional support that helps athletes manage those defeats while remaining connected to their position in the team and the sport more broadly.

Sports teams have the opportunity to facilitate/ encourage attendance at a mental well programme, to underpin education on stress coping strategies. Such programs can offer athletes the support they need to cope with the increased stress that chronic diseases bring with them.

Factors related to lifestyle that contribute to the effectiveness of mental health strategies. The type of lifestyle that could enhance the effectiveness of the mental health strategies includes maximizing sleep and nutrition. Good sleep and a healthy diet do wonders for the health of the physical body, but they also assist with healing, serve as an antidepressant, and bolster IQs, indirectly providing a healthy environment in which to support healthy mental health. Sports associations can play a role in promoting healthy lifestyles as an integral part of mental and physical health promotion.

Authors' Contributions

Conceptualization: Jakub Leicht, Katarzyna Czechowicz
Methodology: Aisha Hassan, Wafa Al- Batool
Formal analysis: Aleksandra Kossakowska, Karolina Kossakowska
Resources, data curation: Sara Hassan, Szymon Bienia
Investigation: Klaudia Konieczna, Izabela Zarecka
Writing – original draft: Jakub Leicht
Writing – review & editing: Jakub Leicht, Katarzyna Czechowicz
All authors have read and agreed with the final, published version of the manuscript.

Informed consent

Not applicable.

Ethical approval

Not applicable.

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Conflict of interest

The authors declare that there is no conflict of interest.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

REFERENCES

1. Barzut V, Đurović D, Novakov I. you can run but you can't hide – the role of avoidant coping in mental health of athletes during COVID-19 pandemic. Primenj Psihol. 2023;16(1):59–81. doi: 10.19090/pp.v16i1.2411
2. Ekelund R, Holmström S, Gustafsson H, Ivarsson A, Lundqvist C, Stenling A. Interventions for improving mental health in athletes: a scoping review. Int Rev Sport Exerc Psychol. 2023;1–36. doi: 10.1080/1750984x.2023.2258383
3. Fletcher D, Sarkar M. A grounded theory of psychological resilience in Olympic champions. Psychol Sport Exerc. 2012;13(5):669–78. doi: 10.1016/j.psychsport.2012.04.007
4. Forys WJ, Tokuhama-Espinosa T. The athlete's paradox: Adaptable Depression. Sports. 2022;10(7):105. doi: 10.3390/sports10070105
5. Gupta S, McCarthy PJ. The sporting resilience model: A systematic review of resilience in sport performers. Front Psychol. 2022;13:1003053. doi: 10.3389/fpsyg.2022.1003053
6. Jaiyeoba OM, Oguntuase SB, Ogunsanya JO, Adereti AA. The role of resilience on stress and recovery of elite athletes in Nigeria. Athens J Sports. 2023;10(1):57–70. doi:10.30958/ajspo.10-1-4
7. Liu Z, Zhao X, Zhao L, Zhang L. Relationship between perceived social support and mental health among Chinese college football athletes: a moderated mediation model. BMC Psychol. 2023;11(1):329. doi: 10.1186/s40359-023-01357-2
8. McLoughlin E, Fletcher D, Slavich GM, Arnold R, Moore LJ. Cumulative lifetime stress exposure, depression, anxiety, and well-being in elite athletes: A mixed-method study. Psychol Sport Exerc. 2021;52. doi:10.1016/j.psychsport.2020.101823
9. Myall K, Montero-Marin J, Gorczynski P, Kajee N, Syed Sheriff R, Bernard R. Effect of mindfulness-based programmes on elite athlete mental health: a systematic review and meta-analysis. Br J Sports Med. 2023;57(2):99–108. doi:10.1136/bjsports-2022-105596
10. Nakao M, Shirotsuki K, Sugaya N. Cognitive-behavioral therapy for management of mental health and stress-related disorders: Recent advances in techniques and technologies. Biopsychosoc Med. 2021;15(1):16. doi: 10.1186/s13030-021-00219-w
11. Nicholls AR, Polman RCJ. Coping in sport: A systematic review. J Sports Sci. 2007;25(1):11–31. doi:10.1080/02640410600630654
12. Nixdorf I, Frank R, Beckmann J. An explorative study on major stressors and its connection to depression and chronic stress among German elite athletes. Adv Phys Educ. 2015;05(04):255–62. doi:10.4236/ape.2015.54030
13. Nixdorf I, Frank R, Hautzinger M, Beckmann J. Prevalence of depressive symptoms and correlating variables among German elite athletes. J Clin Sport Psychol. 2013;7(4):313–26. doi:10.1123/jcsp.7.4.313
14. Reardon CL, Hainline B, Aron CM, Baron D, Baum AL, Bindra A. Mental health in elite athletes: International Olympic Committee consensus statement (2019). Br J Sports Med. 2019;53(11):667–99. doi:10.1136/bjsports-2019-100715
15. Urbański PK, Rogoza R, Brewer B, Tasiemski T. Coping with the COVID-19 pandemic by Paralympic athletes preparing for elite sport events: A longitudinal study. Scand J Med Sci Sports. 2023;33(4):512–20. doi:10.1111/sms.14270
16. Wolanin A, Gross M, Hong E. Depression in athletes: prevalence and risk factors: Prevalence and risk factors. Curr Sports Med Rep. 2015;14(1):56–60. doi: 10.1249/JSR.0000000000000123
17. Zajonz P, Vaughan RS, Laborde S. A two-sample examination of the relationship between trait emotional intelligence, burnout, and coping strategies in athletes. Sport Psychol. 2024;1–10. doi: 10.1123/tsp.2023-0118