QUALITY IN SPORT
eISSN 2450-3118 · Open Access · Peer-reviewed
apcz.umk.pl/QS Nicolaus Copernicus University in Toruń

Cite as: PSIUK, Arkadiusz, SZYMOCHA, Joanna, SMĘDOWSKI, Igor, TSUKERMAN, Jarosław and WOJAS, Aleksandra. The Impact of Minority Stress and Social Polarization on Mental Well-Being and Functioning in the Sporting Environment. Quality in Sport. 2026;59:72797. https://doi.org/10.12775/QS.2026.59.72797

ARTICLE TIMELINE
Received: 29.05.2026. Revised: 20.06.2026. Accepted: 20.06.2026. Published: 24.06.2026.

The journal has been awarded 20 points in the parametric evaluation by the Polish Ministry of Higher Education and Science (Annex to the announcement of 05.01.2024, No. 32553). Unique Journal Identifier: 201398. Scientific disciplines: Medical Sciences; Health Sciences.
Punkty Ministerialne z 2019 – aktualny rok 20 punktów. Załącznik do komunikatu Ministra Szkolnictwa Wyższego i Nauki z dnia 05.01.2024 Lp. 32553. Posiada Unikatowy Identyfikator Czasopisma: 201398. Przypisane dyscypliny naukowe: Nauki medyczne; Nauki o zdrowiu.

The Impact of Minority Stress and Social Polarization on Mental Well-Being and Functioning in the Sporting Environment

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Abstract
Background: Sport occupies an ambivalent position in mental health scholarship, serving both as a resource for well-being and as a setting in which structural stigma, interpersonal prejudice, and chronic stressors may converge to produce psychological harm. Minority stress theory and emerging work on affective polarization may offer complementary lenses for understanding how social conditions translate into individual outcomes among athletes from sexual, gender, and racial minority backgrounds.
Aim: This narrative review aimed to synthesize the available literature on minority stress, social polarization, and mental well-being and functioning within sporting environments, with attention to conceptual foundations, empirical findings, mediators, and intervention possibilities.
Material and Methods: Peer-reviewed sources spanning minority stress theory, structural stigma, affective polarization, sport psychiatry, and elite sport mental health frameworks were appraised qualitatively for thematic relevance and applicability to sporting contexts.

Results: Minority stressors may be associated with depression, anxiety, disordered eating, sleep disturbance, and altered physiological stress responses among athletes. Social polarization appears to interact with stigma processes, potentially amplifying their effects through cultural climates, online abuse, and contested policy debates. Protective factors such as social support, adaptive coping, mindfulness, self-compassion, and inclusive environments may moderate some of these effects.
Conclusions: Mental health in sport may benefit from an ecologically informed approach attending to individual, interpersonal, organizational, and societal levels. Continued attention to minority stress and polarization seems warranted in research, clinical practice, and sport governance.

Keywords: minority stress; affective polarization; mental health; athletes; sexual and gender minorities; sport; well-being

1. Introduction

1.1 Background and Rationale

Sport occupies an increasingly visible position in public discourse concerning health, identity and social cohesion. Although the physiological and broadly psychosocial benefits of physical activity have been documented across the lifespan and within most major non-communicable disease categories, the more specific mental health implications of competitive, professional and elite sport have until comparatively recently received less systematic empirical attention [1,2]. Over the past two decades a growing body of narrative syntheses, empirical investigations and consensus statements has begun to characterise elite sporting environments as contexts in which mental health symptoms and disorders may be present at rates broadly comparable to those observed in non-athletic populations of similar age, while also exhibiting sport-specific manifestations that warrant tailored clinical attention [1,2,3,4]. The recognition that mental and physical health cannot be fully separated, and that high-performance settings may concurrently support and undermine wellbeing, has helped to reposition mental health as an integral dimension of athlete care rather than a peripheral consideration [3,4].

Successive consensus documents issued by the International Olympic Committee, the International Society for Sports Psychiatry and allied professional bodies have articulated the case for treating mental health symptoms and disorders in athletes with rigour comparable to that customarily applied to musculoskeletal injury or cardiovascular concerns, while acknowledging the limited evidence base for many specific intervention approaches in athlete populations [2,5,6]. Reviews of the prevalence literature suggest that approximately one third of currently competing elite athletes may report symptoms consistent with anxiety or depression, with elevated risks reported among individuals navigating severe injury, performance failure, transitions out of competitive sport, or unhelpful organisational climates [1,2,3]. Several authors have emphasised the methodological heterogeneity of the underlying studies, including limited use of standardised diagnostic criteria, an over-representation of male and Western samples, and a relative scarcity of prospective designs, all of which complicate inference about causal pathways and longitudinal trajectories [1,2,7].

The catalogue of sport-specific stressors implicated in mental health risk has been progressively elaborated, with severe musculoskeletal injury, surgical recovery, deselection, contractual instability, public scrutiny via mainstream and social media, frequent relocation and the demands of group dynamics each identified as plausible contributors to symptomatology [1,2,3]. These stressors operate alongside general life events shared with non-athletic populations and may be modulated by the timing of athletic careers, which often overlap with peak ages of risk for the onset of common mental disorders [1,2]. Within such environments, mental health is now widely understood as a continuum extending from flourishing through languishing to clinically diagnosable disorder, a framing that emphasises the simultaneous presence of high subjective wellbeing and clinical symptomatology and that has been adopted by recent ecological and integrative models of elite sport mental health [3,4,8].

The physiological mechanisms by which sustained psychological and physical demands may impinge on athlete health have been usefully framed through the allostatic load model, which conceptualises wear-and-tear on multiple regulatory systems following prolonged exposure to environmental challenge and the dysregulation of compensatory responses [9]. Stress endocrinology research has emphasised that exercise may serve simultaneously as a stressor and as a modifier of subsequent stress responsivity; chronic adaptation to training appears to attenuate hypothalamic–pituitary–adrenal axis reactivity to non-exercise stressors, whereas excessive training combined with insufficient recovery may produce maladaptive neuroendocrine patterns consistent with overtraining or burnout [10,11,12]. These findings are complemented by emerging research on sleep, recovery and microbiota–gut–brain interactions, all of which appear to be implicated in mood regulation, anxiety vulnerability and stress reactivity among athletes, and which have been incorporated into broader frameworks of training load management at the elite level [11,13,14].

Despite the breadth of this expanding literature, athletes have often been treated in research and applied practice as a relatively homogeneous population, with comparatively limited attention to the ways in which identity-related social positions may shape both exposure to stressors and access to resources [4,8]. Such treatment risks obscuring the experiences of athletes who occupy socially stigmatised positions on the basis of sexual orientation, gender identity, race, ethnicity, disability or other characteristics, and may also overlook the social–political climate within which athletic careers unfold. Outside the specific domain of sport, work conducted over several decades has repeatedly suggested that members of stigmatised minority groups may bear an elevated burden of common mental health problems, of stress-related morbidity and of premature mortality, an inequality that demands explanatory frameworks capable of integrating individual, interpersonal, organisational and structural levels of analysis [15,16,17].

Among the frameworks that have proved most influential in this respect is minority stress theory, articulated by Meyer in foundational reviews and synthesised in a widely cited 2003 article in Psychological Bulletin [15]. The model proposes that mental health disparities observed between sexual minority and heterosexual populations are not adequately explained by individual-level differences alone but are better understood as a product of social environments characterised by prejudice, stigma and structural exclusion [15]. Minority stress is distinguished from general stress by its origin in stigma and prejudice rather than in events that may befall any individual irrespective of identity, and is theorised to comprise distal stressors — including discrimination, victimisation, and major life events motivated by prejudice — and proximal stressors that arise from internalisation of negative social attitudes, expectations of rejection and concealment of identity [15,16]. Subsequent extensions of the framework have applied minority stress concepts to gender minorities and have integrated cisnormativity, misgendering and identity invalidation as additional sources of strain that may not have been adequately captured by earlier formulations focused on sexual orientation alone [16].

Continued elaboration of the model has incorporated couple-level processes through which minority stressors may propagate between partners in same-sex relationships, developmentally sensitive adaptations attuned to sexual minority adolescents navigating compulsory social contexts such as family, school and religious communities, and considerations of cultural variability in the meaning and impact of stigma across national settings [16,18]. The framework has also been brought into dialogue with critiques emphasising positive psychological resources and the value of distinguishing between mental ill-health and the broader construct of psychological wellbeing in queer populations, with some scholars cautioning that an exclusive focus on deficits may obscure the resilience-related processes that also operate within stigmatised communities [16,19]. Sociological extensions of the framework have further situated minority stress within multi-level socioecological models that delineate how stigma may operate across individual, interpersonal, community and structural domains, providing a useful scaffold for translation to applied settings such as sport [20].

A further conceptual development has been the elaboration of structural stigma, defined as the societal-level conditions, cultural norms and institutional policies that constrain the opportunities, resources and wellbeing of the stigmatised [17]. Empirical research has linked variation in structural stigma — operationalised through state laws, aggregate community attitudes or measures of community-level prejudice — to differences in concealment, rejection sensitivity, psychiatric morbidity and mortality among sexual minority populations [17,21]. Qualitative work has further illuminated the experiential dimensions of structural stigma, including how individuals come to anticipate, internalise and navigate the constraints imposed by prevailing institutional cultures, even where interpersonal hostility is not overt [22]. These findings suggest that the social conditions within which minority stress is experienced are not incidental to its psychological consequences but constitute an essential component of how stigma is theorised to "get under the skin," with implications for the design of interventions across multiple levels [17,21,22].

Race- and ethnicity-related stressors represent a parallel and conceptually allied tradition of inquiry, in which scholars have documented how everyday discrimination, heightened vigilance, racialised insults and broader institutional racism may contribute to disparities in mental and physical health among populations of colour [23]. Although racial discrimination and minority stress have often been investigated within separate literatures, their conceptual overlap is substantial: both posit that chronic exposure to socially structured threat may be a key driver of inequality in psychological and physical health, and both situate individual outcomes within structural histories of inequity [17,23]. For athletes positioned at the intersection of multiple stigmatised identities, the cumulative burden of race- and minority-related stressors may be particularly consequential, although empirical work explicitly addressing intersectional experience within sport remains comparatively limited [4,8,23].

Within sport specifically, a sustained body of qualitative and review research has begun to map the experiences of sexual and gender minority athletes. Systematic reviews indicate that LGBTIQA+ individuals participating in sport may encounter LGBTIphobic climates characterised by discrimination, bullying, verbal harassment and exclusion, with consequent elevated risks of anxiety, depression, low self-esteem and disengagement from sport [24,25]. Meta-ethnographic synthesis of qualitative studies on LGBTQ student-athletes in collegiate contexts has identified recurring themes of experienced discrimination and violence, perceived stigma, internalised prejudice, and the role of team support and resilience in shaping wellbeing [26]. Cross-cultural extensions of this work have suggested that, while the broad contours of these experiences are recognisable across national contexts, the specific configurations of cultural norms, religion and family expectations may shape the meaning and impact of minority stressors in distinctive ways, as illustrated by qualitative research on sexual minority student-athletes in Chinese collegiate sport [27,28].

Transgender athletes warrant particular attention given the convergence of social, legal and policy-level uncertainties that may affect their participation in sport. Systematic reviews have noted that, while explicit barriers to transgender participation are often justified on grounds of perceived athletic advantage, the evidence base supporting such assumptions has been characterised as inconsistent and incomplete [29]. Meta-analytic work has further indicated that transgender athletes may be over-represented among those subjected to discrimination both within sporting settings and in associated healthcare encounters, with measurable consequences for psychological wellbeing and reported rates of suicidality [30]. Community surveys of transgender people conducted in jurisdictions such as Australia have documented widespread experiences of bullying, exclusion and avoidance of sport-related spaces, alongside more affirming experiences when inclusive environments are intentionally cultivated [31]. The most recent International Olympic Committee framework on fairness, inclusion and non-discrimination on the basis of gender identity and sex variations has sought to articulate principles to guide policy at the international level, although debates regarding implementation and the underlying evidence base persist [32].

In parallel with these developments, a second body of work has examined the implications of social and political polarization for individual and population health. Affective polarization — the tendency of partisan or ideological in-groups to express marked antipathy and social distance toward out-groups — has become an increasingly active area of investigation in political psychology, with theoretical roots in social identity and intergroup threat models [33]. Empirical research has suggested that polarization may be associated with declines in self-rated mental and physical health, with reductions in social support and interpersonal trust, and with broader changes in democratic norms that could, in turn, alter the psychological climate within which individuals live, work and compete [34,35]. The conceptual and methodological apparatus needed to disentangle the multiple dimensions of polarization — including its ideological, affective and behavioural facets — has continued to evolve, with some recent longitudinal work cautioning against the uncritical extrapolation of cross-sectional associations to within-person causal effects [33,35].

The COVID-19 pandemic provided a particularly visible case study of these dynamics, as polarized responses to public health measures appeared to influence both behavioural adherence and mental health outcomes [36,37]. Systematic review protocols have been developed to evaluate the relationship between polarization and pandemic-related health behaviours and outcomes, while empirical work conducted in athletes during the same period has documented widespread disruption to training, social connection and identity, with mental-health sequelae that may not have fully receded [36,37]. The intensity of social-media-mediated public discourse over questions of identity, inclusion and athletic eligibility has further contributed to a climate in which minority stress and polarized public sentiment may converge to act upon individuals already exposed to structural disadvantage [32,33,36].

Online abuse aimed at athletes — including racist, sexist, homophobic and transphobic content — has emerged as a particularly concerning feature of contemporary sport, with documented impact on the wellbeing of those targeted [38,39]. Comparative analyses of online abuse during major sporting competitions have suggested that women, athletes of colour and LGBTIQA+ athletes are disproportionately exposed, and that high-stakes events may amplify both the volume and severity of harmful content [38,39]. Within sport, harassment and abuse — including psychological, physical, sexual and neglectful conduct — have also been the subject of consensus statements warning that elite, disabled, child and LGBT athletes may be at elevated risk, and that such conduct may carry lasting mental-health consequences for those affected [40].

These multiple threads — the elaboration of minority stress theory, the empirical literature on sexual and gender minority athletes, the body of work on affective polarization and its health correlates, and the documentation of online abuse and harassment within sport — converge on a set of pressing questions concerning how social conditions may interact with the demands of competitive sport to shape mental health. While each constituent literature has matured considerably within its own boundaries, the integration of these strands in relation to athletes who occupy stigmatised positions remains comparatively underdeveloped, and the social–political contexts within which sport unfolds are themselves changing rapidly [16,32,33,40].

1.2 Scope and Aims of the Review

The present narrative review aims to synthesise the available literature at the intersection of minority stress, social polarization and mental wellbeing and functioning within sporting environments. Although the constituent fields — minority stress theory, polarization research, sport psychiatry and elite sport mental health frameworks — have generated substantial bodies of evidence in their own right, their integration in relation to athletes who occupy stigmatised positions has received less systematic attention [4,16,32]. The review therefore seeks to articulate how concepts from these fields may be brought together to illuminate the experiences of sexual minority, gender minority, racially minoritised and otherwise marginalised athletes, with attention to mediators, moderators and intervention possibilities.

The specific aims of the review are: (i) to outline the theoretical foundations of minority stress, structural stigma, race-related stress, polarization and allostatic load as they bear upon sport; (ii) to summarise the empirical evidence concerning the prevalence and patterning of mental health symptoms and disorders among athletes from sexual, gender, racial and other minority backgrounds; (iii) to consider the physiological pathways through which minority stress and polarised social environments may shape athlete health; (iv) to examine mediators and moderators — including social support, coping strategies, mindfulness, self-compassion, resilience and inclusive sporting environments — that may attenuate or amplify these effects; and (v) to identify intervention frameworks and policy recommendations that have been articulated in the literature, while highlighting gaps in evidence requiring further investigation [4,16,17,40].

In pursuing these aims, the review remains alert to the limitations of generalisation across populations, sports, levels of competition and national contexts. Where evidence permits, the review distinguishes between findings derived from sport-specific samples and those that, while developed in other settings, have been extended or appear plausibly extendable to athletes. Throughout, the review adopts cautious language consistent with the heterogeneity of the underlying literature and the comparatively young state of empirical work on minority stress and polarization in sport [1,4,16].

1.3 Methodological Considerations of a Narrative Review

A narrative review, as distinct from a systematic review or meta-analysis, allows for the integration of conceptually diverse literatures and the development of synthetic frameworks that may not be reducible to standardised outcome metrics [4,16]. Such reviews are arguably valuable in fields characterised by methodological heterogeneity, evolving theoretical concepts and rapidly changing social contexts, although they carry inherent limitations related to the selection of sources, the role of

authorial judgement in interpretation, and the inability to deliver pooled effect estimates [4]. The present review draws on peer-reviewed sources spanning theoretical articulations of minority stress and polarization, empirical investigations in sport-specific populations, consensus statements issued by professional bodies in sport medicine and psychiatry, and intervention literature developed in sexual and gender minority populations. Where possible, references to systematic reviews and meta-analyses have been foregrounded in order to summarise cumulative evidence, while qualitative studies have been drawn upon to illuminate experiential and contextual dimensions that quantitative work may underdetermine [24,26].

The synthesis is organised thematically rather than chronologically, in keeping with established conventions in narrative reviews of complex psychosocial phenomena. Areas such as the broader sociology of sport, the political philosophy of inclusion in competitive contexts, and the technical detail of physiological performance modelling are addressed only insofar as they support the central themes; readers seeking more focused treatment of particular subdomains are referred to the systematic reviews and consensus statements cited throughout. While the review aspires to comprehensiveness within its declared scope, no claim is made to exhaustiveness, and it is acknowledged that the rapidly evolving social–political climate may render some interpretations time-limited [16,32,40].

2. Conceptual Foundations

2.1 The Minority Stress Model: Origins, Articulation and Extensions

Minority stress theory, as formalised by Meyer in influential mid- to late-1990s work and consolidated in a 2003 synthesis published in Psychological Bulletin, was developed to explain the persistent observation that sexual minority populations tend to exhibit elevated prevalences of common mental health disorders, including mood, anxiety and substance use disorders, relative to heterosexual comparison groups [15]. The model has its roots in broader social stress theory, which holds that conditions in the social environment — and not only personal life events — may constitute sources of stress capable of disrupting psychological and physical functioning [15]. Within this tradition, scholars working on role strain, ambient stress and chronic life-strain processes have articulated the centrality of social context to the production of health disparities, while psychological theorists working on stigma, symbolic interaction and self-categorisation have provided complementary accounts of how social devaluation may shape the inner life of those who are its targets [15].

Meyer's specific contribution was to integrate these traditions into an explanatory model concerned with the excess stress imposed upon sexual minority individuals by virtue of their stigmatised social status [15]. Three features of this excess stress have been emphasised: first, minority stress is unique, in the sense that it is additive to general stressors experienced by all individuals; second, it is chronic, being tied to relatively stable social and cultural structures rather than to discrete events; and third, it is socially based, originating in social processes and institutional structures rather than in biological or individual characteristics of the affected person [15]. These properties distinguish minority stress conceptually from general stress and provide a rationale for examining the cumulative burden borne by members of stigmatised groups [15,16].

Within the model, minority stressors are arrayed along a distal–proximal continuum [15]. Distal stressors comprise events and conditions that can in principle be specified independently of an individual's identification with the minority group, including discrimination in employment, education and healthcare; experiences of violence and victimisation; chronic exposure to microaggressions and "everyday" hostility; and the so-called non-events, in which expected positive outcomes are thwarted because of stigma [15,16]. Proximal stressors, by contrast, arise from an individual's awareness of, and reaction to, the prevailing stigmatising context, and include expectations of rejection and the chronic vigilance such expectations may require; concealment of one's identity for fear of negative consequences; and internalised stigma, denoting the absorption of negative societal evaluations into one's self-concept [15,16]. Concealment occupies a paradoxical position within the model, in that it may sometimes shield individuals from acute distal stressors while simultaneously undermining access to community, social support and authentic self-expression, with documented consequences for mental and physical health [15,16].

Subsequent extensions of the framework have applied minority stress concepts to gender minority populations, drawing attention to specific stressors such as cisnormativity, misgendering, gender non-affirmation and identity invalidation that do not map neatly onto sexual orientation-based formulations [16]. Adaptations designed to capture the experiences of transgender and non-binary individuals have incorporated the role of gender affirmation as both a developmental task and a potential resource for resilience, and have highlighted how the visibility of gender expression may sometimes amplify exposure to distal stressors in ways that the original framework, focused largely on sexual orientation, did not fully anticipate [16,19]. Further extensions have addressed the proliferation of minority stress within couples in same-sex relationships, demonstrating that couple-level stressors may exert effects on mental health beyond those attributable to individual experiences alone [16].

A developmentally informed adaptation of the framework, drawing on qualitative work with sexual minority adolescents, has highlighted that the experience of minority stress in adolescence may differ from that observed in adults in ways that bear directly upon trajectories of mental health [18]. Adolescents typically negotiate compulsory social contexts — including family of origin, school and religious communities — from which they may not readily exit; identity development is itself in flux, with labels and self-understandings shifting over time; and social and informational coping resources, while increasingly available, are unevenly distributed across geographic and cultural settings [18]. These observations have informed the elaboration of stage-sensitive intervention frameworks and have underscored the importance of socioecological analyses in research with younger sexual and gender minority populations [18]. They have also encouraged a closer

examination of the "developmental collision" by which contemporary youth may come out at younger ages — when they may be more vulnerable to the negative effects of minority stress on mental health — even as the broader social climate continues to improve in some respects [16,18].

Critical engagement with the minority stress framework has been ongoing. Some scholars have argued that the model operates from a primarily deficit-oriented stance, with insufficient attention to positive psychological resources, group-level coping mechanisms and resilience-promoting processes that may also characterise sexual and gender minority lives [16,19]. Others have proposed an analytic reorientation toward social safety — encompassing social connection, inclusion, protection, recognition and acceptance — as a complementary or alternative organising construct, on the grounds that the mere absence of threat may not, in itself, equate to the presence of conditions necessary for wellbeing [16]. Still others have noted that the original model already incorporates considerations of coping, social support and group-level resources, and that newer formulations are best understood as extending rather than replacing the foundational framework [16,19]. Despite these debates, the continued relevance of minority stress theory has been defended on the basis of consistent empirical findings indicating that disparities in mental and physical health between minority and non-minority groups remain substantial, even in social contexts in which legal and attitudinal indices of acceptance have improved [16,17].

2.2 The Socioecology of Sexual and Gender Minority Stigma

A series of theoretical contributions has progressively situated minority stress within socioecological frameworks that distinguish levels of analysis ranging from intra-individual psychological processes through interpersonal interactions to community structures and broader societal conditions [20]. Hatzenbuehler and colleagues have proposed a psychological mediation framework specifying the mechanisms through which experiences of stigma may be translated into mental health outcomes, including emotion dysregulation, social and interpersonal problems, and cognitive processes such as rumination, hopelessness and negative self-schemas [17,20]. Within this framework, sexual minority stigma is theorised to operate not by producing entirely sui generis mechanisms of psychopathology but by intensifying general psychological processes that are themselves implicated in vulnerability across diagnostic categories, a formulation that may facilitate the integration of minority stress research with broader cognitive and affective science [17,20].

The socioecological elaboration of the framework articulated by Hatzenbuehler and Pachankis distinguishes individual-, interpersonal-, structural- and intergroup-level mechanisms through which sexual minority stigma may shape outcomes [20]. At the individual level, processes such as internalised stigma, concealment, rejection sensitivity, identity centrality and emotion dysregulation are implicated; at the interpersonal level, day-to-day interactions with family, peers, teachers, coaches and healthcare providers constitute the immediate context in which stigma is enacted; at the structural level, laws, policies, organisational practices and cultural norms set boundary conditions that constrain the lives of stigmatised individuals; and at the intergroup level, comparative processes between in-group and out-group members may shape both prejudice and the self-concept of minority individuals [20]. This multi-level architecture has been deployed both as a research heuristic, helping to organise diverse empirical findings, and as a guide to the design of multi-component interventions targeting different layers of influence [20].

Within the broader literature on the socioecology of stigma, attention has been paid to how stigma processes may operate differently across social contexts. In settings characterised by high structural stigma, individuals may be more likely to engage in concealment and to internalise negative evaluations; in lower-stigma contexts, individual-level processes may attenuate, although intergroup dynamics and microaggressions may persist [17,20]. Cross-cultural extensions of the framework have suggested that the configuration of stigma processes may differ across national settings, with collectivistic values, family-centred norms and religious traditions modulating both the experience of distal stressors and the salience of proximal ones — observations of obvious relevance to the increasingly global character of competitive sport and to the experience of athletes who travel, train and compete across cultural boundaries [16,20,27].

Critical perspectives within this literature have also noted that socioecological models risk eliding the heterogeneity that exists within sexual and gender minority populations along intersecting axes of race, ethnicity, class, disability, religion and age [16,20,23]. Intersectional analyses have been argued to be necessary to understand the distinctive ways in which multiple stigmatised identities may shape exposure to stressors and access to resources, a recommendation that has particular force in the context of sport, where racial, gender and class hierarchies have historically structured participation [16,20,23]. The socioecological framework therefore provides an organising scaffold that, applied with care, may help illuminate not only the average experience of sexual and gender minority athletes but also the variability within these populations and the conditions under which different mechanisms become salient [20].

2.3 Structural Stigma: Definitions, Mechanisms and Consequences

Structural stigma may be defined as the societal-level conditions, cultural norms and institutional policies that constrain the opportunities, resources and wellbeing of the stigmatised [17]. The concept extends earlier work on institutional racism by broadening the category of groups for whom such structural disadvantage may be theorised, and it has been operationalised in empirical research through two principal strategies: policy analyses that code the content of laws and institutional rules, and aggregated measures of community attitudes, which use individual responses to attitudinal items as inputs to community-level indices [17]. Each strategy has methodological strengths and limitations: policy analyses rely on comparatively objective data sources but may not capture unwritten customs and informal practices, while aggregated attitudinal measures may underestimate true levels of structural stigma owing to social desirability biases in self-report [17].

Empirical work using such measures has linked structural stigma to a range of outcomes among sexual minority populations, including concealment behaviour, rejection sensitivity, psychiatric morbidity, physiological stress responses and mortality [17]. Sexual minority adults living in U.S. states without protective policies have, in cross-sectional analyses, been observed to display higher prevalences of mood, anxiety and substance use disorders than counterparts in states with such policies, with disparities reduced or eliminated in lower-stigma contexts [17]. Quasi-experimental designs leveraging changes in policy — for example, the passage of same-sex marriage bans, or, conversely, the introduction of marriage equality — have produced evidence broadly consistent with a causal interpretation of these associations, while laboratory studies have suggested that prior exposure to high-stigma environments may be associated with altered cortisol responses to social stress tasks, even when current residence is in a low-stigma context [17].

Comparative analyses of the relative strength of associations between minority stress, structural stigma and physical health have suggested that, when assessed jointly, both individual-level minority stress exposures and structural stigma may exert independent contributions, though with differing magnitudes across outcome types and population subgroups [21]. Such findings have reinforced the view that interventions limited to individual-level coping or symptom management are unlikely to fully address the health consequences of stigma, and that structural-level reform is also required to produce sustained reductions in disparities [17,21]. Qualitative work complements this perspective by illustrating how individuals experience and interpret structural stigma, including the dissonance that may arise when formal legal protections coexist with everyday hostility, and how the cultural narratives surrounding minority identity continue to shape self-concept even in the presence of nominal equality [22].

In the context of sport, structural stigma may operate through a variety of mechanisms, including eligibility policies and competitive regulations, the cultural emphasis on hegemonic masculinity and gender binary structures, the absence or presence of anti-discrimination policies within governing bodies, the organisation of facilities such as changing rooms and the practices of media coverage [22,24,25,32]. While research that directly applies the structural stigma framework to sport remains comparatively limited, the conceptual apparatus appears well suited to characterising how cumulative institutional decisions may shape the experiences of athletes who occupy stigmatised positions, and to guiding intervention design at the organisational, federation and policy levels [17,22,32,40]. Within this broader context, debates over the inclusion of transgender athletes in elite competition, the policing of identity in athletic eligibility regulations, and the management of harassment and abuse in sport may all be productively analysed through the lens of structural stigma [22,29,30,32,40].

2.4 Race, Ethnicity and Intersectional Stressors

Although minority stress theory was initially developed with primary reference to sexual minority populations, parallel and conceptually allied work on race-related stressors has produced a substantial body of evidence concerning the mental health consequences of racism and racialised discrimination [23]. Racism, in this literature, is conceptualised as an organised system in which dominant groups categorise and rank populations and differentially allocate resources, opportunities and respect on the basis of these categorisations [23]. The system is sustained by ideologies that are deeply embedded in cultural narratives, by individual prejudice and stereotypes, and by discriminatory practices enacted at interpersonal and institutional levels, with all of these mechanisms theorised to contribute to disparities in mental and physical health [23].

Empirical research has consistently linked self-reported experiences of racial discrimination — including major acute experiences, such as being denied employment or being unfairly treated by law enforcement, and chronic everyday experiences, such as being treated with less courtesy or receiving poorer service in everyday encounters — to elevated levels of psychological distress, depressive and anxiety symptoms, and diagnosed mental disorders [23]. Longitudinal designs, while still in the minority, have begun to address concerns about reverse causation, with several studies indicating that prior experiences of discrimination prospectively predict changes in mental health rather than the reverse [23]. The literature has also addressed potential confounding by personality factors such as hostility, neuroticism and negative affectivity, generally finding that associations between discrimination and health persist after adjustment for these constructs [23].

Beyond explicit discrimination, the concept of heightened vigilance has been developed to capture the psychological consequences of anticipating possible discriminatory encounters, with measurable effects on stress reactivity, sleep and mental health [23]. Children and adolescents are not exempt from these dynamics; reviews suggest that exposure to discrimination begins early in life and may shape psychosocial development, conduct outcomes and emerging mental health symptoms, with vicarious exposure — for example, observing parents being treated unfairly — also implicated in pathways to child health [23]. Race-related stressors have further been argued to be especially pathogenic because they target identity directly, with documented sequelae for physiological dysregulation, allostatic load, telomere shortening, oxidative stress and cardiovascular morbidity [9,23].

For athletes located at the intersection of multiple stigmatised positions — for example, Black sexual minority athletes, or transgender athletes of colour — the cumulative burden of race- and minority-related stressors may be particularly consequential, although empirical work explicitly addressing intersectional experience within sport remains comparatively limited [4,8,23]. Theoretical accounts have argued that intersectionality is not reducible to the additive combination of distinct stigmas, and that the interaction of multiple positions may produce novel configurations of exposure, coping and identity work that are not fully captured by separate consideration of constituent dimensions [16,20,23]. Within sport organisations, intersectional analyses have also drawn attention to how leadership pipelines, scholarship structures, mentorship opportunities and the demographic composition of governing bodies may interact with race and identity to

influence athlete trajectories [23]. The present review integrates intersectional considerations where the literature allows, while acknowledging that more focused inquiry is needed to support firm conclusions in this area, particularly within sport-specific contexts [23].

2.5 Political and Affective Polarization as Context-Level Stressors

The literature on political and affective polarization, while developed largely outside health-focused disciplines, has emerged as a complementary conceptual resource for understanding how broad social–political conditions may bear upon individual psychological functioning [33,34,35]. Polarization has been conceptualised along multiple dimensions, including ideological polarization, referring to the divergence of policy attitudes between groups; partisan sorting, referring to the increasing alignment of policy attitudes with partisan identity; and affective polarization, denoting the antipathy and social distance that members of partisan in-groups display toward members of out-groups [33]. Affective polarization in particular has been theorised to operate through processes consistent with social identity and intergroup threat theories, in which partisan identity becomes a salient self-categorisation that shapes emotional reactions to in-group and out-group members [33].

Within the affective polarization literature, increasing attention has been paid to the role of discrete and dimensional emotions in shaping intergroup behaviour and individual wellbeing. Although early work foregrounded broad measures such as the feeling thermometer, more recent contributions have argued that the construct of affect deployed in this literature must be more carefully specified, with attention to valence, arousal and discrete emotions such as anger, fear, disgust and contempt [33]. Empirical investigations using psychophysiological measures — including skin conductance, facial electromyography and electroencephalography — have begun to characterise the embodied dimensions of partisan response, suggesting that exposure to in-group and out-group political stimuli may elicit measurable changes in autonomic and muscular activity, with potential implications for chronic stress exposure in highly polarized environments [33]. The relative importance of anger versus fear, of ingroup love versus outgroup hate, and of unconscious versus self-reported affective responses remains contested, and the field has gradually moved beyond a single-dimensional conceptualisation toward a more textured account of how polarized affect is experienced and expressed [33].

Empirical work conducted in the U.S. context has linked perceived polarization to indicators of physical and mental health. Individuals who report greater perceived political distance from their state's median voter have, in cross-sectional surveys, reported more days of poor physical health per month, with smaller and less consistent associations for mental health outcomes [34]. Such findings have been interpreted as suggesting that polarization may operate as a context-level stressor, particularly for individuals who experience themselves as politically isolated within their local communities, with knock-on effects on social capital, neighbourly relations and access to informal support [34]. However, longitudinal and within-person analyses have produced more equivocal results. One pre-registered six-wave study conducted during a U.S. presidential election period found that, although affective polarization was cross-sectionally associated with lower social support, greater perceived stress and poorer self-rated health, fluctuations in polarization did not prospectively predict changes in these outcomes, suggesting that some of the observed associations may reflect stable between-person differences rather than within-person causal effects [35]. These findings have prompted calls for greater caution in causal claims about affective polarization, while preserving the broader observation that polarized environments may co-occur with elevated psychological strain, social network constriction and altered trust [35].

The relevance of polarization for the sport context has been less directly examined, but plausible pathways may be hypothesised. Sport functions as a high-visibility cultural domain in which questions of identity, fairness and inclusion are publicly contested; athletes who become focal points of debates over transgender inclusion, racial justice or social activism may find themselves embedded in contexts in which affective polarization is unusually intense, with potential implications for psychological wellbeing [32,33,38,39,40]. The mechanisms by which such exposure may translate into psychological strain include direct exposure to abuse, vigilance for hostile responses on social media, social distancing from previously close in-group members who hold contrasting views, and the cumulative weight of being a symbol within broader cultural debates [33,38,39,40]. The empirical investigation of these mechanisms in athlete populations remains, however, comparatively underdeveloped, and further work that combines polarization measurement, sport-specific exposures and health outcomes is likely to be needed before firm conclusions can be drawn [33,35].

2.6 Allostatic Load and the Biology of Chronic Stress

The biological correlates of chronic stress have been usefully integrated through the allostatic load model, which expands the earlier homeostatic framing of stress by emphasising the dynamic and predictive nature of physiological regulation [9,10]. Allostasis refers to the maintenance of physiological stability through change — the recalibration of regulatory set-points in anticipation of and response to environmental demands — while allostatic load denotes the cumulative wear-and-tear that results from repeated activation of allostatic processes, particularly under conditions of frequent, prolonged or poorly resolved stress [9]. When demands consistently exceed the organism's capacity for adaptive regulation, allostatic overload may ensue, manifesting in dysregulated patterns of physiological response and elevated risk for chronic disease across multiple organ systems [9].

The biological substrates of the stress response include the hypothalamic–pituitary–adrenal (HPA) axis, with cortisol and dehydroepiandrosterone-sulphate as key mediators; the sympathetic–adrenal–medullary axis, signalling through catecholamines such as epinephrine and norepinephrine; the immune system, with pro- and anti-inflammatory cytokines including interleukin-6, tumour necrosis factor-alpha and C-reactive protein; and metabolic and cardiovascular systems that

adjust to demands through changes in lipids, glucose handling, blood pressure and heart rate [9,10]. The allostatic load index has been operationalised through multi-systemic biomarker composites that combine neuroendocrine, immune, metabolic and cardiovascular indicators, and has been shown in observational research to predict mortality, cognitive decline, frailty and a range of chronic conditions more strongly than any single biomarker considered in isolation [9]. The framework has thereby offered a useful empirical scaffold for translating psychosocial constructs such as chronic stress, discrimination and minority stress into measurable biological signatures [9,23].

For sexual and gender minority populations, a growing body of work has examined whether chronic exposure to minority stress may be associated with biological signatures consistent with elevated allostatic load. Systematic reviews of the relationship between minority stress and biological outcomes have produced mixed findings, with approximately half of the studies examined reporting statistically significant associations between an indicator of minority stress and a biological outcome [16,41]. These mixed results have been attributed in part to heterogeneity in the operationalisation of minority stress, the choice of biological indicators, sample characteristics and study designs, as well as to the relatively young state of the literature [16,41]. Nonetheless, suggestive evidence has been produced for associations between minority stress exposures and inflammatory markers, cortisol patterns, cardiovascular reactivity and indicators of cellular aging, with particular interest in moderated mediation models that incorporate childhood adversity as an upstream factor and inflammation as a downstream pathway to mental health outcomes among young men who have sex with men [42].

Within the broader physiological literature, the dual role of exercise as a stressor and a modifier of stress responses has been carefully characterised [10]. Acute exercise elicits robust neuroendocrine responses, with the magnitude of these responses dependent on intensity, duration, environmental conditions and the individual's training status; chronic exercise training typically attenuates the neuroendocrine response to acute exercise at a given absolute workload and may also blunt reactivity to non-exercise stressors [10]. Excessive training combined with insufficient recovery, however, may produce a sequence in which initial hyperactivity of the HPA axis transitions to a hypoactivity phase consistent with the clinical presentation of overtraining syndrome, with prolonged disturbances in mood, sleep, immune function and performance [10,11,12]. These observations situate the minority-stressed athlete within a complex physiological context in which sport-related demands and identity-related stressors may interact in potentially nonlinear ways, with consequences for biological regulation that are only beginning to be characterised [9,10,11,12].

Allied work on inflammation has further suggested that minority stress and childhood adversity may interact to predict elevated inflammatory markers among young sexual minority men, with implications for the development of stress-related comorbidities later in life [42]. Such findings reinforce the view that minority stress is not solely a psychological construct but is embedded within biological processes that operate across the lifespan, and that the integration of psychological, social and physiological perspectives is likely to be necessary for a comprehensive account of mental and physical health disparities [9,17,41,42]. Within the sport context, where biological monitoring is comparatively well developed and where attention to recovery, sleep, nutrition and load management is often routine, the opportunity to integrate biopsychosocial analyses of minority stress may be unusually fertile, although the translation of such monitoring to questions of minority stress in athletes has so far been limited [10,11,13,14].

2.7 Social Identity Theory and the Sport Context

The social identity approach, comprising social identity theory and self-categorisation theory, has been increasingly deployed as a framework for understanding athlete mental health and the influence of group processes upon wellbeing [8]. The approach starts from the observation that individuals are capable of defining themselves both in terms of personal identity ("I" and "me") and in terms of their membership in social groups ("we" and "us"), and that the salience of any particular social identity is context-dependent and dynamic [8]. When a social identity becomes salient, behaviour, perception and emotion may shift in ways that reflect group needs and norms rather than purely individual considerations, a process documented in classic minimal group studies and elaborated in extensive subsequent research [8].

The relevance of this framework to sport is multiple. Team sports are explicitly group endeavours in which collective identity is foregrounded; even individual sports are typically embedded in training groups, support staff teams and broader sporting cultures that constitute meaningful social contexts [8]. Strong identification with one's team or sport may provide psychological resources, including a sense of belonging, meaning, esteem and purpose, that have been associated with better mental health outcomes; conversely, a narrowly defined athletic identity may render individuals vulnerable to mental health difficulties during sporting transitions, including injury, deselection and retirement [8]. The social identity approach has also been applied to leadership in sport, with evidence that leaders who embody group prototypicality, advance the group's interests, craft a shared sense of identity and exemplify in-group norms may enhance team functioning and wellbeing [8].

The intersection of the social identity approach with minority stress theory is conceptually rich. For sexual minority, gender minority and racially minoritised athletes, the social identities most salient at any given moment may vary considerably across contexts, and the alignment or misalignment of these identities with the dominant culture of the sport may influence both the experience of stress and access to coping resources [8,15,16]. In sporting environments that affirm minority identities, group membership may itself be a source of resilience; in environments that stigmatise or invalidate them, the very identities that might otherwise be protective may become sources of strain, particularly when athletes feel compelled to suppress aspects of their selfhood in order to maintain team membership or competitive standing [8,16,17,26]. The social identity perspective may therefore complement the minority stress framework by helping to clarify when and how

membership in particular groups confers either resource or risk, and by offering an analytical bridge between individual-level stress processes and the team- and organisation-level cultures within which they are enacted [8].

Taken together, the frameworks reviewed in this section — minority stress, structural stigma, race-related stress, polarization, allostatic load and the social identity approach — provide a complementary set of conceptual lenses through which the experiences of athletes who occupy stigmatised positions in increasingly polarized social environments may be examined. While each framework has independent value, their integration is likely to be necessary in order to address the multiple, interacting determinants of athlete mental health [8,15,16,17,23,33]. The subsequent sections of this review apply these conceptual foundations to the empirical literature, with attention to specific populations, contexts and outcomes within the sporting environment.

3. The Sport Environment as a Distinctive Context

3.1 Cultural Features of Competitive Sport

Competitive sport, particularly at elite and professional levels, may be characterised as a culturally distinctive setting in which a combination of historically masculine ideals, performance-focused norms, public visibility and hierarchical organisational structures interact to shape both the opportunities and the constraints encountered by participants [3,4,24,26]. Scholarship in the sociology and psychology of sport has emphasised that organised competitive sport developed historically as a domain of male dominance and was bound up with the cultivation of "hegemonic masculinity," in which traits such as competitiveness, physical toughness, emotional restraint and heterosexual desirability were institutionalised as criteria of athletic excellence [24,26,27]. Although the contemporary landscape is plainly more heterogeneous than this historical inheritance, traces of these ideals continue to shape the norms of many sports, the gendered patterning of participation, and the cultural climate within which athletes from sexual, gender and racial minority backgrounds engage with their sporting environments [24,26,27].

A second cultural feature that has received sustained attention concerns the "win-at-all-costs" ethos that characterises some high-performance settings, in which the pursuit of competitive success may be allowed to override other considerations including athlete welfare, mental health and long-term development [3,4]. While performance excellence is, by definition, central to elite sport, the imbalance between performance demands and the resources available to support psychological wellbeing has been identified as a contributor to the cultivation of cultures in which mental ill-health is stigmatised, help-seeking is discouraged and athlete vulnerabilities are concealed [3,4]. Frameworks intended to promote mental wellbeing in elite sport have therefore emphasised the importance of a cultural reorientation in which athletes, coaches and high-performance staff are valued intrinsically — rather than solely as instruments of competitive achievement — and in which mental health is treated with parity alongside physical health [3,4].

Hierarchies and power differentials constitute a third distinctive feature of the sporting environment. Athletes, particularly at younger ages or earlier career stages, may have limited autonomy in relation to decisions about selection, contracts, training prescription, medical management and even personal conduct, and may be highly dependent upon coaches, administrators, agents and support staff for the continuation of their careers [3,4,40]. The asymmetry of such relationships, combined with the limited number of senior positions and the often hyper-competitive context, has been identified as a potential enabling condition for various forms of maltreatment, including psychological, physical, sexual and neglectful conduct that may be tolerated, ignored or actively concealed by organisations focused on reputational protection or competitive success [40]. The role of leaders within such structures — both their formal authority and their informal influence — has been characterised as central to shaping cultural norms around acceptable behaviour and to determining whether power is used in support of, or in opposition to, athlete wellbeing [3,4,8,40].

A fourth cultural feature concerns the unusually high public visibility of elite athletes, whose performances, bodies and increasingly personal lives are subject to media scrutiny, public commentary and, in many cases, sustained social-media attention [1,2,3,38,39]. Whereas a generation ago such visibility was largely mediated by traditional press and broadcast outlets, athletes today routinely engage with audiences directly via social-media platforms, with the attendant exposure to commentary that may include both supportive engagement and abusive content [38,39]. The cultural environment of contemporary sport is therefore one in which private experiences may be rapidly transformed into public spectacle, and in which the boundaries between professional performance, personal identity and public discourse are increasingly difficult to maintain [3,4,38,39]. This visibility may be intensified for athletes who occupy stigmatised positions or who become focal points of cultural debates, with potential consequences for the mental health of those affected [22,29,30,32].

3.2 Sport-Specific Stressors and the Architecture of Elite Sport

Within the cultural features outlined above, a more specific catalogue of stressors associated with elite, professional and collegiate sport has been progressively documented. Severe musculoskeletal injury and surgical recovery, deselection from teams or programmes, contractual instability, frequent travel, separation from familiar social networks, public criticism and the demands of group cohesion in team sports have each been identified as plausible contributors to psychological symptomatology [1,2,3,7]. These stressors operate alongside general life events shared with non-athletic populations, including bereavement, relationship transitions and financial concerns, and may be modulated by the timing of athletic careers, which often overlap with peak ages of risk for the onset of common mental disorders [1,2]. The cumulative effect of multiple concurrent stressors may be particularly important, with research suggesting that the co-occurrence of injury,

performance difficulty and adverse life events may elevate the risk of clinically significant symptoms beyond what would be expected from any individual stressor in isolation [1,2,3].

Stress and coping research in athletes has further differentiated between acute, episodic and chronic stressors, with each category associated with somewhat distinct patterns of psychophysiological response and behavioural adaptation [1,2]. Acute stressors, such as the impending start of a major competition, typically elicit time-limited neuroendocrine activation that may either facilitate or impair performance depending on appraisal and prior experience [10]. Episodic stressors, including injury rehabilitation or contract negotiation, may extend over weeks to months and engage more sustained patterns of cognitive, emotional and behavioural adjustment [1,2]. Chronic stressors, including organisational climate concerns, persistent maltreatment, financial uncertainty and identity-related stress, may sustain physiological activation over much longer periods and may interact with sport-specific demands to produce conditions consistent with burnout, overtraining or clinical disorder [1,2,3,10,11].

A specific cluster of high-risk transitions has been highlighted in the literature. The transition into elite sport from junior or developmental levels may expose young athletes to demands for which they are not yet psychologically prepared, including increased autonomy, geographic relocation and the cultivation of new social networks [1,3]. The transition between teams, leagues or national contexts — including for athletes who migrate internationally to pursue careers — may involve loss of familiar support structures, exposure to unfamiliar cultural norms, and the renegotiation of identity within new organisational settings [3]. The transition out of competitive sport, whether by voluntary retirement or involuntary deselection, has been identified as a period of particular vulnerability, with documented increases in psychological symptoms, identity-related distress, and disrupted social functioning that may persist for substantial periods following exit from active competition [1,3]. The integration of mental health planning across the athlete career trajectory has therefore been argued to require attention to entry, intermediate transitions and exit, rather than focusing primarily upon the period of active elite competition [3,4].

A complementary literature has examined the mental health of coaches, high-performance staff and other personnel within sporting organisations, who themselves may experience elevated stress, sleep disturbance and symptoms of mental ill-health in contexts characterised by performance pressure, frequent travel, long working hours and job insecurity [3,4,5]. Although less extensively researched than the athlete-focused literature, work in this area suggests that the cultural and structural features of sporting organisations affect mental health throughout the workforce, and that frameworks for mental health promotion must be designed to support coaches and staff as well as athletes [3,4,5]. The recognition that coaches are not exempt from the conditions they may inadvertently impose upon athletes has been argued to have particular importance for cultural change initiatives within sport, in which leadership modelling of healthy behaviours, help-seeking and vulnerability may be required to sustain broader shifts in organisational climate [3,4,8].

3.3 Prevalence and Patterning of Mental Health Symptoms Among Athletes

The empirical literature on mental health prevalence among athletes has matured considerably over the past two decades. Narrative and systematic syntheses have suggested that, in aggregate, elite athletes experience common mental health symptoms and disorders at rates broadly comparable to those observed in age-matched general populations, though with some sport-specific patterning [1,2]. A widely cited Australian survey of elite athletes found that almost half acknowledged symptoms of at least one assessed mental health condition, with depression, eating disorders and anxiety prominent within the profile, while comparable studies in football, swimming, equestrian sport and other disciplines have produced overlapping findings [1,2]. International consensus reviews of mental health symptoms and disorders in current and former elite athletes have estimated that approximately one third of currently competing athletes may report symptoms consistent with depression or anxiety, with sleep disturbance and psychological distress also frequently endorsed [2,8].

The distribution of risk across athletic populations appears uneven. Particular vulnerability has been described in athletes recovering from severe injuries, in those experiencing performance failure or sustained deselection, in those approaching or undergoing retirement, and in those exposed to maladaptive organisational cultures characterised by harassment, bullying or coach maltreatment [1,2,3,40]. Eating disorders and disordered eating have been documented at elevated prevalence in sports emphasising leanness, low body weight, or aesthetic presentation, with female athletes and younger athletes often more affected, though male athletes in disciplines such as combat sport, cycling and endurance running are also at risk [1,2]. Substance use, including alcohol misuse and recreational drug use, has been documented at variable prevalences depending on sport, level and competitive period, with binge patterns of alcohol consumption during off-season periods of particular concern [1,2].

Sleep disturbance has emerged as an especially salient concern in athletic populations. Surveys of collegiate and elite athletes suggest that a substantial proportion regularly experience insufficient sleep duration, with frequent reports of difficulty initiating or maintaining sleep, particularly in the night before competition [2,13]. Insomnia disorder may be more common among Olympic athletes than in general population samples of similar age, while circadian dysregulation arising from frequent travel across time zones may further compromise sleep quality and recovery [2,13]. Sleep disturbance has been associated with elevated risk for depression, anxiety and substance use, with impairments in cognitive performance, reaction time, immune function and tissue repair, and with poorer training adaptation and competitive performance [13]. Given the centrality of sleep to athletic recovery, attention to sleep concerns has become a routine component of mental health and performance support in many elite environments [2,13].

A persistent methodological challenge concerns the heterogeneity of the underlying studies. Definitions of "elite," sample inclusion criteria, instrumentation for the assessment of mental health and reporting conventions have varied substantially across investigations, complicating direct comparison [1,2]. The over-representation of male athletes, Western contexts and certain sports (notably football and athletics) in the published evidence has further limited generalisability [1,2]. The relative scarcity of prospective and longitudinal designs has also impeded inference about temporal sequencing and causal pathways, while the use of self-report instruments may inflate or deflate prevalence estimates depending on cultural and contextual factors influencing disclosure [1,2,3]. Despite these limitations, the broad pattern of findings indicates that mental health symptoms and disorders are common in elite sport, that sport-specific stressors are implicated in their patterning, and that systematic clinical attention is required to identify and respond to athlete needs in a timely manner [1,2,3,4].

Adjacent to the empirical literature on prevalence, a complementary body of work has examined psychological vulnerability in athletes — including the cognitive, affective and personality dispositions that may render some individuals more susceptible than others to stress-related symptoms [43,44]. Research on perfectionism, neuroticism, anxiety sensitivity and rumination has indicated that these traits may be associated with elevated risk of anxiety and depressive symptoms in athletic populations, and may interact with sport-specific stressors such as competitive evaluation and performance failure to shape outcomes [43,44]. Models of psychological vulnerability have also incorporated attentional and emotion-regulation processes that may be amenable to targeted psychological training interventions, providing a conceptual bridge between dispositional vulnerability and skills-based intervention [44,45]. Psychological skills training programs — encompassing techniques such as imagery, goal setting, attentional control, cognitive reappraisal and arousal regulation — have been investigated as means of strengthening adaptive coping in athletes and may contribute, at least in some contexts, to reducing the impact of competitive and non-competitive stressors on mental health [45].

3.4 Exercise Physiology, Stress Regulation and the Architecture of Training Load

The physiological dimensions of athletic stress have been the subject of substantial empirical investigation, much of it integrated through the conceptual frameworks of allostasis, the General Adaptation Syndrome and the more recent allostatic load model [9,10]. Acute exercise reliably elicits neuroendocrine responses across the hypothalamic–pituitary–adrenocortical and sympathetic–adrenomedullary systems, with the magnitude of response dependent on the volume of exercise — defined by the intensity and duration of the session — as well as environmental conditions, time of day, nutritional status and the individual's training history [10]. Above a critical threshold of approximately 50–60 per cent of maximal oxygen uptake, circulating concentrations of adrenocorticotropic hormone, cortisol, norepinephrine and epinephrine typically rise in approximate proportion to intensity, with further accumulation observed when constant-intensity exercise is sustained over longer durations [10].

Chronic adaptation to exercise training is generally associated with attenuation of the neuroendocrine response to acute exercise performed at a given absolute workload, reflecting an improved physiological "economy" of the trained individual [10]. Importantly, this adaptation may also be associated with attenuated reactivity to non-exercise stressors, providing one of the mechanisms by which physical activity may exert protective effects on mental health [10,46]. Reviews and meta-analytic syntheses of the relationship between physical activity and mental health have suggested that regular exercise may be associated with reductions in symptoms of depression and anxiety, with potential roles in the prevention and management of common mental disorders, although effect sizes and mechanisms appear to vary across populations and intervention modalities [46]. The translation of these findings to elite athlete contexts is, however, complicated by the substantially higher exercise volumes typical of elite training, which may exceed thresholds at which beneficial effects on mental health are most clearly observed in general populations [10,46].

The relationship between training load and mental health becomes especially complex when training volume or intensity outpaces the capacity for recovery. Under such conditions, athletes may enter a state of functional or non-functional overreaching, in which short-term decrements in performance are accompanied by altered mood, sleep and biological markers, but from which adequate rest may permit full recovery and even compensatory gains in performance [10,11,12]. With continued overload and insufficient recovery, this state may progress to overtraining syndrome — a clinical condition characterised by persistent fatigue, mood disturbance, sleep disruption, altered hormonal responses, immune dysfunction and impaired performance that may require weeks to months to resolve [10,11,12]. The endocrine and metabolic responses observed in athletes diagnosed with overtraining syndrome have included disturbances across the hypothalamic–pituitary–adrenal axis, the somatotropic axis and reproductive hormonal systems, with research programs such as the Endocrine and Metabolic Responses on Overtraining Syndrome study contributing to a more precise diagnostic framework [12]. Consensus statements on training load and risk of illness in sport have emphasised the importance of individualised load monitoring, balanced periodisation and attention to early warning signs of maladaptation, including changes in mood, sleep and self-reported wellness [11].

A growing literature has further examined the relationship between exercise, stress and the gastrointestinal system, with particular attention to the gut–microbiota–brain axis and its potential role in modulating mood, anxiety and cognitive performance in athletes [14]. Intense exercise may transiently alter gastrointestinal permeability, modulate the composition of the gut microbiota and influence inflammatory signalling, with downstream implications for hypothalamic–pituitary–adrenal axis function and central neurotransmitter systems [14]. Although the clinical implications of these findings for athlete mental health remain to be fully elucidated, the integration of microbiota research with established stress physiology offers a promising direction for understanding the biological substrates of athletic adaptation and the consequences of training-related

stress [14]. Dietary, probiotic and nutritional interventions intended to support gut–brain function have begun to be investigated in athletic populations, though the evidence base remains in an early stage of development [14].

Sleep has been highlighted as a particularly important physiological domain at the intersection of training, recovery and mental health [13]. Expert consensus recommendations have specified individualised sleep targets for athletes, with attention to total sleep time, sleep onset, continuity, timing relative to training and competition, and management of jet lag and other circadian challenges associated with elite sport [13]. Sleep extension interventions, sleep hygiene education and pharmacological options when clinically indicated have been incorporated into integrated approaches to athlete recovery, while practitioner education on common sleep disorders in athletes has been recommended to facilitate early identification and management [13]. From the perspective of minority stress and polarization, the vulnerability of sleep to environmental disturbance, vigilance and rumination suggests that athletes exposed to stigmatising or polarised environments may experience compromised sleep that, in turn, may impair their broader mental health and competitive functioning [13,23].

Considered jointly, these physiological observations indicate that the bodies of elite athletes are subject to demands and adaptations that differ substantially from those characterising the general population, and that any account of athlete mental health that overlooks the physiological substrate is likely to be incomplete [9,10,11,12,13,14]. They also suggest that the additive or interactive effects of identity-related stress and training-related stress in athletes from minority backgrounds may produce physiological signatures that are not adequately captured by either literature in isolation, and that more integrated biopsychosocial designs may be necessary to advance understanding in this area [9,10,17,41,42].

3.5 Harassment, Abuse and Non-Accidental Violence in Sport

The recognition that sporting environments may also expose athletes to forms of harassment, abuse and non-accidental violence has been formalised in consensus statements issued by the International Olympic Committee and allied bodies [40]. The IOC consensus statement on harassment and abuse in sport articulated definitions and categorisations for psychological, sexual, physical and neglectful conduct, and identified a series of mechanisms — including contact, non-contact/verbal, cyber-based, negligence, bullying and hazing — through which such conduct may be perpetrated [40]. The statement emphasised that all athletes have a right to engage in "safe sport," defined as an athletic environment that is respectful, equitable and free from non-accidental violence, and that the obligation to safeguard this right rests with the organisations that govern sport [40].

Within these consensus definitions, psychological abuse — including belittling, humiliating, threatening, scapegoating, isolating and otherwise undermining the dignity of athletes — has been identified as the most pervasive and arguably foundational form of maltreatment, on the grounds that other forms of abuse typically involve some degree of psychological harm [40]. Sexual harassment and abuse have been documented across sports, levels and national contexts, with prevalence estimates varying widely due to methodological differences but generally indicating that such conduct is more common in higher-level competitive contexts and that athletes with disabilities and LGBT athletes may be at particularly elevated risk [40]. Physical abuse, including forced or inappropriate physical exertion and excessive training loads imposed despite injury or fatigue, has been less extensively studied but is increasingly recognised, while neglect — including failure to provide a safe training environment, age-appropriate loads, adequate nutrition or appropriate medical care — has been highlighted with particular concern in the context of child and youth athletes [40].

The consensus literature has also drawn attention to particular vulnerability factors in sport. Power differentials between athletes and coaches, support staff, administrators or peer athletes may create conditions in which abuse can occur with reduced risk of detection or sanction, particularly where institutional cultures discourage disclosure or prioritise reputational protection over athlete welfare [40]. The cultural normalisation of demanding training regimens, of stoicism in the face of pain, and of unquestioning deference to authority figures may further enable maltreatment, while specific sport contexts — including changing rooms, training trips, social events involving alcohol, and the homes of coaches — may be associated with elevated risk for sexual abuse in particular [40]. Athletes with disabilities, child athletes and LGBT athletes have been identified as groups for whom such risks may be intensified, on the grounds that they may face additional structural barriers to disclosure and to access to safeguarding resources [40].

Beyond traditional forms of harassment and abuse, online abuse aimed at athletes has emerged as a distinct and rapidly growing concern. Comparative analyses of online abuse during major sporting championships have indicated that women, athletes of colour and LGBTIQA+ athletes may be disproportionately targeted, that high-stakes events appear to amplify both volume and severity of harmful content, and that abusive messages may include not only criticism of performance but also identity-targeted insults, threats and incitements to violence [38,39]. Analyses of online abuse during NCAA championships and similar contexts have further documented the scale of the problem, with social-media platforms serving as a primary vector through which athletes are exposed to such content [39]. The mental-health consequences of online abuse have begun to be characterised, with athletes reporting increased anxiety, vigilance, sleep disturbance and concerns about safety that may persist for substantial periods following acute episodes [38,39].

The cumulative and potentially synergistic effects of these multiple forms of harassment have important implications for athletes who occupy minority positions. Sexual and gender minority athletes may simultaneously experience identity-targeted harassment within sporting settings, online abuse following competitive visibility, and structural disadvantages encoded in eligibility policies and organisational practices [24,30,32,40]. For racially minoritised athletes, racialised harassment may compound general athletic stress and contribute to the wider burden of race-related stressors documented in the broader

literature [23,38,39]. Within the framework of the present review, these convergent exposures may be understood as instantiations of minority stress operating through the specific mechanisms of the sporting environment, and as plausible sites at which polarized public discourse may translate into direct psychological exposure for individuals already subject to structural disadvantage [16,17,22,32,33,40].

The recognition of these dynamics has informed an increasingly comprehensive set of safeguarding frameworks, codes of practice and reporting procedures within international and national sporting bodies, although the implementation and effectiveness of such measures remain uneven across contexts [40]. Subsequent sections of this review return to the question of intervention design at organisational and policy levels, drawing on the conceptual foundations articulated above and on the empirical literature concerning specific populations within sport [3,4,40].

4. Minority Stress in Sporting Contexts: Sexual Minorities

4.1 The Sport Climate for Sexual Minority Athletes

The empirical literature on sexual minority experience in sport has converged on a broadly consistent description of sporting environments as contexts in which heteronormativity and historically gendered ideals may shape both the explicit norms and the implicit assumptions governing participation [24,25,26]. Across qualitative and quantitative studies, sport — and particularly competitive, team-based and traditionally masculine sport — has been characterised as a setting in which sexual minority individuals may face higher levels of discrimination, hostility and exclusion than in many other social domains, with associated implications for participation rates, sport-related identity development and mental health [24,26,27]. A European Union survey cited in this literature has reported that almost half of LGBT adults across multiple countries indicated avoiding sports clubs out of fear of assault, threats or bullying based on sexual orientation or gender identity, an indicator of the cumulative effect of climate-level concerns on engagement with organised sport [24].

Hegemonic masculinity, conceptualised as the culturally dominant ideal of manhood that legitimises men's dominance over women and over alternative masculinities, has been argued to structure many sporting contexts in ways that may marginalise both women and sexual minority men [24,26,27]. Within this framing, sport functions historically as a key arena in which masculinity is performed, validated and policed, with successful athletic performance bound up with displays of physical toughness, emotional restraint and heterosexual desirability [26,27]. Sexual minority men may be positioned as paradoxical within such cultures: their athletic identity may align with traditional masculinity, while their sexual identity is perceived to undermine the foundational assumption that masculinity is necessarily aligned with heterosexuality [26,27]. Studies of gay male athletes have documented strategies through which they may seek to negotiate this paradox, including the cultivation of muscular bodies, the performance of stereotypically masculine behaviours, and the strategic management of disclosure within team contexts [26,27].

The experiences of sexual minority women in sport exhibit somewhat different contours. Women in athletic settings have long been subjected to scrutiny over the perceived conflict between competitive sport and traditional femininity, with female athletes who excel in physical, aggressive or muscular performance often presumed — accurately or not — to be lesbian [24,26]. This "lesbian label," applied indiscriminately and sometimes deployed as a means of social control, may operate to discipline female athletes regardless of their actual sexual orientation, with documented effects including pressure to display normatively feminine appearance, hesitancy to engage in close friendships with women perceived as gay, and the avoidance of certain sports or positions deemed "too masculine" [24,26]. Within team contexts, the presence of larger numbers of lesbian women in some sports — such as women's basketball, softball and rugby — has been argued to create both subcultures of relative acceptance and arenas of intensified stigma, depending on broader institutional cultures and leadership [26].

A further dimension of the climate concerns those who occupy positions of leadership and influence within sport. A systematic review of LGBTQ+ identities and topics in sport leadership has indicated that coaches, athletic directors and other staff who identify as sexual minorities frequently report marginalisation and stigmatisation, both from athletes and from other stakeholders such as parents and colleagues [49]. These leaders may face a particular set of challenges that include navigating the visibility of their own identity, deciding whether and how to disclose, balancing professional and personal lives, and addressing or refraining from addressing LGBTQ+ topics within their roles [49]. The cumulative consequence has been described as a context in which LGBTQ+ sport leaders may either leave the profession entirely or develop strategies of identity negotiation that allow continued participation at psychological cost [49]. Insofar as leaders shape the cultural climate of their teams and organisations, the experiences of LGBTQ+ leaders are also relevant to those of athletes, who may interpret the visibility — or invisibility — of LGBTQ+ figures in authority as a cue to the safety of their own self-presentation [49].

4.2 Distal Stressors in Sport: Discrimination, Harassment and Violence

Within the broad climate described above, the empirical literature has documented a more specific set of distal stressors to which sexual minority athletes may be exposed. Verbal harassment using homophobic slurs — including terms such as "fag," "gay" used pejoratively, "dyke" and similar expressions — has been consistently reported across qualitative studies of LGBTQ+ student-athletes, with such language often described as normalised within sporting subcultures and tolerated, downplayed or even produced by coaches [26,27]. Athletes have reported that homophobic language may be interpreted as either deliberately hostile or "merely joking," but in either case may signal a climate in which sexual minority identity is devalued, and may serve to reinforce concealment behaviours among LGBTQ+ athletes within the team [26]. The frequency

and severity of such language appears greater in male, team-based and traditionally masculine sports, while women's sports may exhibit somewhat different patterns, in some cases coexisting with implicit silencing of LGBTQ+ topics rather than overt verbal hostility [24,26].

Bullying, exclusion and marginalisation have been documented at the team and peer-group levels. Qualitative work with sexual minority student-athletes has described experiences of being shut out of team activities, of being ignored by previously friendly teammates following disclosure, of losing scholarship support or being threatened with such loss, and of being subjected to coordinated isolation campaigns by influential team members [26,27]. Such exclusion may be intensified by the role of "in-group" hierarchies within sport teams and by the limited possibilities for affected athletes to withdraw without compromising other dimensions of their athletic and educational trajectories [26]. The use of disclosure as a threat — in which knowledge of an athlete's sexual orientation is wielded by teammates or staff as leverage — has been described in particularly stark terms in qualitative work, and is consistent with broader minority stress accounts of how the threat of involuntary outing may itself constitute a stressor [26,27].

Although physical violence and threats have been reported less frequently in the published sport literature than verbal harassment, qualitative work has documented their occurrence. Accounts include physical assault by teammates during training, the throwing of objects, vandalism of property accompanied by anti-LGBTQ+ messages, and threats of more serious violence [26]. Sexual assault and unwanted sexual contact have also been reported in some accounts, with implications that overlap with broader literatures on sexual victimisation among sexual minority populations [26,50]. The cumulative effect of these acute incidents — particularly when set against a background of chronic verbal hostility and marginalisation — may be substantial, even where any single event would not in itself meet criteria for sustained harm [16,26].

A specific concern within this literature is the role of coaches and administrators as sources of, or accomplices to, distal stress. While many coaches express positive attitudes toward LGBTQ+ athletes in survey research, qualitative accounts indicate that the lived experience of athletes may diverge from these stated attitudes [24,26,49]. Athletes have reported coach behaviours including the explicit use of homophobic language, the refusal to intervene when teammates engage in harassment, the policing of feminine or masculine appearance, the threatened or actual withdrawal of selection or scholarship support, and overt advocacy of religious or moral positions hostile to LGBTQ+ identity [26]. Accounts of coach silence in the face of homophobia have been particularly consequential, since the absence of intervention from a position of authority may communicate tacit endorsement of stigmatising conduct and may reinforce broader team norms of silence around sexual minority identity [24,26,49].

Findings from systematic reviews of mental health, the sporting context and the LGBTIQA+ community have indicated that these distal stressors are not isolated phenomena but constitute a recurrent pattern across studies, jurisdictions and disciplines [24,25]. A systematic review of LGBTIQA+ mental health in the sporting context, drawing on studies published between 1996 and 2019, concluded that there exists a high prevalence of mental health problems among LGBTIQA+ individuals as a consequence of experiences in hostile and LGBTIphobic environments, with stress, depression, low self-esteem and sadness most frequently reported [24]. A scoping review of the sporting experiences of gender and sexual minority athletes similarly identified discrimination, harassment, exclusion and the policing of gender norms as recurrent features of the literature, while also noting variability across sports, levels and national contexts [25]. The meta-ethnographic synthesis of qualitative studies on LGBTQ student-athletes in collegiate sports produced a model in which experiences of discrimination and violence constitute a first major theme, alongside perceived stigma, internalised prejudice and the role of team support and resilience [26].

4.3 Proximal Stressors in Sport: Vigilance, Concealment and Internalisation

The literature on sexual minority experience in sport also offers substantial evidence for the operation of proximal stressors as articulated within minority stress theory. Expectations of rejection — and the chronic vigilance such expectations require — have been documented across qualitative studies, with sexual minority athletes describing how they monitor their environments for cues of safety or hostility, attend carefully to the language used by teammates and coaches, and remain alert to the possibility of being "outed" or otherwise exposed [15,16,26,27]. This vigilance has been described as cognitively and emotionally taxing, with athletes reporting that significant portions of their attention may be devoted to managing social interactions and self-presentation, with potential implications for the cognitive and emotional resources available for athletic performance [26].

Concealment of sexual identity is a particularly prominent proximal stressor in sport contexts. Qualitative studies report that sexual minority athletes often elect to conceal their sexual orientation from teammates, coaches and administrators, at least in some contexts, in order to avoid the consequences of disclosure [26,27]. Strategies of concealment have been described to include the avoidance of conversations that might reveal sexual orientation, the deliberate fabrication of opposite-sex partners or romantic interests, the participation in gendered conversations that perform heterosexuality, and the strategic management of social-media presence to obscure indicators of identity [26]. The "level of outness" of any given athlete has been described as context-dependent and dynamic, with disclosure decisions varying across teammates, coaches, family and external networks, and across competitive seasons or career stages [26].

The locker room has been highlighted within this literature as a setting of particular concern. Qualitative work with sexual minority athletes has described the locker room as a site in which the body is exposed, social hierarchies are reinforced, and identity may be discussed with reduced filters relative to other team contexts [26,27]. For sexual minority athletes, the locker

room may produce specific anxieties around being perceived as sexually interested in same-sex teammates, around the management of one's own gaze and bodily posture, and around the possibility of being subjected to homophobic commentary in a comparatively private space [26]. For transgender athletes, the locker room may further raise issues of gender recognition, body congruence and access, considerations addressed more fully in a subsequent section of the review [27,29,30].

Internalised homophobia has been documented in numerous qualitative studies of LGBTQ student-athletes, with accounts describing the absorption of negative societal evaluations into self-concept and the consequent experience of shame, guilt, self-criticism and reduced self-worth [26,27]. Athletes have described moments in which they "did not want to be gay," in which they actively tried to suppress same-sex attractions, in which they sought religious or therapeutic interventions intended to alter sexual orientation, or in which they attributed problems in their lives to their sexual minority status [26,27]. Internalised homophobia may interact with the broader athletic culture of mental toughness and emotional restraint in ways that complicate help-seeking, as athletes may interpret their identity-related distress as a form of personal weakness rather than a response to a stigmatising environment [26]. The relationship between internalised homophobia and mental health outcomes — including depression, anxiety, suicidality and disordered eating — has been documented across both general and sport-specific studies [16,24,26].

Strategies of identity management used by sexual minority athletes include passing as heterosexual, covering, compartmentalisation and selective disclosure [26,27,49]. Passing involves the active presentation of a heterosexual identity, including through behaviours that align with heteronormative expectations; covering involves the concealment or downplaying of cues that might disclose sexual minority identity without active misrepresentation; compartmentalisation involves the maintenance of separate "athletic" and "personal" identities across distinct social contexts; and selective disclosure involves sharing identity information with carefully chosen interlocutors while concealing it from others [26,27,49]. These strategies may serve as functional coping responses in hostile environments but, consistent with minority stress theory, may also carry psychological costs including the burden of cognitive load, the inhibition of authentic self-expression and the limitation of access to identity-affirming community resources [15,16,26].

4.4 Cross-Cultural Perspectives on Sexual Minority Experience in Sport

While much of the early research on sexual minority experience in sport was conducted in North American and Western European contexts, a growing body of work has begun to examine these dynamics in other regions. Cross-cultural extensions have indicated that, while many of the core features of minority stress in sport are recognisable across national contexts, the specific configurations of cultural norms, religion and family expectations may shape the meaning and impact of stigma in distinctive ways [16,27,28]. Such variability has important implications for the design of interventions and for the interpretation of findings drawn from particular national contexts [16].

A particularly rich body of qualitative work has been conducted with sexual minority student-athletes in Chinese collegiate sport. Interpretative phenomenological studies have identified three key themes shaping the experience of this group: Chinese cultural pressures and normative expectations; sports norms reinforcing the sex–gender–sexuality triad; and anticipated and internalised stigma [27,28]. Within the first theme, athletes have described the influence of Confucian traditions of filial piety, family expectations regarding marriage and reproduction, and the relative absence of public discourse about non-heterosexual identities, all of which may compound the distress associated with stigma in sport and limit access to coping resources [27,28]. The second theme draws attention to how the perceived linkages between sex, gender and sexuality within sport — including the assumption that female athletes who are competitive and muscular must be lesbian, and that gay men cannot be physically dominant — operate to police identity expression even in the absence of explicit policy [27]. The third theme indicates that anticipated stigma — the expectation that disclosure will lead to negative consequences — may be widespread among Chinese SMSAs and may shape disclosure decisions, coping strategies and team participation in substantial ways [27,28].

Empirical work with sexual minority populations in Mexico has provided complementary insight into the relationship between sport and mental health across distinct cultural contexts. A study conducted in the context of the 2023 Gay Games examined psychological distress among LGBTQ athletes, spectators, volunteers and non-attendees, and considered the role of sport-related community events in shaping wellbeing [48]. Such investigations may suggest that participation in LGBTQ+ specific sporting events may provide opportunities for the affirmation of identity, the cultivation of community and the experience of belonging that are difficult to obtain within mainstream sport, with potential implications for mental health outcomes in populations frequently exposed to general-population minority stress [48]. At the same time, the variability of mental health outcomes across roles in such events suggests that participation per se is not uniformly protective, and that the contextual features of LGBTQ+ sporting communities — including their inclusivity, their cultural orientation and their accessibility — are likely to be important moderators [48].

Cross-cultural research has also highlighted the role of religious traditions in shaping sexual minority experience in sport. Studies in both Western and non-Western contexts have noted that religious teachings concerning sexual orientation may serve as a source of internalised stigma, particularly for athletes raised in contexts in which religious institutions are central to social life [26,27]. In Christian, Muslim, Hindu and other religious traditions, the relationship between religious belief and sexual minority identity may be experienced with varying degrees of conflict, and the institutional positions of particular religious authorities may interact with cultural climates to shape the meaning of identity for individual athletes [26,27]. The intersection of religion, sport and sexual minority identity therefore appears to constitute a productive site for further inquiry, particularly in contexts in which religion-affiliated sport organisations remain prominent [26,27].

A further consideration in cross-cultural research concerns the relevance of collectivistic versus individualistic value orientations. Cross-cultural extensions of minority stress theory have argued that, in contexts in which collectivistic values and norm conformity are emphasised, minority stress may be experienced with particular intensity, since deviation from group norms may carry social consequences extending beyond the individual to families and broader social networks [16,27]. Within sport, this dynamic may be reflected in the increased salience of family expectations regarding sport participation, marriage and career trajectories, and in the role of team-based collective identity in shaping individual experience [27,28]. The implications of these observations for intervention design include the need to adapt approaches developed in individualistic Western contexts to settings in which family-based and community-based interventions may be more culturally resonant [16,27].

4.5 Mental Health Outcomes Among Sexual Minority Athletes

The cumulative effect of the distal and proximal stressors documented in the preceding sections may be reflected in elevated prevalences of mental health symptoms and disorders among sexual minority athletes, although direct epidemiological evidence in athletic populations remains limited and inferences often draw on extrapolation from general-population studies of sexual minorities [15,16,24]. Within the LGBTIQA+ mental health and sporting context literature, recurrent reports of stress, anxiety, depression, low self-esteem, sadness, frustration and shame among sexual minority athletes have provided qualitative confirmation that mental health concerns are common in this population [24,26]. Quantitative studies, while fewer, have suggested that LGBTQ+ youth participating in physical education and organised sport may be substantially more likely than heterosexual counterparts to experience bullying, anxiety, depression and self-harming behaviours, consistent with broader literatures on minority stress and adolescent mental health [24,47].

Suicidality represents a particularly grave outcome that has been documented across general sexual minority populations and that may be exacerbated in athletic contexts characterised by stigma and stress. While direct evidence of elevated suicidality in sexual minority athletes is sparse, qualitative accounts have included references to suicide attempts, suicidal ideation and self-harm in relation to experiences of harassment and disclosure-related distress [26,27]. The integration of athlete-specific risk factors — including injury, deselection, performance failure and identity disruption during retirement — with minority-stress related factors may produce particular vulnerability in the sexual minority athlete population [1,15,16,26]. The recognition of this convergence has implications for clinical assessment, risk monitoring and intervention design in sport contexts [1,2,3].

Substance use, including alcohol and drug use, has been documented at elevated levels in sexual minority populations and may also affect athletes. Sport-specific patterns of alcohol consumption, including binge use during off-season and post-competition periods, may interact with minority stress to produce particular risks for sexual minority athletes [1,2]. While the empirical literature on substance use in sexual minority athletes specifically is limited, qualitative accounts have referenced the use of alcohol as a coping strategy for identity-related stress, and the broader literature on minority stress and substance use suggests that this convergence merits more focused investigation [16,26,27].

Eating disorders and disordered eating have been documented at elevated prevalences in some sexual minority populations, particularly among gay and bisexual men, with potential interactions with sport-specific demands for weight management, body composition and aesthetic presentation [1,2,16]. Studies in sport have suggested that sexual minority athletes may experience body dissatisfaction, drive for thinness or muscularity, and disordered eating behaviours in patterns that may be amplified by the convergence of sport-related body norms and minority stress [1,2,24]. Of particular importance, sport contexts that emphasise leanness, weight categories or aesthetic performance may interact with internalised norms about masculinity, femininity and desirability to produce distinctive patterns of body-related distress among sexual minority athletes [1,2,24].

A further consideration concerns the mental health of sexual minority individuals who have experienced sexual assault or victimisation. Research with LGBTQ survivors of sexual assault has documented elevated rates of post-traumatic stress, depression, anxiety, and substance use, with the cumulative experience of minority stress and trauma producing patterns of psychological symptomatology that may not be fully captured by either literature alone [50]. Within sporting environments, where unwanted sexual contact and abuse have been documented and where the cultural conditions of sport may complicate disclosure and help-seeking, sexual minority athletes who have experienced victimisation may face particular barriers to recovery [40,50]. Comprehensive approaches to mental health in sexual minority athletes therefore require attention to trauma history and to the intersection of trauma and minority stress in shaping psychological functioning [16,40,50].

The model of stress process developed through meta-ethnographic synthesis of LGBTQ student-athlete experience has integrated these mental health considerations within a broader framework. In this model, experiences of discrimination and violence — together with perceived stigma — generate chronic pressure that may result in tolerance, hiding and self-hating among affected athletes, while team support and personal resilience may attenuate these effects under certain conditions [26]. The model is consistent with the broader minority stress framework but adds specificity for the sporting context, drawing attention to the team-level dynamics through which both stress and protective processes are enacted [26]. Empirical studies converging on this framework provide a useful organising lens for understanding the mental health outcomes of sexual minority athletes and for identifying intervention targets at individual, team and organisational levels [24,26,49].

4.6 Physical Activity Disparities and Trajectories of Engagement

Beyond outcomes among athletes already engaged in competitive sport, an important parallel literature has examined disparities in physical activity participation between sexual minority and heterosexual populations. Studies of adolescents and young adults have indicated that sexual minority youth — particularly sexual minority boys — may be substantially less likely than their heterosexual peers to engage in moderate-to-vigorous physical activity, to participate in organised sport, or to remain involved in sport over time [47]. A study of physical activity disparities in heterosexual and sexual minority youth aged 12–22 reported that sexual minority youth were 46–76 per cent less likely than heterosexual youth of the same gender to participate in sports, with childhood gender nonconformity and athletic self-esteem identified as significant mediators of these disparities [47]. Such findings suggest that the pathways from minority status to reduced sport participation are shaped not only by overt experiences of discrimination but also by earlier developmental factors that may influence engagement with athletic activity well before adolescence [47].

Childhood gender nonconformity in particular has been highlighted as an important precursor of later physical activity outcomes. Individuals who, as children, displayed behaviours, interests or appearances that diverged from gender stereotypes may have been subject to particular forms of teasing, exclusion or coercion in early sporting environments, with consequences for athletic self-esteem, body confidence and sport-related identity that may persist into adolescence and adulthood [47]. Athletic self-esteem — the belief in one's competence and value within sporting contexts — has been shown to mediate substantial portions of the disparity in sport participation between sexual minority and heterosexual youth, suggesting that interventions targeting confidence, skill development and inclusive coaching during the early years of sport may have downstream effects on participation rates and on associated mental health outcomes [47].

The trajectory from early sport involvement to disengagement among sexual minority youth has been described in qualitative work as a process in which initial engagement is gradually eroded by experiences of teasing, exclusion, discomfort in gendered facilities and the perception that sport is unwelcoming to LGBTQ+ identity [24,26,47]. Some sexual minority youth report engaging in sport at younger ages but withdrawing during adolescence as identity becomes more salient and as the costs of sustained participation appear to outweigh the benefits [24,47]. This trajectory has implications for the broader public health goal of promoting physical activity across the lifespan, since sexual minority populations who disengage from sport in adolescence may carry forward reduced physical activity habits into adulthood, with potential consequences for cardiovascular health, mental health and quality of life [24,46,47].

The implications of these participation disparities for the present review are several. First, the population of sexual minority athletes visible within competitive sport may represent a selected subset of sexual minority individuals — those who have, despite hostile climates, retained engagement with sport — and findings from this group may not generalise to the broader sexual minority population [24,26,47]. Second, interventions designed to support sexual minority athletes within elite sport must be complemented by efforts upstream in the developmental pipeline, ensuring that young sexual minority individuals encounter sporting environments that affirm identity and support sustained engagement [24,46,47]. Third, the very absence of sexual minority individuals from particular sports, levels or roles may itself be an indicator of structural stigma operating through self-selection and attrition rather than through formal exclusion, with implications for how disparities are conceptualised and addressed [17,22,24,47]. The integration of these considerations into both research and practice may help to ensure that gains in inclusion within elite sport are matched by progress in the broader participation patterns of sexual minority individuals across the lifespan [24,46,47].

5. Minority Stress in Sporting Contexts: Gender Minorities

5.1 Transgender Athletes: Definitions, Visibility and Participation

Transgender individuals — those whose gender identity differs from the sex assigned at birth — constitute a population whose visibility has increased substantially over recent decades, with attendant increases in scholarly, clinical and policy attention to the conditions under which they engage with sport [16,29,30]. Within this literature, "transgender women" and "transgender men" are typically used to describe individuals assigned male and female at birth, respectively, whose gender identity is female or male; "non-binary," "genderqueer" and related terms designate individuals whose gender identity is not exclusively male or female; and "cisgender" describes individuals whose gender identity aligns with the sex assigned at birth [16,29,30]. While these terms are widely employed, scholars have noted that the specific configurations of identity, expression and embodiment within transgender populations are diverse, and that any synthesis of the literature must remain alert to within-group heterogeneity along axes including age, race, ethnicity, class, disability and the specific stage of social or medical transition [16,29].

The systematic review literature on sport and transgender people has been gradually expanded since the early 2000s. An early systematic review identified a relatively small body of research articles examining sport participation and competitive sport policies for transgender individuals, alongside a larger body of policy documents from sporting organisations, and concluded that transgender people often reported negative experiences in competitive and recreational sport, particularly in relation to inclusive and comfortable environments [29]. A subsequent systematic review and meta-analysis on societal discrimination and mental health among transgender athletes synthesised 12 studies and a total of approximately 21,565 participants, of whom roughly one third were estimated to have experienced discrimination in sports participation or healthcare; transgender athletes who felt welcomed by their respective teams represented a smaller proportion, with the difference between the two subgroups underscoring the impact of inclusive versus hostile environments on participation and wellbeing [30]. Protocols for systematic reviews focused specifically on disparities in sport participation among transgender women have further drawn

attention to gaps in the literature concerning eligibility policies, performance outcomes and the experience of those who participate or refrain from participation [51].

Population-level work in jurisdictions including Australia has provided additional empirical context. A national community survey of trans people in Australia documented widespread experiences of bullying, exclusion and avoidance of sport-related spaces, alongside facilitators of participation such as inclusive policies, supportive peers and access to gender-affirming environments [31]. Within this body of work, the choice of sports, the level of participation and the modality of activity — including individual versus team-based and competitive versus recreational sport — were shown to vary considerably across transgender populations, with some individuals preferring solitary activities such as jogging or gym-based exercise to team sports in which social interaction is more intense [31]. Such patterns are consistent with broader observations that transgender individuals may navigate sport spaces strategically in order to manage exposure to potential discrimination [29,30,31].

Qualitative research with transgender athletes has further detailed the specific challenges they may encounter. Accounts have described feelings of exclusion in changing rooms that do not align with gender identity, experiences of being questioned about gender or required to "prove" gender identity in order to access sport, and interactions with coaches and teammates that range from supportive to overtly hostile [26,29,30,31]. Studies of transgender athletes navigating hormone therapy and gender-affirming medical care have documented additional layers of complexity, including changes in body composition, performance, recovery and identity that may interact with the demands of competitive sport in ways not fully anticipated by participants or by their support networks [29,30]. Although qualitative studies of transgender athletes remain comparatively small in number, the convergence of accounts across different jurisdictions and disciplines lends support to the view that transgender experience in sport is shaped by a combination of identity-related stress, structural barriers and individual coping resources [29,30,31].

5.2 Competitive Sport Policies and Structural Stigma

The evolution of transgender-specific competitive sport policies has been one of the more contested domains in contemporary sport governance, and these policies have themselves been the subject of considerable empirical and ethical scrutiny [29,30,32]. In 2004, the International Olympic Committee introduced a policy that allowed transgender individuals to compete in their experienced gender provided they had undergone gender-confirming surgery, obtained legal recognition of their gender, undergone cross-sex hormone treatment for at least two years and lived in their experienced gender for the same duration [29]. While praised at the time for its inclusivity, the 2004 policy was subsequently characterised as carrying several limitations, including its exclusion of transgender individuals who opted out of surgery for personal, medical or financial reasons; its narrow focus on transgender women without commensurate consideration of transgender men; and its specification of a two-year hormone treatment period without a clearly articulated evidence base [29].

Subsequent updates to international sport policy have sought to address some of these concerns. Revised guidance issued during the mid-2010s relaxed the requirement for surgical intervention and introduced testosterone thresholds intended to operationalise concerns about athletic advantage in transgender women, while preserving access to participation in many disciplines [29,30,32]. The most recent IOC framework on fairness, inclusion and non-discrimination on the basis of gender identity and sex variations, articulated through a series of principles addressing prevention of harm, inclusion, no presumption of advantage and evidence-based approaches, has been intended to guide international federations in the development of sport-specific eligibility regulations [32]. Within this framework, the IOC has acknowledged that the trade-offs between fairness, inclusion and safety may vary across disciplines, that a one-size-fits-all approach is not appropriate, and that federations bear responsibility for the design of policies relevant to their specific competitive contexts [32].

The framework has, however, also been the subject of critical commentary, including from authors who have argued that, in some sports, current eligibility criteria may not adequately protect competitive fairness in the female category, and that the evidence base for transgender participation has not been sufficiently considered in the formulation of the framework [32]. Lundberg and colleagues, among others, have argued that the framework's foregrounding of inclusion principles may, in certain disciplines, be in tension with goals of competitive fairness for cisgender female athletes, particularly where physiological differences attributable to pubertal development of the male phenotype may persist following testosterone suppression [32]. These critical analyses have prompted further debate over the relative weighting of competing values within sport governance, and over the methodological and empirical standards by which transgender-specific policies should be developed [29,30,32].

Beyond the IOC, individual federations, national governing bodies, collegiate athletic associations and recreational sport organisations have developed their own policies governing transgender participation, with substantial variability across contexts [29,30]. The National Collegiate Athletic Association in the United States, World Athletics, World Rugby, FINA and other bodies have each issued policy statements addressing eligibility, hormone thresholds and category access, with consequences for the athletes who must navigate the resulting patchwork of regulations [29,30]. The lived experience of transgender athletes within this policy landscape has been characterised in qualitative work as one of substantial uncertainty, in which eligibility may depend on factors outside the athlete's control and in which changes in policy may have abrupt consequences for ongoing competitive trajectories [29,30,31].

From the perspective of structural stigma, the cumulative effect of these policies and their associated debates may be understood as a contributor to the contextual conditions within which transgender athletes form expectations of acceptance, exclusion or scrutiny [17,22,29,30,32]. Even where specific policies provide formal pathways to participation, the public

discourse surrounding such policies — including media coverage, social-media debate and the public commentary of athletes, administrators and political figures — may itself function as a source of distal stress, regardless of whether any individual transgender athlete is directly targeted [17,32,33,38,39,40]. The convergence of structural stigma, eligibility policy and polarized public discourse has therefore been identified as a particularly important site for the application of minority stress and polarization frameworks to gender minority athletes, with implications both for empirical research and for the design of inclusive sport governance [17,22,29,30,32,33].

5.3 Mental Health Among Transgender Athletes

The mental health of transgender individuals has been documented across general population studies as substantially more affected than that of cisgender comparison groups, with elevated rates of depression, anxiety, suicidal ideation and suicide attempts widely reported [16,19,30]. Within athletic populations, direct empirical evidence remains comparatively limited, but available data and qualitative accounts converge on a picture broadly consistent with the general literature [29,30,31]. A meta-analytic synthesis of societal discrimination and mental health among transgender athletes drawing on 12 studies and over 21,000 participants suggested that the experience of discrimination in sport participation and associated healthcare encounters is widespread, and that transgender athletes who report being welcomed by their teams exhibit substantially better mental health outcomes than those who report exclusion [30]. The mental health implications of the convergence between transgender-specific stressors and sport-specific stressors have been argued to require further focused investigation, particularly through longitudinal designs that can characterise trajectories of symptom development and resolution [30].

Depression and anxiety symptoms among transgender athletes have been documented in qualitative accounts and in the broader meta-analytic literature, with stressors including misgendering, identity invalidation, exclusion from changing rooms, restrictive eligibility policies and exposure to public commentary all implicated as contributors [29,30,31]. The interaction of these stressors with sport-specific demands — including the pressures of training, performance evaluation and competitive comparison — may produce additive or synergistic effects, although the empirical disentanglement of these contributions remains a methodological challenge [29,30]. Among adolescent and young adult transgender athletes, additional considerations include the developmental impact of gender dysphoria, the timing of social and medical transition relative to sport participation, and the role of family acceptance in mediating broader outcomes [16,29,31].

Suicidality represents one of the most concerning indicators of mental health risk in transgender populations, with general population data indicating that approximately one quarter of transgender individuals and approximately one in five non-binary individuals report having attempted suicide, in contrast to roughly nine per cent of cisgender individuals [19]. While direct prevalence figures for suicidality among transgender athletes are not well established, qualitative accounts have included references to suicide attempts, suicidal ideation, self-harm and severe emotional distress in relation to sport-specific experiences of exclusion and identity invalidation [26,29,30]. The cumulative impact of these findings has informed calls for mental health screening, suicide risk assessment and targeted intervention strategies within sport medicine and sport psychiatry settings that work with transgender athletes [2,5,30].

Healthcare disparities have been identified as a further dimension of mental health risk for transgender athletes. The meta-analytic literature has documented that transgender athletes frequently report experiencing discrimination or inadequate care in healthcare encounters, including with sport-specific personnel such as athletic trainers and sport medicine providers [30]. Surveys of athletic trainers have indicated that, while many express positive attitudes toward LGBT athletes including transgender athletes, a substantial proportion report inadequate formal training on transgender-specific care, including issues of hormone therapy, mental health, and the appropriate provision of services such as counselling and referral [30]. The cumulative effect of these gaps may be a healthcare environment in which transgender athletes encounter additional barriers to obtaining the support they need, with consequences for both physical and mental health [29,30].

The integration of mental health considerations into transgender-specific policies and practices has been advocated within several recent frameworks, including those addressing harassment and abuse in sport, mental health in elite athletes and sports psychiatry [2,5,30,40]. Within these frameworks, the call for explicit attention to transgender athletes has emphasised the need for gender-affirming approaches, the avoidance of presumption of advantage in clinical encounters, and the development of safeguarding procedures specifically attentive to the vulnerabilities of transgender individuals in sport contexts [30,32,40]. Despite these recommendations, the gap between policy intent and implementation in many sporting environments has been characterised as substantial, with continued attention to training, monitoring and evaluation required to translate framework principles into practice [30,32].

5.4 Cisnormativity, Gender Affirmation and Invalidation

Cisnormativity — the implicit and explicit assumption that everyone is, or ought to be, cisgender — has been identified as a structuring feature of many sporting environments and as a key contributor to the experience of minority stress among transgender athletes [16,19,29,30]. Within sport, cisnormativity operates through multiple channels: the gender binary structure of most competitive categories; the design of facilities such as changing rooms and toilets; the conventions of uniforms and dress codes; the use of pronouns and gendered language in coaching, officiating and media coverage; and the unstated expectation that athletic bodies will display features aligned with the sex assigned at birth [29,30]. Each of these features may produce moments in which transgender athletes are reminded that their identity is regarded as exceptional, requiring negotiation, exception-making or accommodation rather than being simply assumed as part of the normative landscape of sport [16,29,30].

The locker room has emerged as a particularly salient site for the operation of cisnormativity. Qualitative accounts from transgender athletes have described locker rooms as spaces in which the body is exposed, gender is publicly performed, and the assumption of cisgender embodiment is least negotiable [26,29,30,31]. Transgender athletes have reported experiences of being directed toward changing facilities that do not align with their gender identity, of being questioned about their presence in changing rooms, and of avoiding sport altogether due to anticipated discomfort or hostility in these spaces [26,29,30,31]. Design-level interventions, including the provision of single-occupancy or gender-neutral facilities and the development of inclusive changing protocols, have been recommended in some frameworks but remain unevenly implemented across sporting contexts [30,31].

Misgendering — the use of incorrect pronouns, names or gendered references — and identity invalidation — verbal or non-verbal communications that deny or undermine the legitimacy of a person's gender identity — constitute proximal stressors that have been emphasised as central to the experience of minority stress among gender minorities [16,19]. Within sport, these stressors may occur in interactions with teammates, coaches, officials, opponents, spectators and media, and may be sustained over time rather than constituting isolated incidents [29,30,31]. The cumulative impact of repeated misgendering and invalidation has been linked, in general population studies, to elevated psychological distress, depression and anxiety, with the effect of public and habitual misgendering on athletes particularly concerning given the visibility of competitive sport [16,19,30].

Gender affirmation — the social, legal and medical recognition of an individual's gender identity — has been theorised within extended minority stress models as both a developmental task and a resource for resilience [16,29]. Social affirmation, including the consistent use of correct names and pronouns by friends, family and colleagues, has been associated with reduced distress and improved mental health outcomes, while legal affirmation, including the ability to update identification documents, may further support psychosocial adjustment [16,19,29]. Medical affirmation, including access to hormone therapy and gender-affirming surgical procedures, has been associated with reductions in gender dysphoria, depression and anxiety in general population studies, although the effects of medical affirmation on athletic performance, training adaptation and competitive eligibility have been the subject of considerable scientific and policy debate [29,30,32].

For transgender athletes, the process of affirmation may interact with sport participation in complex ways. Hormone therapy may alter body composition, strength, endurance and recovery in ways that may affect competitive performance, and the timing of medical affirmation relative to sport participation may have implications for both psychological adjustment and athletic trajectory [29,30]. The integration of gender affirmation with sport-specific clinical care, including nutritional support, training periodisation, mental health monitoring and longitudinal follow-up, has been identified as a key area for development in sport medicine and sport psychiatry [5,30]. Models of care that situate affirmation within broader frameworks of athlete welfare, rather than treating it as a peripheral or controversial matter, are likely to be most consistent with the principles articulated in mental health and inclusion frameworks [3,4,5,30,32].

Non-binary athletes, whose gender identity is not exclusively male or female, occupy a particularly distinctive position within the contemporary sport landscape, since the binary structure of most competitive categories may not accommodate their identity at all [16,19]. Surveys of queer populations in German-speaking countries have indicated that non-binary individuals may report higher levels of minority stress than cisgender female counterparts, with gender identity rather than sexual orientation emerging as the more salient predictor of stress in some analyses [19]. Within sport, the experiences of non-binary athletes have been less extensively documented than those of transgender men and women, but qualitative accounts have indicated specific challenges related to the absence of category options, the difficulty of obtaining recognition in formal sport documents and the cumulative effect of being rendered invisible in sporting cultures organised around the male–female binary [16,19,30].

Considered together, the literature on cisnormativity, gender affirmation and invalidation provides a conceptual and empirical foundation for understanding the proximal-level minority stress experienced by transgender and non-binary athletes [16,19,29,30]. The interaction of these proximal stressors with the distal stressors of discrimination, exclusion and structural disadvantage produces a complex picture of stress exposure that, in combination with sport-specific demands, may bear upon the mental health and competitive functioning of athletes in this population [16,17,29,30]. Within the broader review, these findings reinforce the case for integrated approaches to athlete care that combine clinical attention to mental health with structural reform of the cultural and policy conditions under which transgender athletes participate [3,4,5,30,32,40].

6. Structural Stigma Within and Beyond Sport

6.1 Qualitative Insights into the Lived Experience of Structural Stigma

While much of the quantitative literature on structural stigma has relied on aggregate measures of laws and community attitudes, an increasingly visible qualitative strand of research has sought to characterise how individuals subjectively experience and navigate the structural conditions that constrain their opportunities and wellbeing [17,22]. Qualitative work has indicated that the effects of structural stigma may extend well beyond the discrete events captured by individual-level measures of discrimination, and may include the cumulative weight of operating within institutions whose norms, vocabularies and assumptions do not accommodate one's identity [17,22]. Within this perspective, the perception that "the system is not built for people like me" has been described as a recurrent feature of the lived experience of structural stigma,

generating low-level but pervasive stress that may be difficult to attribute to specific incidents and that may consequently be overlooked in research designs focused on episodic discrimination [22].

A re-conceptualisation of structural stigma drawing on qualitative interviews with sexual and gender minority individuals has emphasised several dimensions of experience that may not be adequately captured by quantitative indices [22]. Participants have described the experience of being expected to navigate institutional procedures — such as identification documentation, healthcare intake forms, sport eligibility rules and educational records — that do not anticipate their existence as members of stigmatised groups, with consequences for emotional regulation, sense of agency and identity coherence [22]. They have also described the cognitive labour involved in continually assessing whether particular institutions, individuals and contexts are safe, an experience consonant with the concept of vigilance articulated in minority stress and race-related stress literatures [17,22,23]. Finally, participants have noted the difficulty of articulating structural stigma to others, since the absence of specific events to point to may make claims of harm appear less credible to interlocutors expecting clear instances of discriminatory conduct [22].

Applied to the sport context, these qualitative insights help to clarify why sexual and gender minority athletes may describe their experiences of stigma in terms that exceed any specific list of distal stressors. The cumulative experience of training within facilities organised around the gender binary, of being addressed by gendered language that may not match identity, of competing under regulations that may at any point be revised in ways adverse to participation, and of inhabiting media environments in which one's identity is publicly debated may constitute a structural-level pattern of exposure even where no single incident of discrimination occurs [22,29,30,32]. The integration of qualitative and quantitative methods has therefore been recommended as a means of producing a more complete account of structural stigma in sport, capable of capturing both its measurable correlates and its phenomenological dimensions [17,22].

A complementary insight from qualitative work has been the recognition that individuals do not passively absorb structural stigma but actively interpret, contest and sometimes resist it through a variety of identity and meaning-making strategies [22,26]. Athletes who occupy stigmatised positions may develop sophisticated narratives concerning their place within sport, including framings that emphasise resilience, the value of visibility, the political significance of participation and the importance of community connection [26,49]. Such narratives may serve as protective resources, particularly when supported by relationships with similarly situated others, but they may also impose obligations of representation that themselves carry psychological costs [22,26]. The recognition of these dynamics has informed calls for intervention designs that respect athlete agency, support meaning-making and avoid framing minority athletes purely as victims of structural disadvantage [16,22,26].

6.2 Sport Leadership and the Perpetuation of Heterosexism

A substantial body of research has examined the experiences of LGBTQ+ individuals in sport leadership roles, including coaches, athletic directors, administrators and support staff [49]. This literature has indicated that, despite gradual improvements in some contexts, LGBTQ+ sport leaders frequently report encountering marginalisation, stigmatisation and identity-related stressors that bear comparison to those documented among athletes [49]. A systematic review of 34 studies on LGBTQ+ identities and topics in sport leadership, conducted across six countries and spanning more than two decades of research, identified themes including intrapersonal experiences of LGBTQ+ sport leaders, stakeholder attitudes toward LGBTQ+ leaders, and sport manager attitudes toward LGBTQ+ topics [49].

Within these themes, lesbian female coaches have been most extensively studied, with research documenting their experiences of identity negotiation, the management of disclosure across professional contexts, and the cultural pressures to perform femininity in ways that may not reflect their authentic preferences [49]. Studies of gay male coaches and administrators, while less numerous, have indicated comparable patterns of identity management, with additional concerns relating to the assumption of athletic culture as a male homosocial space in which gay male presence may be perceived as challenging dominant masculine norms [49]. The relatively limited attention to bisexual, transgender and asexual sport leaders has been highlighted as a significant gap in the literature, with implications for the inclusivity of both research and practice [49].

Identity management strategies employed by LGBTQ+ sport leaders include practices broadly comparable to those documented among LGBTQ+ athletes: covering, in which stigmatised identity is concealed through behavioural choices such as hyperfeminine or hypermasculine self-presentation; compartmentalisation, in which professional and personal identities are kept rigorously separate; prioritisation, in which professional or athletic identity is emphasised as the most salient self-categorisation, partly to deflect attention from minority identity; and selective disclosure, in which identity information is shared with carefully chosen interlocutors [49]. Each of these strategies may serve protective functions while also carrying psychological costs, including the cognitive load of managing multiple identities, the experience of inauthenticity, and the limitation of opportunities for connection with similarly situated colleagues [16,49].

The impact of LGBTQ+ leadership invisibility upon athletes has been a recurrent theme in this literature [24,26,49]. Athletes within environments lacking visible LGBTQ+ leaders may have fewer cues that their own identity will be accommodated, fewer mentors and role models who share their experiences, and fewer opportunities for the cultural transmission of identity-affirming practices [26,49]. Conversely, environments in which LGBTQ+ leaders are visible and supported may signal a degree of structural acceptance that supports athlete disclosure, help-seeking and full engagement with team life [24,26,49]. The dynamics of leadership visibility therefore constitute a specific mechanism through which structural stigma operates in sport, with the absence of visibility itself functioning as a form of marginalisation [49].

A complementary literature has examined the attitudes and behaviours of heterosexual coaches and administrators in relation to LGBTQ+ athletes and colleagues [24,49]. Surveys have generally reported that coaches express positive overall attitudes toward LGBTQ+ athletes, while also indicating substantial variation by factors including gender, religion, prior contact with LGBTQ+ individuals and age cohort [49]. Yet, as noted in qualitative work, the gap between stated attitudes and lived behaviours may be substantial: coaches who endorse positive attitudes on questionnaires may nonetheless tolerate homophobic language within teams, decline to address overt harassment, or refrain from discussing LGBTQ+ topics in ways that effectively silence athletes [24,26,49]. The role of bystander behaviour has accordingly been identified as central to the cultural climate of teams, with the inaction of well-intentioned coaches potentially exerting effects comparable to active hostility [24,40,49].

Recommendations emerging from the sport leadership literature have emphasised the need for intentional efforts to support inclusive leadership at multiple levels [24,49]. These include the development of training programs addressing LGBTQ+ topics for coaches and administrators, the integration of inclusive language and practices into team operations, the visibility and support of LGBTQ+ leaders within organisations, and the establishment of clear procedures for addressing harassment and discrimination [24,40,49]. Frameworks for mental wellbeing promotion in elite sport have similarly emphasised the importance of diversity, cultural competence and respectful engagement with minority identities throughout the organisational hierarchy [3,4,40]. The implementation and sustained effectiveness of such recommendations, however, depend on broader structural conditions, including the political, legal and cultural climates in which sport organisations operate [17,22,32,49].

6.3 Structural Stigma and Health Inequalities: From Evidence to Sport

The empirical literature on structural stigma and health, while developed largely outside the sport context, provides a robust foundation for understanding how the institutional conditions of sport may bear upon athlete health. Cross-sectional studies linking state-level policies, community-level attitudes and aggregate measures of stigma to individual-level health outcomes have repeatedly found that sexual minority individuals living in higher-stigma contexts may exhibit elevated rates of psychiatric morbidity, dysregulated stress physiology and increased all-cause mortality compared to those in lower-stigma contexts, with disparities sometimes reduced or eliminated where protective policies are in place [17,21]. The cumulative pattern of these findings supports the view that structural stigma may operate as a meaningful determinant of health for sexual minority populations, and that disparities within minority populations between high- and low-stigma contexts may be of comparable magnitude to those typically attributed to other major social determinants [17].

Quasi-experimental designs leveraging changes in policy regimes have provided additional support for causal interpretation. The introduction of marriage equality laws in various jurisdictions has been associated with reductions in healthcare utilisation, mental health service costs and certain diagnostic outcomes among sexual minority individuals in the relevant communities, while the passage of laws restricting same-sex relationships or rights has been associated with corresponding increases in psychiatric morbidity [17]. Laboratory designs comparing physiological responses to standardised social stress tasks among individuals from high- versus low-stigma backgrounds have suggested that prior exposure to high-stigma environments may produce blunted cortisol responses consistent with chronic stress-related physiological adaptation, even where the individual currently resides in a lower-stigma context [17]. Such findings indicate that the health consequences of structural stigma may persist beyond the duration of acute exposure, with implications for the design of interventions and the timing of expected health gains following policy change [17,21].

A comparative analysis of the relative strength of associations between minority stress, structural stigma and physical health has indicated that, when assessed jointly, both individual-level minority stress exposures and structural stigma may exert independent contributions to physical health outcomes [21]. These findings reinforce the view that interventions focused solely on individual coping or symptom management are unlikely to fully address the health consequences of stigma, and that structural-level reform — including changes in laws, policies, organisational practices and cultural narratives — is also required to produce sustained reductions in disparities [17,21]. The integration of structural and individual-level perspectives has therefore been emphasised as central to comprehensive approaches to minority stress, both in general populations and in specific subgroups such as athletes [16,17,20,21].

Applied to sport, the structural stigma framework can be used to analyse a range of institutional features that may exert effects on athlete health. Eligibility regulations governing transgender participation, anti-discrimination policies within international federations, the design and resourcing of safeguarding mechanisms, the cultural expectations communicated through media coverage and the representation of LGBTQ+ identities in coaching, administration and governance all constitute structural-level conditions that may shape the experience of athletes who occupy stigmatised positions [22,29,30,32,40,49]. The cumulative impact of these conditions may operate independently of any specific interpersonal interaction, contributing to the chronic stress exposure documented in qualitative accounts and in the broader minority stress literature [17,21,22,26].

The international and cross-cultural dimensions of structural stigma have particular relevance for sport, given that competitive sport increasingly operates within a globalised framework in which athletes traverse jurisdictions with sharply differing legal and cultural contexts [16,17,32]. An athlete who is recognised as full participant in one country may be subject to legal disadvantage or social exclusion in another, with implications for international competition, training and the conduct of broader sporting events [16,17,32]. The contrast between Scandinavian countries — many of which have undergone

substantial reductions in structural stigma against sexual and gender minorities — and contexts in which such stigma remains pronounced provides one example of the diversity of conditions within which contemporary international sport unfolds [17]. The implications of this diversity for athlete mental health, for safeguarding arrangements at major events, and for the coordination of clinical care across jurisdictions remain insufficiently explored within the published literature, although they have begun to be addressed within consensus statements on harassment, abuse and mental health in elite sport [2,5,30,40].

A further consideration concerns the dynamic character of structural stigma. Policy changes, legal reforms and shifts in public attitudes may alter structural-level conditions over relatively short timeframes, with consequences for both ongoing and prospective athlete trajectories [17,32]. The contemporary period has been characterised by simultaneous trends of expanded protection in some jurisdictions and reaction or rollback in others, generating a landscape in which structural stigma may increase, decrease or fragment depending on context [17,32,33]. The capacity of sport governance to keep pace with such changes, to anticipate their effects on athlete welfare and to design adaptive responses has been identified as an important area for ongoing development [3,4,30,32,40].

6.4 Race, Ethnicity and the Intersection with Sport

Although the present review has primarily focused on sexual and gender minority athletes, the conceptual apparatus of structural stigma applies equally to race- and ethnicity-related stressors among athletes of colour, and the intersection of race with sexual and gender minority status warrants explicit consideration [23]. Race-related stressors operate through pathways comparable to those articulated within minority stress theory, including experiences of discrimination and victimisation, anticipated discrimination and vigilance, and the internalisation of racialised devaluation, with documented consequences for psychological and physical health across populations of colour [23]. Within sport, racialised experience may include exposure to racial slurs, biased officiating, discriminatory media coverage, restricted access to certain sports or positions, and exclusion from leadership pipelines, with the cumulative weight of these exposures contributing to a distinctive burden of stress within the broader minority stress framework [23,38,39,40].

The structural conditions shaping race-related stress in sport include the historical legacies of segregation in sporting institutions, the under-representation of people of colour in coaching, ownership and governance roles, the unequal distribution of resources across racially differentiated youth sports infrastructure, and the persistence of stereotypes regarding athletic capacity that may channel athletes of colour into particular sports or positions while excluding them from others [23]. The visibility of athletes of colour in elite professional sport, while often substantial, has not been accompanied by commensurate progress in the broader institutional landscape, and disparities in compensation, sponsorship, media coverage and post-career trajectories have been documented across racially differentiated populations of athletes [23]. These structural conditions are themselves implicated in the production of health inequalities, both in the general population and among athletes [23,40].

Intersectional analyses have drawn attention to the ways in which race and sexual or gender minority status may combine to produce distinctive configurations of exposure and resource access. Black sexual minority men, for example, have been described in qualitative research as navigating challenges that are not fully captured by either race-related or sexual minority stress frameworks alone, including specific patterns of microaggressions within both predominantly White LGBTQ+ communities and within communities of colour [23,26]. Athletes of colour who are also sexual or gender minorities may face compounded structural disadvantage within sport, including reduced visibility, limited culturally competent support and intensified exposure to identity-targeted harassment [23,26,38,39,49]. The development of intersectional analyses within sport-specific research has been recommended as a priority for future work, with implications for both empirical investigation and intervention design [16,23,26].

The mental health consequences of race-related stress in sport have been studied less extensively than those associated with sexual and gender minority status, though emerging evidence indicates broadly comparable patterns of association with depressive and anxiety symptoms, sleep disturbance and physiological stress responses [23]. The integration of race-related stress into broader frameworks of athlete mental health, including the IOC consensus statement on mental health in elite athletes and frameworks for the promotion of wellbeing in elite sport, has been recommended in order to ensure that the experiences of racially minoritised athletes are not subsumed under a generic athlete category but receive focused attention informed by the broader race-related stress literature [2,3,4,23]. Particular attention has been called for to the experiences of athletes from indigenous and first nations populations, athletes from migrant backgrounds, and athletes navigating multiple racial and ethnic identifications, whose specific configurations of stress and resilience may warrant tailored research and intervention strategies [3,23].

The convergence of race-related stress, sexual and gender minority stress, structural stigma and the specific demands of sport produces a particularly complex stress environment for athletes who occupy multiple stigmatised positions [16,17,23,30]. The recognition of this complexity has implications for clinical practice, including the need for cultural humility, intersectional competence and integrated care within sport medicine and sport psychiatry [2,3,5,23]. It also has implications for research, including the need for sampling strategies, measurement approaches and analytic frameworks capable of accommodating the heterogeneity of stigmatised athlete populations and of supporting inferences that respect within-group variability [16,20,23]. Finally, it has implications for sport governance, including the design of policies, safeguarding arrangements and organisational cultures attentive to the multiple, overlapping dimensions of disadvantage that may shape athlete trajectories [3,17,23,30,40].

Taken together, the literature reviewed in this section indicates that structural stigma, operating at the levels of laws, institutions, organisational practices and cultural narratives, constitutes a significant component of the conditions within which athletes who occupy minority positions develop, train and compete. The application of the structural stigma framework to sport — informed both by the broader empirical literature on its health consequences and by the qualitative insights into lived experience — provides an analytic resource capable of integrating attention to individual-level stress processes with attention to the institutional contexts within which they occur [17,21,22]. Subsequent sections of the review build on this foundation by addressing the further dimension of social polarization as a contextual condition, and by examining the empirical literature on outcomes, mediators and interventions within sport [3,4,16,17,33].

7. Social Polarization and the Sport Environment

7.1 Conceptualising Affective Polarization

The contemporary literature on social polarization has expanded considerably in scope and conceptual sophistication, encompassing analyses of ideological divergence, partisan sorting and the affective dimensions of intergroup relations between political-ideological groups [33]. Within this broader literature, affective polarization has emerged as a focus of particular interest, denoting the tendency of partisan or ideological in-groups to display marked antipathy, social distance and disdain toward members of out-groups [33]. While affective polarization has been studied most extensively in the United States, comparable patterns have been documented in multiparty systems across Europe, Latin America and other regions, indicating that the phenomenon is not limited to two-party democracies and may carry implications for diverse political contexts [33].

The construct of affect deployed in this literature, however, has been the subject of growing critical attention. Early empirical work in political science relied substantially on feeling-thermometer measures, which capture broad valence-related responses to in-group and out-group members but provide limited insight into the discrete emotions that may underlie affective polarization [33]. Subsequent contributions have argued for a more careful specification of affect, with attention to valence (positive versus negative orientation), arousal (intensity of physiological activation) and discrete emotions such as anger, fear, disgust, contempt and pride [33]. The conceptual extension of affective polarization research toward this more textured account of emotion is consistent with developments in affective science more broadly, where multi-dimensional models of emotion have superseded earlier single-dimensional approaches [33].

The mechanisms through which affective polarization may operate have been traced to theoretical foundations in social identity and intergroup threat theories. Partisan or ideological identity, once salient, may function as a meaningful self-categorisation, with consequent effects on emotional reactions to in-group and out-group members, on biased information processing, on behavioural choices regarding contact and avoidance, and on the construal of out-group members as threats to the in-group's values, status or wellbeing [33]. Within this framework, affective polarization may be both an outcome of broader social-political conditions — including elite signalling, media ecosystems and policy contention — and an input to further polarization, as polarized affect shapes the conditions under which subsequent political and social interactions unfold [33]. The methodological apparatus required to disentangle these dynamics has continued to evolve, with researchers increasingly drawing on psychophysiological measures such as skin conductance, facial electromyography and electroencephalography to characterise the embodied dimensions of partisan response [33].

A further refinement in the conceptualisation of affective polarization concerns the distinction between in-group affection and out-group antipathy. While early formulations sometimes treated affective polarization as a unitary construct encompassing both poles, more recent work has emphasised that these dimensions may be partially independent and may have distinct antecedents and consequences [33]. The intensification of negative affect toward political out-groups, in particular, has been described as a key feature of contemporary polarized environments, with implications that may extend beyond political behaviour to interpersonal relationships, civic engagement and individual wellbeing [33,34,35]. The contested empirical question of whether affective polarization causes anti-democratic attitudes or merely co-occurs with them has further motivated calls for designs capable of supporting more rigorous causal inference [33,35].

7.2 Polarization, Stress and Population Health

A growing body of empirical work has examined the relationship between polarization and indicators of population health, with attention to both physical and mental dimensions of wellbeing [34,35]. Cross-sectional analyses using nationally representative samples have linked perceived political polarization — operationalised as the perceived distance between respondents' own political views and those of the average voter in their state or country — to elevated reports of days of poor physical and mental health [34]. In one widely cited study, each one-unit increase in state-level perceived polarization on a 0–10 scale was associated with an approximately 3 per cent increase in the chance of an additional day of poor physical health per month, with effects remaining significant after adjustment for a comprehensive battery of demographic, behavioural and health-related covariates [34]. The associations observed in this work were noted to be stronger for state-level than national-level perceived polarization, and to be more pronounced among individuals already reporting frequent poor physical health, suggesting potential vulnerability amplification within already disadvantaged groups [34].

The mechanisms proposed to link polarization to health include several plausible pathways. Polarization may be associated with reductions in social capital and interpersonal trust, with consequent erosion of the informal networks of support typically available to individuals in times of need; with selective avoidance of contact across partisan lines, restricting opportunities for

the kind of bridging social ties associated with positive health outcomes; with intensified exposure to anger-inducing media content and to incivility in everyday interactions; and with elevated background stress arising from the perception that one's community is fragmented or hostile [34,35]. The integration of these mechanisms within broader models of social determinants of health has been proposed as a productive avenue for further research, particularly in contexts in which polarization appears to be increasing over time [34,35].

Longitudinal work has provided a more equivocal picture of the within-person dynamics of polarization and health. A pre-registered six-wave longitudinal study conducted in the three months preceding the 2024 United States presidential election examined the relationships between affective polarization, social support, perceived stress and self-rated health using random intercept cross-lagged panel models [35]. The study found that, although affective polarization was cross-sectionally associated with lower social support, greater perceived stress and worse self-rated health, fluctuations in affective polarization did not prospectively predict changes in these outcomes within individuals over the study period [35]. The investigators noted evidence that perceived stress may have a small causal effect on subsequent affective polarization, raising the possibility that within-person dynamics may run in the reverse direction to that often inferred from cross-sectional studies [35]. These findings have been interpreted as cautioning against the uncritical extrapolation of cross-sectional associations to within-person causal effects, while preserving the broader observation that polarized environments and individual psychological strain tend to co-occur [34,35].

The methodological challenges of polarization and health research are several. The construct of polarization itself encompasses multiple dimensions — ideological, affective, behavioural and perceived — each of which may carry distinct implications for health, and the measurement of these dimensions varies across studies [33,34,35]. The selection of relevant covariates is non-trivial, given that polarization may be associated with a range of demographic and social factors that also predict health [34]. The unit of analysis — individual, household, neighbourhood, state or country — affects what can be inferred, and the relevant timescales of polarization-health associations remain only partially specified [35]. Despite these challenges, the cumulative pattern of findings suggests that polarization may operate as a meaningful contextual condition for individual health, and that the further refinement of research designs capable of disentangling its multiple dimensions and effects is likely to be valuable [33,34,35].

The conceptual link between polarization research and minority stress theory has been suggested by several authors. Polarized environments may amplify the visibility and intensity of identity-based conflicts, may concentrate hostility toward stigmatised groups within particular partisan or ideological factions, and may interact with structural stigma to produce contexts in which minority individuals are especially exposed [17,33,35]. Within such contexts, the experience of being a member of a stigmatised group may take on a politicised dimension, with affective polarization functioning as a vector for the transmission of identity-targeted hostility through media, online platforms and everyday interactions [33,38,39]. The integration of polarization and minority stress frameworks, while still at an early stage, may help to characterise the distinctive vulnerabilities of minority individuals in polarized environments, including in the specific context of sport [16,17,33].

7.3 Polarization and Health Behaviours During the COVID-19 Pandemic

The COVID-19 pandemic provided a particularly visible empirical context for studying polarization, health behaviours and mental health, as polarized responses to public-health interventions emerged across multiple jurisdictions [36,37]. Mask-wearing, vaccination, social distancing, school closures and other public-health measures became sites of partisan and ideological contention, with implications for adherence behaviour, transmission dynamics and ultimately morbidity and mortality [36]. Systematic review protocols developed to evaluate the relationship between polarization and pandemic-related health behaviours and outcomes have indicated that political polarization, affective polarization and partisan identification may each contribute to variation in adherence, and that the interaction of polarization with broader social determinants of health may produce particularly inequitable outcomes [36].

Within the broader pandemic period, athletes experienced a series of disruptions to training, competition and social connection that have been documented as bearing upon mental health [37]. The cancellation or postponement of major events, including the rescheduling of the Tokyo Olympic and Paralympic Games, restrictions on team training and travel, the closure of training facilities, and the imposition of quarantine and isolation requirements affected athletes across levels and disciplines, with consequences for routines, identity and wellbeing [37]. Reviews of the literature on athletes during the pandemic have identified increased symptoms of anxiety, depression, sleep disturbance and disordered eating among substantial subsets of the athletic population, with particular vulnerability identified among team-sport athletes who lost access to teammates, athletes already managing pre-existing mental health concerns, and athletes whose income or career prospects were affected by event cancellations [37].

The intersection of pandemic-related disruption with polarized public discourse may have created particular complexities for athletes who occupy stigmatised positions. Public health debates intersected with culture-war controversies in ways that produced unusually charged environments for athletes whose visibility brought them to the attention of polarized commentators, and athletes who publicly advocated for vaccination, social distancing or other measures sometimes attracted partisan responses including hostility and abuse [36,37]. Conversely, athletes who declined to comply with public-health recommendations, or whose conduct was perceived as resistant to them, sometimes received polarized support or opposition that exceeded the conventional bounds of sport-related commentary [36,37]. The cumulative experience of being situated

within a polarized public-health context, while also navigating the specific demands of pandemic-era sport, may have contributed to the mental-health sequelae documented in athletes during this period [37].

The longer-term implications of pandemic-related disruption for athlete mental health are not yet fully characterised, but qualitative work and emerging quantitative evidence suggest that the effects may persist beyond the acute phase of the pandemic [37]. Athletes have reported continued difficulties with social connection, identity reintegration, sleep, mood and motivation in the post-acute period, with the cumulative experience of the pandemic appearing to interact with pre-existing patterns of vulnerability [37]. The recognition of the pandemic as a specific stressor with sustained effects on athlete wellbeing has informed calls for the integration of pandemic-experienced cohorts within longitudinal research on athlete mental health and for the development of post-pandemic support strategies attuned to the specific challenges that athletes face [37].

The COVID-19 experience has also informed broader discussions of how sport governance, public-health authorities and broader societal institutions may interact during periods of polarized crisis. The capacity to deliver coordinated responses that protect athlete welfare while respecting public-health priorities was, in some contexts, compromised by the polarized character of public discourse, with implications for the design of future crisis-response arrangements within sport [36,37]. The integration of polarization considerations into sport governance frameworks — including consideration of how public discourse may amplify or attenuate the effects of organisational decisions on athletes — has been suggested as a productive area for further development, particularly in contexts where contentious issues such as transgender inclusion, anti-doping enforcement or athlete activism intersect with broader cultural debates [33,36,37,40].

7.4 Polarization in the Sport Context: Trans Inclusion, Online Abuse and Athlete Activism

Although direct empirical investigation of polarization within sport remains comparatively limited, several lines of evidence indicate that sport functions as a setting in which polarized public discourse may have particular salience and consequence. Debates over transgender inclusion in elite competition have become one of the most visible such sites, with policy decisions by international federations, national governing bodies and individual events generating intense public commentary and partisan response [29,30,32]. The polarized character of these debates means that transgender athletes may find themselves not only navigating eligibility regulations and the practical conditions of sport participation but also embedded in broader cultural contests in which their identity and existence are publicly contested [22,30,32]. The cumulative experience of being a focal point in polarized debate, even where one's own statements are minimal, may itself constitute a stressor of substantial magnitude [22,30,32,33].

Online abuse aimed at athletes constitutes a further mechanism through which polarized public discourse may translate into direct psychological exposure. Comparative analyses of online abuse during major sporting championships have documented that women, athletes of colour and LGBTIQA+ athletes are disproportionately targeted, that high-stakes events tend to amplify both the volume and severity of harmful content, and that abusive messages may include not only criticism of performance but also identity-targeted insults, threats and incitements to violence [38,39]. Analyses focused specifically on National Collegiate Athletic Association championships have further documented patterns of abuse directed at student-athletes, with social-media platforms serving as primary vectors for such content [39]. The cumulative effect of these exposures may be substantial, with athletes reporting elevated anxiety, vigilance, sleep disturbance and concerns for personal safety following acute episodes [38,39].

The role of athletes as figures of public visibility carries particular implications for polarization-related exposures. Athletes who publicly endorse causes such as racial justice, LGBTQ+ rights, climate action or public-health measures may attract polarized commentary that exceeds the bounds of sports-related discussion, with both supportive and hostile responses potentially intense [33,38,39]. Athletes who decline to engage with such causes, or who take positions perceived as counter to particular partisan or ideological commitments, may attract equally polarized responses [33,38,39]. The decision to engage publicly with politically contested topics has therefore become, for many contemporary athletes, a calculation in which the potential benefits of advocacy must be weighed against the costs of exposure to polarized abuse [33,38,39].

A specific concern within this dynamic is the role of social-media platforms as amplifiers of polarized affect. The architectural features of contemporary platforms — including algorithmic curation that prioritises engagement, the ease of message production by anonymous or pseudonymous accounts, the absence of accountability mechanisms in many contexts, and the rapid propagation of content across networks — combine to create environments in which polarized hostility may be both more visible and more sustained than in earlier media regimes [33,38,39]. Athletes, whose visibility on these platforms is typically substantial, may encounter polarized abuse at scales and intensities that would have been unusual in earlier eras, with associated implications for the cumulative mental-health burden borne by those who maintain active social-media presence [38,39].

Within the framework of the present review, the convergence of polarization and minority stress in sport may be understood as operating through several interrelated mechanisms. Polarized public discourse may amplify the visibility of identity-targeted hostility, may concentrate hostility toward minority athletes within particular ideological factions, and may interact with structural stigma to produce environments in which minority athletes are simultaneously exposed to abuse, scrutinised over participation eligibility and burdened with the role of public symbols in contested cultural debates [22,30,32,33,38,39]. The recognition of these mechanisms reinforces the case for integrated frameworks that combine attention to individual-level

minority stress, to institutional structural stigma and to broader social-political conditions in characterising the experience of contemporary minority athletes [16,17,22,33].

7.5 Cumulative and Synergistic Effects of Minority Stress and Polarization

The integration of minority stress and polarization frameworks suggests several pathways through which their effects may converge and potentially amplify one another within the sport context. First, polarized environments may increase the salience and intensity of identity-related conflicts, with consequences for the experience of distal stressors among minority athletes. The presence of polarized political contexts may elevate the frequency and visibility of identity-targeted hostility, may concentrate such hostility within particular factions whose conduct may be reinforced rather than restrained by in-group dynamics, and may transform identity-related debates from local concerns into nationally or internationally contested issues, with associated implications for the exposure of individual athletes [22,29,30,32,33,38,39].

Second, polarization may interact with proximal stressors in ways that have particular implications for athletes who occupy stigmatised positions. The vigilance described within minority stress theory as a proximal stressor may be intensified within polarized contexts, where the perceived likelihood of identity-targeted hostility may be elevated and the cues required to assess safety in any given context may be more numerous and less reliable [16,33,35]. Concealment behaviours may similarly become more salient within polarized contexts, as the risks of disclosure are perceived as elevated and the available coping options may be constrained [16,33]. Internalised stigma may also be implicated, as repeated exposure to polarized hostility, including via media and social-media platforms, may reinforce the absorption of negative valuations into self-concept among individuals already exposed to broader stigmatising conditions [15,16,33].

Third, polarization may interact with structural stigma to produce contexts in which institutional protections become less reliable and the trajectory of policy may itself become unpredictable. The contemporary period has been characterised by simultaneous progress and reversal of structural-level protections for sexual and gender minorities in various jurisdictions, with polarized political processes contributing to the volatility of policy environments [17,32,33]. Athletes whose participation, eligibility or welfare depends on specific institutional arrangements may consequently find themselves operating within contexts in which the rules of engagement may shift abruptly, with associated psychological costs that exceed those typically associated with stable institutional environments [17,30,32,33].

Fourth, the cumulative impact of these interacting processes may be particularly consequential for athletes who hold multiple stigmatised identities. An athlete who is, for example, a transgender woman of colour participating in elite competition may simultaneously face transgender-specific eligibility regulations, racialised abuse online, gendered scrutiny of athletic performance and identity-targeted hostility within polarized debates over inclusion, with each layer of exposure compounded by the others [22,23,30,32,33,38,39,49]. The integration of intersectional analysis with minority stress and polarization frameworks may therefore be necessary to capture the specific configurations of stress facing such athletes, and to design interventions that address the multiple dimensions of disadvantage they may experience [16,20,23,30,33].

The convergence of minority stress and polarization may also have implications for the cultural climates within which athletes train, compete and develop. Polarized environments may produce conditions in which inclusive cultural change within sport organisations becomes more difficult to enact, as proposed reforms may attract polarized opposition, and as the implementation of inclusive practices may be contested across organisational hierarchies [17,32,33,49]. Conversely, polarized environments may also generate energy and resources for inclusion-oriented coalitions, particularly where stakeholders perceive sport as a site for the expression of broader cultural values [33,49]. The empirical disentanglement of these dynamics — including how polarization may simultaneously accelerate progress in some contexts while obstructing it in others — remains an important challenge for future research [33].

Considered together, the literature reviewed in this section suggests that social polarization constitutes a meaningful contextual condition within which sport unfolds, and that its convergence with minority stress and structural stigma is likely to be consequential for the mental health and functioning of athletes who occupy minority positions [16,17,22,32,33,34,35,38,39,40]. While direct empirical investigation of polarization within sport remains comparatively underdeveloped, the integration of conceptual frameworks from political psychology, minority stress theory and sport-specific research provides a productive foundation for future inquiry. The clinical and policy implications of these convergences are likely to require sustained attention from sport medicine, sport psychiatry, sport governance and broader public-health communities, with particular attention to the protection of athletes who may otherwise bear the cumulative weight of multiple, interacting forms of disadvantage [3,4,5,16,17,30,33,40].

Subsequent sections of this review return to the empirical literature on physiological and psychological consequences, mediating and moderating factors, and intervention frameworks, drawing on the conceptual foundations articulated to this point and on the specific evidence summarised in earlier sections. The integration of these elements is intended to support a comprehensive account of how athletes who occupy minority positions navigate the contemporary sport environment, and of how research, clinical practice and policy may collectively contribute to improvements in the conditions of their participation [3,4,16,17,30,33].

8. Physiological and Psychological Consequences

8.1 Biological Outcomes of Minority Stress

A growing body of work has examined the biological correlates and consequences of minority stress, with attention to whether the chronic psychosocial exposures articulated within minority stress theory may translate into measurable physiological signatures consistent with elevated allostatic load [9,41]. Systematic reviews of the relationship between minority stress and biological outcomes in sexual and gender minority populations have indicated that the available evidence is heterogeneous, with approximately half of the studies examined reporting statistically significant associations between an indicator of minority stress and a biological outcome [41]. The heterogeneity of these findings has been attributed to several factors, including variability in the operationalisation of minority stress, the selection of biological indicators, sample characteristics and the relatively young state of the empirical literature [16,41]. Despite this heterogeneity, the cumulative pattern of findings has been interpreted as broadly consistent with the view that chronic exposure to minority stressors may, under at least some conditions, be associated with biological signatures consistent with chronic stress activation [9,41].

The hypothalamic–pituitary–adrenal (HPA) axis has been a particular focus of biological research in minority stress. Studies have examined patterns of cortisol secretion across the diurnal cycle, the cortisol awakening response, and reactivity to laboratory stressors among sexual and gender minority individuals, with mixed but suggestive findings indicating altered cortisol patterns in some subgroups [9,17,41]. Laboratory designs that have administered standardised social stress tasks to sexual minority young adults raised in environments with varying levels of structural stigma have suggested that prior exposure to high-stigma environments may be associated with blunted cortisol responses consistent with the patterns observed in other populations exposed to chronic adversity, including survivors of childhood maltreatment [17,41]. These observations are consistent with the proposition that minority stress may produce sustained alterations in HPA axis function that persist beyond the duration of acute exposure, with implications for downstream risks of cardiovascular and mental health conditions [9,17,41].

Inflammation has emerged as a complementary biological pathway through which minority stress may exert health effects. Cytokines such as interleukin-6, tumour necrosis factor-alpha and C-reactive protein, which signal both within the immune system and to the central nervous system, have been associated with depressive and anxiety symptoms in general population studies, with chronic low-grade inflammation increasingly implicated as a mechanism linking psychosocial stress to mental and physical health outcomes [9,42]. Within sexual minority populations, a moderated mediation model of childhood adversity and mental health in young men who have sex with men has suggested that elevated inflammatory markers may operate as a downstream pathway through which childhood adversity and minority stress are translated into adult mental health outcomes [42]. The integration of inflammatory biomarkers into broader frameworks of minority stress research is at a relatively early stage, but suggests promising directions for the further elucidation of biological pathways [9,41,42].

The role of childhood adversity as an upstream contributor to adult biological dysregulation has been increasingly emphasised within minority stress research. Sexual and gender minority individuals may, on average, experience higher rates of childhood adversity, including family rejection, school bullying and exposure to community violence, with cumulative effects on developmental neurobiology that may interact with adult minority stress exposures to shape biological outcomes [42]. Within the allostatic load framework, the convergence of early-life adversity and ongoing adult stress may produce particularly elevated allostatic load and associated health risks, providing a developmental account of disparities that complements cross-sectional analyses of contemporary exposures [9,17,42]. The implications of these dynamics for athletes — who may have entered competitive sport carrying the biological residue of earlier adversity, and who may continue to experience minority stress in the course of athletic careers — remain insufficiently characterised in the published literature, though the convergence has been described as plausibly consequential [9,16,17,42].

Within the sport context, the integration of biological monitoring with attention to minority stress offers opportunities and challenges. Elite sport environments routinely deploy biomarkers including cortisol, testosterone, inflammatory indices, heart rate variability and metabolic measures to assess training adaptation and recovery, providing a measurement infrastructure that could, in principle, support biopsychosocial research on minority-stressed athletes [10,11,12,14]. The interpretation of such biomarkers in this context, however, requires careful consideration of the multiple determinants of physiological response in athletes, including training load, nutritional status, sleep, environmental conditions and acute stressors [10,11,12]. Methodological work designed to disentangle the contributions of identity-related and training-related factors to biological outcomes is likely to be necessary before firm conclusions can be drawn about the embodied consequences of minority stress in elite athletes [9,10,17,41,42].

8.2 Mental Health Outcomes in Minority-Stressed Athletes

The mental health consequences of minority stress in athletes draw on a literature that combines general findings from minority stress research, sport-specific studies of mental health and qualitative accounts of athletes' experiences. Depression and anxiety, the most extensively documented mental health outcomes associated with minority stress, have been reported at elevated prevalences in sexual and gender minority populations across multiple jurisdictions and study designs, with effect sizes that, while variable, suggest meaningful differences relative to non-minority comparison groups [15,16,19,30]. Within athletic populations, qualitative work and the small number of available quantitative studies have indicated that LGBTQ+ athletes may experience elevated rates of depressive and anxiety symptoms, with the convergence of minority stress and sport-specific stressors potentially producing patterns of psychological distress that are not fully captured by either literature in isolation [24,26,27,30].

Post-traumatic stress and trauma-related symptomatology constitute additional outcomes of concern within minority-stressed populations, particularly among individuals who have experienced sexual assault, intimate partner violence or hate-motivated victimisation. Research with LGBTQ survivors of sexual assault has documented elevated rates of post-traumatic stress disorder, depression, anxiety and substance use, with the cumulative experience of minority stress and trauma producing patterns of psychological symptomatology that may differ in important respects from those observed in heterosexual survivors [50]. Within sport contexts, where harassment and abuse have been documented and where the cultural conditions of sport may complicate disclosure and help-seeking, sexual minority athletes who have experienced victimisation may face particular barriers to recovery [40,50]. The integration of trauma-informed approaches into sport medicine and sport psychiatry practice, with specific attention to the convergence of trauma and minority stress, has been recommended as a priority area for development [2,3,5,40,50].

Suicidality has been documented at elevated rates among sexual and gender minority populations across general population studies, with particularly high estimates among transgender individuals, who in some samples have reported lifetime suicide attempt prevalences of approximately one in four, compared to substantially lower estimates among cisgender individuals [16,19,30]. Within sport, qualitative accounts have referenced suicide attempts and suicidal ideation in association with experiences of harassment, exclusion and disclosure-related distress, although direct prevalence estimates among athletes remain sparse [26,27]. The convergence of athlete-specific risk factors for suicidality — including severe injury, performance failure, identity disruption during retirement and substance use — with minority-stress related factors may produce particular vulnerability in the sexual and gender minority athlete population [1,2,3,16,26,30]. The recognition of this convergence has been argued to warrant explicit suicide risk assessment and prevention strategies in sport contexts working with sexual and gender minority athletes [2,5,30,40].

Eating disorders and disordered eating have been documented at elevated prevalences in some sexual minority populations, particularly among gay and bisexual men, with potential interactions with sport-specific demands for weight management, body composition and aesthetic presentation [1,2,16]. Studies of athletes more broadly have suggested that disordered eating may be more common in disciplines emphasising leanness, weight categories and aesthetic performance, with female athletes and younger athletes often more affected [1,2]. Within sexual minority athletic populations, the convergence of body-related minority stress, body image concerns prevalent in sexual minority communities and sport-specific body norms may produce patterns of disordered eating that are not fully reducible to either literature alone [1,2,24]. The literature on eating disorders in transgender athletes is comparatively less developed but suggests that gender dysphoria, body composition changes associated with hormone therapy and exposure to scrutiny of athletic bodies may all contribute to elevated risk [29,30].

Substance use, including alcohol misuse and recreational drug use, has been documented at elevated rates in general sexual minority populations, with patterns that may interact with sport-specific behaviours around alcohol use and team-based social practices [1,2,16]. Athletes more broadly have been characterised in some studies as exhibiting elevated patterns of alcohol consumption during off-season and post-competition periods, with binge drinking and high-risk patterns of consumption associated with sport participation in some contexts [1,2]. The empirical literature on substance use specifically in sexual minority athletes is limited, but the broader minority stress literature suggests that alcohol and drug use may function in some cases as a coping response to identity-related stress, with potential interactions with athletic responsibilities and recovery requirements [1,2,16,26]. The integration of substance use considerations into broader mental health assessments of minority-stressed athletes has been recommended as a priority for clinical practice [2,5].

Beyond the principal diagnostic categories, broader psychological distress, life dissatisfaction and reduced psychological wellbeing have been documented as outcomes of minority stress that may not meet formal diagnostic criteria but that nonetheless reflect meaningful burdens [16,19]. Empirical studies of psychological wellbeing in queer populations have indicated that proximal minority stressors, including self-stigma, concealment and expectations of rejection, may be particularly negatively associated with psychological wellbeing, with non-binary individuals and those with diverse gender identities reporting higher minority stress than cisgender female counterparts in some samples [19]. These findings underscore the importance of attending to subclinical and wellbeing-focused outcomes within research on minority-stressed athletes, both because such outcomes may represent the most common consequences of minority stress and because their accumulation over time may have implications for clinical risk and for the broader quality of athletes' lives [16,19].

8.3 Sleep, Recovery and Mental Health

Sleep has been emphasised as a critical physiological domain at the intersection of training, recovery and mental health for athletes, with expert consensus recommendations specifying individualised sleep targets and integrated approaches to sleep management within athletic populations [13]. Within general population research, sleep disturbance has been documented as both a consequence and a risk factor for common mental disorders, with bidirectional relationships between sleep and mood that may also be relevant for athletes [13]. Within minority-stressed populations, sleep disturbance has been documented at elevated rates across studies, with mechanisms including hypervigilance for safety threats, rumination over identity-related concerns, exposure to harassment via mobile devices, and the activation of stress physiology in ways that may impair sleep onset, continuity and architecture [13,16,17].

The convergence of sport-related and identity-related contributors to sleep disturbance may be particularly consequential for minority-stressed athletes. Sport-related contributors include training timing and intensity, travel across time zones, competitive anxiety, the proximity of major events and the routine demands of life as an elite athlete [13]. Identity-related contributors include exposure to harassment, vigilance for stigmatising encounters, distress related to disclosure decisions

and the cognitive load of identity management within sporting environments [13,16,26,27]. The cumulative effect of these contributors may exceed what would be expected from any single source, and may produce sleep disturbance with consequences for cognitive performance, mood, immune function, recovery and ultimately competitive performance [13].

Implications of these convergences for clinical practice include the recommendation that mental health screening of athletes from minority backgrounds incorporate detailed assessment of sleep, with attention to sleep duration, sleep onset latency, frequency of nocturnal awakenings, daytime sleepiness and the patterns of sleep disturbance characteristic of insomnia disorder [2,13]. Interventions intended to improve athlete sleep, including cognitive behavioural therapy for insomnia, sleep hygiene education, light exposure protocols and pharmacological management where clinically indicated, may all be relevant for minority-stressed athletes, though attention to the identity-related contributors to sleep disturbance is likely to be necessary to support sustained improvement [2,5,13]. The integration of sleep monitoring with broader athlete wellness frameworks may also help to identify minority-stressed athletes who would benefit from targeted intervention [3,4,13].

8.4 Performance-Related Consequences

Beyond mental health and biological outcomes, minority stress may have specific consequences for the cognitive, motivational and behavioural dimensions of athletic performance. Vigilance for identity-targeted hostility, the cognitive labour of identity management, and the emotional load of operating within stigmatising environments may all draw upon attentional and executive resources that are central to athletic performance [15,16,26]. Empirical literature outside sport has documented effects of vigilance, rumination and concealment on cognitive performance, working memory and decision-making, with implications that may extend to athletes whose performance depends on rapid, accurate processing of complex environmental information [16,17,26]. Within the qualitative literature on LGBTQ+ student-athletes, accounts of distracted training, impaired focus during competition and difficulty fully engaging with team interactions are consistent with the proposition that minority stress may compete with performance demands for cognitive and emotional resources [26,27].

The motivational consequences of minority stress in sport may be especially consequential. Athletes who experience hostile climates may develop ambivalent relationships with their sport, in which the activity that once provided meaning and identity becomes associated with negative affect, vigilance and the management of difficult interactions [24,26,27]. The cumulative effect of these dynamics has been described in some accounts as a gradual disengagement from sport, in which initial enthusiasm gives way to reduced commitment, missed training sessions and ultimately withdrawal from active participation [24,26,47]. Conversely, athletes who experience affirming team environments may report reinforced motivation and deeper engagement with sport, illustrating the role of contextual conditions in shaping the motivational trajectory of minority athletes [24,26]. The implications for talent development pipelines, retention in elite sport and the broader sustainability of athletic careers are likely to be substantial, even if direct quantification remains difficult [24,26,47].

Burnout, characterised by emotional exhaustion, depersonalisation and reduced sense of accomplishment, has been documented in athletic populations as a consequence of prolonged psychological and physical demands that may exceed the capacity for recovery [1,2,3]. The convergence of athletic stressors with minority stressors may elevate burnout risk in minority athletes, particularly when identity-related stress contributes to ongoing emotional load beyond what is captured by purely sport-related measures [1,2,16,26]. Overtraining syndrome, with its associated neuroendocrine, mood, sleep and performance disturbances, may also interact with minority stress, although the empirical disentanglement of these contributions remains limited [10,11,12]. The recognition that minority-stressed athletes may face elevated risk for both burnout and overtraining-related dysfunction has implications for training prescription, monitoring practices and clinical attention within elite sport [1,2,3,11,12].

A complementary consideration concerns how stress and coping appraisals interact with performance. Research on athletes more broadly has indicated that the interpretation of competitive stress as facilitative or debilitative may shape subsequent performance, with appraisal processes amenable to psychological skills training [1,2,44,45]. For minority-stressed athletes, the additional layer of identity-related stress may complicate appraisal processes, particularly where the meaning of competitive stress is bound up with broader concerns about visibility, representation and identity [16,26,27]. Interventions that address appraisal, coping and identity-related concerns in an integrated manner may therefore be especially relevant for this population, though the empirical development of such interventions within sport-specific contexts remains in an early stage [44,45,49].

8.5 The Shame–Loneliness–Relationship Pathway

A complementary theoretical and empirical strand within the minority stress literature has emphasised the role of shame, loneliness and disrupted relationships as pathways linking stigma exposure to mental and physical health outcomes [52]. A relational model of sexual minority mental and physical health has proposed that shame — defined as a painful self-conscious emotion involving the global negative evaluation of the self — operates as a central mediator between minority stress and a range of downstream outcomes, including impaired interpersonal relationships, social withdrawal, loneliness and the corresponding physiological consequences of social isolation [52]. Within this framework, shame may be both an outcome of internalised stigma and a process that produces additional consequences, including the withdrawal from social contexts in which support might otherwise be obtained [52].

The relational model emphasises that the impact of minority stress is not solely intrapsychic but is enacted within and across relationships. Shame may motivate concealment, the avoidance of intimacy and reduced willingness to engage in self-

disclosure, all of which may compromise the quality of close relationships within which support is typically negotiated [52]. The resulting loneliness — both the subjective experience of social disconnection and the objective reduction in supportive social network ties — has been associated with elevated risks of depression, anxiety, suicidality, cardiovascular morbidity and mortality across general population studies, providing a plausible pathway by which minority stress may be translated into broader health consequences [52]. The relational model thereby integrates psychological, social and biological dimensions of minority stress within a framework that emphasises the relational character of human life and the centrality of relationships to wellbeing [52].

Within the sport context, the relational pathway carries particular implications given the team-based, group-oriented nature of much athletic activity. Athletes whose sport involves close interpersonal engagement with teammates, coaches and support staff may find that minority stress-related shame compromises their capacity to engage authentically with these relationships, with consequences for both psychological wellbeing and team functioning [16,24,26,52]. The locker-room dynamics, post-training social interactions, travel arrangements and team rituals that constitute the social fabric of sport may all become sites in which shame is activated and concealment is enacted, with cumulative effects on the depth of relational engagement available to minority-stressed athletes [26,52]. The recognition of this dynamic has implications both for individual clinical intervention and for the cultivation of team cultures in which authentic engagement is supported [3,4,8,52].

The integration of the relational model with the broader minority stress framework reinforces the case for multi-level approaches to athlete care. At the individual level, interventions that address shame, foster self-compassion and support the development of authentic self-presentation may be relevant for minority-stressed athletes [16,52]. At the relational level, interventions that strengthen team cultures, support relational repair following identity-related stress and provide opportunities for affirming connection may complement individually focused work [4,8,26,52]. At the broader cultural level, the reduction of stigma and the cultivation of inclusive sporting environments may attenuate the conditions under which shame is initially activated, with corresponding implications for the relational, psychological and biological consequences that follow [17,21,22,52]. The integration of these levels within a coherent intervention strategy has been proposed within several recent frameworks for the promotion of mental wellbeing in elite sport [3,4,40].

Beyond its theoretical implications, the relational model has empirical correlates relevant to athlete populations. Loneliness has been documented as a meaningful predictor of distress in studies of athletes, with athletes who report reduced social support endorsing higher symptom levels and lower wellbeing [1,4,8]. The integration of social-identity perspectives, which emphasise the value of group memberships for mental health, with the relational model's attention to shame and loneliness provides a complementary framework in which both the resources of social belonging and the obstacles to its full enactment are considered [8,52]. Within the present review, the relational pathway constitutes an additional dimension along which the cumulative effects of minority stress and polarization in sport may be understood, with implications for research, clinical practice and the design of sporting environments [16,17,33,52].

Taken together, the literature reviewed in this section indicates that the consequences of minority stress in athletes operate across biological, psychological, behavioural, relational and performance-related dimensions, with consequences that may be substantial even where any single indicator falls short of clinical thresholds [9,15,16,17,41,42,50,52]. The integration of these dimensions within comprehensive accounts of athlete health requires multidisciplinary collaboration, attention to the specific contexts in which sport unfolds, and ongoing engagement with the populations whose experiences the literature seeks to characterise. Subsequent sections of the review address the mediating and moderating factors that may attenuate or amplify these consequences, and the intervention frameworks that have been articulated to support the wellbeing of athletes from minority backgrounds [3,4,16,17,40].

9. Mediating and Moderating Factors

9.1 Social Support as Buffer and Resource

Social support occupies a central place within the minority stress framework as both a moderator of the effects of stress on health and a resource that may operate independently to promote wellbeing [15,16]. Within the original articulation of minority stress theory, social support — encompassing emotional, informational, instrumental and appraisal-related forms — was conceptualised as one of the principal coping resources that may ameliorate the impact of distal and proximal stressors on mental health outcomes [15]. Subsequent empirical work has produced broadly consistent findings, with sexual and gender minority individuals who report stronger social support generally exhibiting better mental health than those with more limited support, although the magnitude and specificity of these associations vary across studies and populations [16,19].

Within the sport context, social support has been characterised as operating through multiple channels, including support from coaches, support from teammates, support from family and personal networks, and support from formal practitioners such as sport psychologists, sport psychiatrists and athletic trainers [3,4,8,26]. Studies of athlete mental health frameworks have emphasised the importance of healthy and diverse avenues for social support in athletes' sporting and non-sporting lives, with evidence that athletes generally prioritise personal relationships outside of sport for emotional support, but that within-sport relationships — particularly with teammates — remain meaningful for the day-to-day experience of training, competition and identity [3,4]. Frameworks for the promotion of mental wellbeing in elite sport have identified social connection as among the most influential factors enhancing athlete wellbeing, while poor social connection has been associated with reduced self-esteem, elevated depressive symptoms and increased psychological distress [3,4].

For sexual and gender minority athletes specifically, the meta-ethnographic literature on LGBTQ student-athlete experience has identified team support as a meaningful protective factor that may attenuate the impact of distal stressors on mental health and engagement [26]. Accounts have described instances in which heterosexual teammates wore visible symbols of solidarity such as "gay pride socks" alongside their LGBTQ+ peers during competition, in which transgender athletes felt "belonging" and "support" within their college teams, and in which lesbian student-athletes received affirming responses from teammates and coaches following disclosure [26]. The presence of substantial numbers of LGBTQ+ teammates in some sports — including women's basketball, softball, hockey and rugby — has further been described as contributing to a sense of community in which disclosure feels safer and identity more readily accepted [26].

The buffering function of social support, however, depends upon the availability, accessibility and quality of the support relationships in question, and these are not equally distributed across athletes or contexts [16,26]. Minority-stressed athletes in environments lacking visible LGBTQ+ peers, in sports characterised by overt hostility or in teams without supportive coaches may have limited access to the kinds of within-sport support that the broader athlete mental health literature emphasises [24,26,49]. Family-based support may also vary considerably, with some athletes drawing strong support from accepting families while others navigate complicated relationships with families of origin in which sexual orientation or gender identity is a source of conflict [16,18,26]. The recognition of this heterogeneity has informed calls for sport organisations to actively cultivate supportive environments rather than rely on athletes' own networks to provide the protection that minority stress theory identifies as necessary [3,4,40].

A complementary literature has examined the role of formal support — the provision of mental health services, athletic trainer support and integrated multidisciplinary care — in supporting athlete wellbeing [2,3,4,5,30]. Within the IOC consensus statement on mental health in elite athletes, and in associated frameworks for the promotion of athlete wellbeing, the availability of evidence-based mental health services has been identified as a necessary component of comprehensive athlete care, with particular attention to the cultural competence required to support sexual and gender minority athletes [2,3,4,30]. The recognition that many sporting organisations have historically under-resourced mental health services has informed advocacy for investment in this area, including the integration of sport psychiatrists and psychologists within multidisciplinary care teams [2,3,4,5].

9.2 Coping Strategies in Minority-Stressed Athletes

Coping has been conceptualised within minority stress theory as a set of cognitive, behavioural and emotional processes through which individuals manage the demands placed upon them by minority stressors [15,16]. Empirical work on coping in sexual and gender minority populations has documented a diverse repertoire of strategies, ranging from cognitive reappraisal and meaning-making through behavioural avoidance to identity concealment and the cultivation of community ties [16,53]. A study of strategies for coping with minority stress among queer young adults examined the frequency of use of various coping strategies and their associations with demographic characteristics and mental health outcomes, suggesting that some coping strategies — including those involving social support and community engagement — were associated with better mental health, while others, particularly avoidance-based strategies, were associated with poorer outcomes [53].

Within the sport-specific literature, coping has been described as a multidimensional construct with both adaptive and maladaptive expressions. Adaptive strategies documented among athletes include active problem-solving, the use of imagery, seeking social support, planning ahead, and cognitive reappraisal of stressors as challenges rather than threats [1,2,3,44,45]. Maladaptive strategies include avoidance, denial, substance use and behavioural disengagement, with the latter sometimes associated with elevated symptoms of depression, anxiety and burnout [1,2,3]. For minority-stressed athletes, the coping repertoire available within the sport context may be shaped by the broader cultural conditions of the team and organisation, with certain strategies — particularly those involving disclosure, identity expression or engagement with formal mental health services — depending on the perceived safety of these actions within the sporting environment [16,26,49].

The meta-ethnographic synthesis of LGBTQ student-athlete experience has identified specific coping responses to the stressors encountered in college sport, including tolerance, hiding, self-hating and the cultivation of personal resilience [26]. Tolerance has been described as a coping response in which athletes accept hostile climates as a feature of the environment, sometimes with active downplaying of the seriousness of homophobic language or conduct; hiding involves the strategic concealment of sexual minority identity from teammates, coaches or peers; self-hating involves the internalisation of negative valuations and the directing of negative affect inward; and resilience involves the integration of identity-affirming meaning, the cultivation of supportive relationships and the development of effective management strategies for ongoing stressors [26]. Each of these responses may serve protective functions in some respects while carrying costs in others, with implications for both immediate functioning and longer-term outcomes [16,26].

A particular concern within this literature is the bidirectional relationship between coping and the broader environment. Coping strategies that may be protective in supportive environments — including disclosure, the cultivation of identity-affirming community and engagement with mental health services — may carry significant risks in hostile environments, leading minority-stressed athletes to rely on strategies that are less effective but more contextually safe [15,16,26]. The recognition of this dynamic has informed calls for the cultivation of supportive environments as a prerequisite to the broader availability of adaptive coping options, since the simple promotion of "good coping" without attention to the conditions under which coping unfolds may place excessive burden on individual athletes [3,4,16,26].

Coping strategies may also vary across developmental stages, sports, levels and cultural contexts. Adolescents may have a more limited repertoire of coping options than adults, particularly in compulsory contexts such as family and school, and may rely more heavily on strategies such as avoidance and concealment when other options are unavailable [18,26]. Athletes in collectivistic cultural contexts may engage in coping strategies that emphasise family-based support, the maintenance of harmony with broader social expectations and the careful management of disclosure, with implications for both research design and intervention adaptation [16,27,28]. The recognition of this variability has reinforced the case for context-sensitive approaches to coping research and practice, capable of accommodating the diversity of conditions under which minority-stressed athletes operate [16,26,27].

9.3 Mindfulness and Self-Compassion

A growing body of empirical work has examined the role of mindfulness and self-compassion as potential moderators of the relationship between minority stress and mental health [54,55]. Mindfulness, conceptualised as nonjudgmental awareness of the present moment, has been theorised to support adaptive responses to stress by reducing experiential avoidance, fostering acceptance of distressing experiences and supporting cognitive flexibility [54,55]. Self-compassion, conceptualised as a stance of kindness toward oneself in the face of suffering, has been theorised to attenuate the impact of stigma by reducing self-criticism, fostering a sense of common humanity and supporting equanimity in the presence of difficult experiences [54].

A meta-analytic and systematic review of self-compassion, minority stress and mental health in sexual and gender minority populations has indicated that self-compassion is associated with reduced symptoms of depression and anxiety, lower internalised stigma and improved psychological wellbeing, with effect sizes that, while variable, suggest meaningful protective associations [54]. The mechanisms through which self-compassion may operate include the reduction of self-critical responses to identity-related distress, the buffering of the impact of perceived discrimination on self-concept and the cultivation of a stance of acceptance toward stigmatised identity that may complement broader processes of identity development and integration [54]. Within this literature, self-compassion has been distinguished both from self-esteem — which depends upon positive self-evaluation that may be vulnerable to negative feedback — and from self-indulgence, which may involve avoidance of necessary efforts to address ongoing concerns [54].

A complementary study of minority stress, mental health, mindfulness and self-compassion as moderators among young sexual minority men has employed structural equation modeling to examine the interaction of stress exposures with these protective factors [55]. Findings have suggested that mindfulness and self-compassion may attenuate the impact of minority stress on mental health outcomes, with implications for the development of intervention approaches that integrate these processes [55]. The translation of these findings to athletic populations remains in an early stage, but the broader literature on psychological skills training in sport has incorporated mindfulness-based approaches with documented benefits for performance, recovery and wellbeing [3,4,45]. The integration of self-compassion-focused work with athlete mental health support has been recommended within several recent frameworks, particularly for athletes navigating high-performance expectations alongside identity-related stress [3,4,55].

Within sport-specific applications, mindfulness training has been investigated as a strategy for managing competitive stress, supporting attentional control and facilitating recovery from setbacks [45]. Mindfulness-based programs developed for athletes have included components addressing breath awareness, body scanning, present-moment focus during training and competition, and acceptance-based responses to anxiety and self-critical thoughts [45]. The adaptation of such programs to address the specific concerns of minority-stressed athletes — including identity-related distress, exposure to discrimination and the chronic vigilance documented in qualitative work — represents a productive direction for further development [16,26,45,54,55].

9.4 Resilience and Positive Identity Processes

The minority stress framework has incorporated, from its initial formulation, attention to processes of resilience and the cultivation of positive identity, although critics have argued that the deficit-focused emphasis of the framework risks under-attention to these dimensions [16,19]. Resilience in this context refers not to an individual personality trait alone but to a set of dynamic processes through which individuals draw upon personal, relational and community-level resources to maintain functioning in the face of adversity [16,56]. Empirical work on resilience in sexual and gender minority populations has documented diverse strategies and resources, including the cultivation of identity-affirming narratives, the maintenance of supportive relationships, the development of effective coping repertoires and engagement with community organisations [16,19,56].

A study of the importance of social support, positive identity and resilience in the successful aging of older sexual minority men has provided a particularly illuminating account of how protective processes operate over the life course [56]. Older sexual minority men who reported greater social support, more positive sexual identity and stronger resilience were found to exhibit better mental health and broader indicators of successful aging, suggesting that the cultivation of these resources over time may have cumulative protective effects [56]. The integration of positive identity development with minority stress theory has been argued to support a more balanced account of the conditions under which sexual and gender minority individuals develop, with implications for the design of interventions that explicitly address identity-affirming processes alongside the management of stress exposures [16,56].

Within sport-specific contexts, resilience has been documented as a meaningful protective process among LGBTQ+ athletes who have navigated hostile environments while sustaining engagement with their sport [26]. Qualitative accounts have described athletes who, having accepted their identity, developed a sense of confidence and strength that supported continued participation despite ongoing exposure to stress [26]. The integration of identity-affirming narratives with the broader social-identity perspective on sport has been argued to support the development of approaches in which minority identity is recognised as a potential source of strength rather than solely as a source of vulnerability [8,26,56]. The development of resilience-focused interventions for minority-stressed athletes, however, requires care to avoid placing excessive burden on individual athletes for the management of structurally determined stressors, with the broader environmental conditions remaining a primary site for intervention [3,4,16,17].

A particular consideration within this literature concerns the trade-offs associated with disclosure and "outness." While greater outness has often been associated with better mental health outcomes in general population research, the specific contexts in which outness occurs may modulate these effects substantially [16,26]. In supportive contexts, disclosure may facilitate access to identity-affirming community, reduce the cognitive load of concealment and support authentic relational engagement [16,52,56]. In hostile contexts, disclosure may expose individuals to elevated distal stressors with potentially adverse consequences for mental health and physical safety [15,16,26]. The recognition of this complexity has reinforced the case for context-sensitive approaches to disclosure, in which the broader environment is taken into account in supporting athletes' choices about how, when and to whom to disclose [16,26,49,56].

9.5 Community Connectedness and Group-Level Resources

Beyond individual-level resources, the minority stress framework has emphasised the importance of group-level coping resources that may not be reducible to individual coping efforts [15,16]. These include the existence of identity-affirming communities, the availability of community organisations and resources, the visibility of role models and the cultural narratives within which minority identity is understood [16,19,56]. Empirical work has documented that community connectedness — variously operationalised as participation in community organisations, engagement with identity-affirming media and the presence of supportive social networks within the broader minority community — may be associated with better mental health outcomes among sexual and gender minority individuals [16,56].

Within sport-specific contexts, LGBTQ+ specific sport communities and events have been documented as providing identity-affirming opportunities for participation that may not be available within mainstream sport. The Gay Games, the EuroGames and other LGBTQ+ specific events have been studied as contexts in which sexual and gender minority individuals may experience belonging, recognition and affirmation that may complement or contrast with their experiences in mainstream sport [48]. A study conducted in the context of the 2023 Gay Games examined psychological distress among LGBTQ athletes, spectators, volunteers and non-attendees, with implications for understanding how participation in identity-affirming sporting events may shape mental health outcomes [48]. Such events have been described as both performance contexts and community gatherings, with the social dimensions of participation potentially carrying as much significance as the competitive dimensions for many participants [48].

The relationship between mainstream and LGBTQ+ specific sport contexts has been the subject of complex theoretical discussion. LGBTQ+ specific sport may provide spaces in which identity is not a source of additional stress, in which community is more readily accessible and in which the broader cultural climate is more affirming [48]. Mainstream sport, by contrast, may provide opportunities for visibility, advocacy and the participation in major events that LGBTQ+ specific contexts may not offer [24,26]. Many sexual and gender minority athletes participate in both contexts, drawing different resources from each, while others may find one context more aligned with their needs and preferences than the other [24,26,48]. The recognition that these contexts may serve complementary rather than competitive functions has informed approaches to athlete care that acknowledge the diverse forms of participation available [24,26,48].

A further consideration within this literature concerns the role of group identification within minority communities. Strong identification with sexual or gender minority identity — including connection with community organisations, engagement with community narratives and the embedding of identity within meaningful relationships — has been associated with better wellbeing in some studies, though the relationship is not universal and may interact with other identity dimensions [16,19,56]. The integration of community connectedness with the broader social identity approach to athlete mental health has been argued to provide a comprehensive framework within which both the resources of group belonging and the obstacles to its full enactment can be considered [8,16,56].

9.6 Athletic Identity and the Multiplicity of Social Identities

The social identity approach to athlete mental health has emphasised that the social identities to which individuals subscribe — and the relationships between these identities — may have substantial implications for psychological wellbeing [8]. Athletic identity, in particular, has been characterised as a powerful organising construct for many elite athletes, with both protective and risk-related implications [8]. Strong identification with athletic identity may provide a sense of meaning, belonging, esteem and purpose, with documented associations between social identification and a range of mental health indicators [8]. At the same time, a narrowly defined athletic identity may render individuals vulnerable to mental health difficulties during sporting transitions, including injury, deselection and retirement, since the loss or disruption of athletic role may carry particular costs for those whose identity has been concentrated in this domain [8].

For minority-stressed athletes, the relationship between athletic identity and minority identity may be especially complex. In some accounts, athletes have described prioritising athletic identity over minority identity as a strategy for managing the costs of identity disclosure, with the cultivation of athletic role serving as both a coping mechanism and a source of personal meaning [26,49]. In others, athletic identity and minority identity have been integrated through the cultivation of narratives in which minority status is understood as part of the athletic self rather than a separate domain, with implications for visibility, advocacy and the broader cultural impact of athletic participation [26,49]. The specific configuration of identities within any given athlete may depend on developmental history, sport context, community connections and individual preferences, with implications for both research and practice [8,16,26].

The cultivation of multiple social identities has been argued, within the social identity approach, to constitute a protective factor against the mental health consequences of identity-related stress [8]. Athletes who maintain group memberships beyond their sport — including in family, friendship, educational, religious, professional and community contexts — may have more diverse psychological resources upon which to draw, with associated benefits for their capacity to navigate stressors and to support sustained wellbeing [8]. Frameworks for the promotion of athlete mental wellbeing have emphasised the development of non-athletic identity as a complement to athletic identity, particularly in preparation for transitions out of competitive sport [3,4,8]. For minority-stressed athletes, the diversity of social identities — including identity-affirming community memberships — may have particular protective value, with the integration of athletic, minority and other identities supporting both wellbeing and authentic self-expression [8,16,56].

The dynamics of identity during sporting transitions warrant particular attention. The transition into elite sport, the navigation of mid-career challenges and the eventual exit from competitive sport all involve identity processes that may interact with minority stress in complex ways [1,3,8]. Athletes whose identity has been substantially organised around sport may face particular difficulties during retirement transitions, with documented increases in depression, anxiety and identity-related distress during this period [1,3,8]. For minority-stressed athletes, the additional layer of identity-related work — including the navigation of community connections, the integration of identity across life domains and the management of disclosure in non-sporting contexts — may add complexity to transition processes [8,16,26,56]. The integration of identity-focused work into transition support has been recommended within several recent frameworks, with attention to the specific concerns of athletes from minority backgrounds [3,4,8,56].

Taken together, the literature reviewed in this section indicates that a range of mediating and moderating factors may shape the consequences of minority stress and polarization for athlete mental health and functioning. Social support, coping strategies, mindfulness, self-compassion, resilience, community connectedness and the configuration of social identities all appear to influence the trajectory of outcomes, with substantial variability across individuals, contexts and developmental stages [8,15,16,26,52,53,54,55,56]. The integration of these factors within comprehensive intervention frameworks, attentive to both individual-level processes and the broader contextual conditions within which they unfold, is taken up in the next section of the review [3,4,16,17,40].

10. Interventions, Frameworks, and Recommendations

10.1 The Intervention "Toolkit" for Minority Stress

A comprehensive review of interventions designed to reduce sexual minority stress has identified a diverse "toolkit" spanning individual, dyadic, group, organisational and structural levels of analysis, with the cumulative implication that the most promising approaches are likely to be multi-component and to operate across several layers of the socioecological framework [57]. Individual-level interventions documented in this review include affirmative cognitive behavioural therapy adapted for sexual and gender minority individuals, acceptance- and mindfulness-based approaches, motivational interviewing aimed at substance use behaviours that may interact with minority stress, and trauma-focused interventions for individuals exposed to identity-related victimisation [57]. Dyadic and family interventions include couples-focused therapies for same-sex relationships and family-acceptance interventions designed to support parental responses to sexual minority adolescents [57].

Group-level interventions include peer support programs, gay-straight alliances in school contexts, identity-affirming community organisations and group-based therapeutic programs informed by minority stress theory [57]. Organisational-level interventions include workplace and educational policies, the development of inclusive practices in healthcare and other service settings, and the cultivation of cultural climates that affirm sexual and gender minority identities [57]. Structural-level interventions include the reform of laws and policies that produce or sustain structural stigma, public-information campaigns intended to shift cultural narratives, and the broader work of advocacy organisations seeking changes in social conditions [17,21,57]. The integration of these levels within coherent intervention strategies has been argued to be essential, since interventions limited to a single level may be unable to address the full range of conditions that contribute to minority stress and its consequences [16,17,57].

Within the sport-specific literature, the development of interventions explicitly informed by minority stress theory is at an earlier stage of development than in other settings, although several recent frameworks have begun to integrate minority stress considerations within broader athlete mental health approaches [3,4,30,40]. The translation of intervention work conducted in general sexual and gender minority populations to athletic contexts requires careful attention to the specific features of sporting environments, including the cultural conditions of teams, the demands of training and competition, the time pressures of the athlete schedule, and the regulatory contexts within which sport operates [3,4,16,57]. Pilot programs that have adapted affirmative cognitive behavioural approaches, mindfulness-based interventions or group-based supports for

athletes are noted in the broader literature, though systematic evaluation in athlete-specific populations remains an area for further development [16,45,54,55,57].

A particular consideration in the design of interventions for minority-stressed athletes concerns the integration of identity-related and sport-specific concerns. Generic mental health interventions delivered to athletes may not adequately address the specific stressors associated with sexual or gender minority status, while identity-focused interventions developed outside sport may not fully accommodate the specific demands and opportunities of the athletic context [16,26,57]. The development of integrated interventions that address both dimensions in a coordinated manner has been recommended within frameworks for the promotion of athlete mental wellbeing, with particular attention to ensuring that intervention design is informed by the lived experiences of athletes from minority backgrounds [3,4,57].

10.2 Mental Health Frameworks and Consensus Statements in Elite Sport

Several major consensus statements and frameworks have shaped the contemporary landscape of mental health practice in elite sport. The 2019 International Olympic Committee consensus statement on mental health in elite athletes provided a comprehensive synthesis of evidence on the prevalence, diagnosis and management of mental health symptoms and disorders in elite athletes, addressing topics including sleep disorders, depression, anxiety, eating disorders, attention deficit/hyperactivity disorder, bipolar and psychotic disorders, sport-related concussion, substance use and gambling disorders [2]. The statement also articulated general approaches to the management of mental health concerns in athletes, including psychotherapy, pharmacological treatment and the integration of mental health care within multidisciplinary sport medicine teams [2]. Within this framework, attention to sexual and gender minority athletes is encompassed within the broader emphasis on cultural humility, individualised care and the avoidance of stigmatising approaches [2].

The first international consensus statement on sports psychiatry, articulated through the International Society for Sports Psychiatry Summit, has further developed the conceptual and practical foundations of sports psychiatry as a medical and psychiatric specialty [5]. The consensus statement articulated three fields of activity within sports psychiatry: mental health and disorders in competitive and elite sports; sports and exercise in the prevention of and treatment for mental disorders; and mental health and sport-specific mental disorders in recreational sports [5]. Within each field, essential knowledge, skills and abilities — augmented by attitudes of cultural competence and non-judgmental engagement — were articulated, with particular attention to gender-affirming, minority-protective approaches to clinical care [5]. The recognition of sports psychiatry as a distinct specialty, supported by international consensus, has been argued to facilitate the integration of mental health expertise within sport medicine teams and to support the development of culturally competent care for athletes from diverse backgrounds [2,5].

A complementary framework has been articulated through the scoping review of athletic trainers' role in supporting competitive athletes with psychological issues [6]. This review identified a continuum of strategies through which athletic trainers — by virtue of their close, frequent contact with athletes — may contribute to mental health support, ranging from recognition and basic support through referral to specialist services to ongoing collaboration with mental health professionals [6]. The integration of athletic trainers within mental health frameworks has been argued to be particularly valuable given their accessibility to athletes, their familiarity with the sporting context and their potential role in early identification of mental health concerns [6].

Mental health literacy has emerged as a particular focus within elite sport mental health frameworks. The recognition that athletes, coaches and support staff often have limited knowledge of mental health conditions, treatment options and pathways to support has informed the development of targeted educational programs designed to enhance recognition of symptoms, reduce stigma and facilitate help-seeking [58]. Designing and delivering mental health literacy strategies in elite sport has been argued to require attention to the cultural conditions of sport, the specific concerns of athletes at different career stages and the integration of literacy programs with broader pathways to clinical care [58]. The adaptation of mental health literacy approaches for athletes from minority backgrounds, attentive to the specific concerns of these populations and to the cultural competencies required of those who deliver such programs, has been recommended as a priority within ongoing development [3,4,58].

The continuum of care model — in which mental health support spans promotion, prevention, early intervention, treatment and recovery — has been increasingly applied within elite sport contexts as a means of structuring comprehensive approaches to athlete wellbeing [2,3,4,5,6]. Within such models, sexual and gender minority athletes may benefit from attention across the continuum, with promotion and prevention activities reducing the contextual conditions that contribute to minority stress, early intervention identifying emerging concerns before they reach clinical thresholds, treatment offering culturally competent care for clinically significant conditions, and recovery support assisting athletes in sustaining wellbeing over time [2,3,5,6]. The implementation of continuum-of-care approaches in resource-constrained contexts and in environments with limited mental health workforce remains a significant challenge for the field [2,3,5].

10.3 Psychological Safety in Elite Sport

The construct of psychological safety, originally developed within organisational psychology, has been increasingly applied to elite sport contexts as a framework for understanding how environmental conditions support or undermine the disclosure of mental health concerns and the broader cultivation of authentic engagement with sport [4]. Within this literature, psychological safety has been defined in several ways, with one influential synthesis emphasising the perception that one is

protected from, or unlikely to be at risk of, psychological harm in sport [4]. More expansive definitions have incorporated additional dimensions, including the comfort to show one's authentic self, to take interpersonal risks, to ask for help, to disclose mental health concerns and to engage with vulnerability [4].

A theoretically informed model of psychological safety for mental health in elite sport has articulated how the presence or absence of psychologically safe conditions may contribute to better or worse mental health outcomes [4]. Within this model, psychologically safe environments are characterised by the ability of individuals to show their authentic selves rather than "wearing a mask," with stigmatising cultural norms regarding mental ill-health being actively challenged, mental health literacy being promoted, clear pathways to support being established, and psychological harms being actively minimised [4]. In such environments, help-seeking behaviour may be more readily expressed, and mental health concerns may be more likely to be identified, supported and managed before they progress to severe stages [4]. Conversely, psychologically unsafe environments are characterised by the absence of these conditions, with associated implications for elevated risk of mental ill-health, reduced help-seeking and the perpetuation of harmful cultural norms [4].

The implications of psychological safety for minority-stressed athletes are particularly important. In environments characterised by high psychological safety, sexual and gender minority athletes may be more likely to disclose identity, access support and engage authentically with team and organisational life [4,16,26]. In environments characterised by low psychological safety, the additional burden of identity-related stress may be compounded by the broader cultural conditions that limit help-seeking and authentic engagement [4,16,26]. The application of psychological safety frameworks to minority-stressed athletes has therefore been recommended as a means of integrating identity-related considerations with broader concerns about organisational culture in elite sport [4,16].

The cultivation of psychological safety has been argued to require both horizontal and hierarchical contributions across sporting organisations. At the horizontal level, peer behaviours — including the avoidance of mockery, the active expression of compassion and the modelling of appropriate language — contribute to the cultural climate experienced by all members of the organisation [4]. At the hierarchical level, leaders bear particular responsibility for setting cultural norms, modelling vulnerability and help-seeking, ensuring that policies and procedures support psychological safety, and intervening when harmful conduct occurs [3,4,40]. The integration of these contributions within coherent organisational strategies has been highlighted as a key challenge for the implementation of psychological safety frameworks in practice [3,4].

10.4 The Evidence-Informed Framework for Mental Wellbeing in Elite Sport

A complementary framework for the promotion of mental wellbeing in elite sport has been articulated through synthesis of empirical evidence and stakeholder engagement [3]. The framework adopts an ecological systems approach, situating athlete mental health within the relational, organisational and structural contexts in which it unfolds, and explicitly distinguishes between flourishing, languishing and clinical mental disorder as distinct but related states that may co-occur in complex configurations [3]. Within this framework, mental wellbeing is conceptualised not as the mere absence of mental illness but as a positive state involving the experience of positive affect, life satisfaction, positive functioning and the satisfaction of basic psychological needs for autonomy, competence and relatedness as articulated within self-determination theory [3].

The framework articulates principles and recommendations across two principal domains: the promotion of mental health and supporting cultural shift, and the promotion of mental health literacy and protective factors [3]. Within the first domain, recommendations include striving to improve the narrative around mental health in elite sports settings, creating environments that foster wellbeing and strengthen protective factors, promoting healthy and diverse avenues for social support, ensuring the basic safety of athletes and others through clear safeguarding processes, and developing respect for diversity and individual differences within sport [3]. Within the second domain, recommendations include providing sports-specific mental health training, promoting person-centred care that responds to individuals' changing needs, providing opportunities for self-development, strengthening external identity, and supporting key transitions including into and out of competitive sport [3].

Of particular relevance to minority-stressed athletes is the framework's explicit emphasis on respecting diversity and creating inclusive environments. The framework recommends ensuring visibility of diversity within sport organisations, supporting unique needs through culturally competent provision, embedding awareness of structural barriers and biases within compliance education, and recognising how identity-related stressors may intersect with other dimensions of athlete experience [3]. The integration of these recommendations with broader principles of person-centred care and psychological safety provides a coherent foundation for the development of intervention strategies attentive to the experiences of sexual and gender minority athletes [3,4].

The role of coaches within the framework has been highlighted as particularly important. Coaches are positioned to model behaviours, set cultural norms, support mental health literacy among athletes and influence the climate of teams in ways that may have substantial implications for athlete wellbeing [3,4]. Recommendations for coaches include the explicit communication that mental health is valued, the active promotion of help-seeking behaviour, the modelling of appropriate behaviour in relation to mental health language and conduct, the elimination of stigmatising practices, and the cultivation of inclusive cultural norms attentive to diversity [3,4]. The investment in coach education and ongoing professional development has been argued to be a high-leverage intervention point for the broader cultural change required to support athletes from minority backgrounds [3,4,49].

10.5 Psychological Skills Training and Vulnerability-Sensitive Approaches

The literature on psychological skills training in sport has documented a substantial repertoire of techniques designed to support competitive performance, recovery from adversity and broader wellbeing [45]. These techniques include imagery, goal setting, attentional and concentration training, arousal regulation, cognitive reappraisal, self-talk, mental rehearsal and acceptance-based approaches, with substantial empirical literature documenting their potential benefits for athletes across a range of sports and competitive levels [45]. The integration of psychological skills training within broader athlete development pipelines has been increasingly common in elite sport contexts, with sport psychologists embedded within multidisciplinary support teams and with athletes participating in structured programs of skill development [45].

Within this literature, research on psychological vulnerability in athletes has identified dispositional and contextual factors that may render some individuals more susceptible than others to stress-related symptoms [43,44]. Perfectionism, anxiety sensitivity, neuroticism, rumination and certain attentional styles have been associated with elevated risk of anxiety and depressive symptoms in athletic populations, with implications for the design of vulnerability-sensitive interventions [43,44]. The recognition that athletes may differ substantially in their psychological dispositions has informed approaches that combine generic psychological skills training with individualised attention to the specific vulnerabilities of particular athletes, including those from minority backgrounds [43,44,45].

For minority-stressed athletes, the integration of identity-related concerns within psychological skills training requires careful attention to the specific configurations of stress and resource that such athletes may experience [16,26]. Techniques such as cognitive reappraisal may be applied not only to performance-related stressors but also to identity-related concerns, including the management of disclosure-related anxiety, the navigation of locker-room interactions and the processing of identity-targeted hostility [16,26,45]. Acceptance-based approaches may support the cultivation of equanimity in the face of stigmatising experiences that cannot be fully eliminated, while mindfulness-based interventions may attenuate the impact of vigilance and rumination on cognitive and emotional functioning [45,54,55]. The empirical development of such adapted approaches within athletic contexts remains an active area for further research, with the broader literature on psychological skills training providing a useful foundation [45,54,55].

10.6 Athletic Trainers and the Continuum of Care

Athletic trainers occupy a distinctive position within sport medicine teams, characterised by frequent contact with athletes, familiarity with the physical demands of sport and accessibility to athletes who may not yet have engaged with formal mental health services [6,30]. A scoping review of strategies that athletic trainers can use to support competitive athletes with psychological issues has identified a continuum of strategies ranging from prevention and early identification through brief intervention to referral and ongoing collaboration with mental health professionals [6]. Within this continuum, athletic trainers may serve as first responders to emerging concerns, as gatekeepers facilitating access to more specialised services, and as ongoing partners in athlete care over time [6].

For sexual and gender minority athletes, the role of athletic trainers carries particular significance given their potential to provide culturally competent support within the sport context [30]. Surveys of athletic trainers have indicated that, while many express positive attitudes toward LGBTQ+ athletes including transgender athletes, a substantial proportion report inadequate formal training on the specific health needs of these populations, including issues related to hormone therapy, mental health and gender-affirming care [30]. The recognition of these training gaps has informed recommendations for the enhancement of athletic trainer education with attention to sexual and gender minority health, the integration of athletic trainers within broader cultural competence initiatives, and the support of athletic trainers in their role as advocates for inclusive sport environments [6,30].

The integration of athletic trainers within multidisciplinary care teams has been emphasised across recent frameworks. Within such teams, athletic trainers may collaborate with sport physicians, sport psychiatrists, sport psychologists, dietitians, physiotherapists and others to provide comprehensive care attentive to the multiple dimensions of athlete health [2,3,4,5,6]. The effectiveness of multidisciplinary approaches depends upon clear communication, mutually respectful collaboration, defined scopes of practice and shared frameworks for understanding athlete needs [2,3,5,6]. For athletes from minority backgrounds, the integration of culturally competent practice across the multidisciplinary team is particularly important, with each member contributing to the broader environment in which athletes experience care [2,3,5,6,30].

10.7 Physical Activity in the Prevention and Management of Mental Health Disorders

A complementary body of work has examined the role of physical activity itself in the prevention and management of mental health disorders, drawing on extensive empirical literature documenting the associations between regular exercise and reduced symptoms of depression, anxiety and other common mental health conditions [46]. Reviews of this literature have indicated that physical activity may serve as a potent component of mental health promotion across the lifespan, with effect sizes that, in some studies, compare favourably to those obtained with pharmacological and psychotherapeutic interventions for mild to moderate depression and anxiety [46]. The mechanisms proposed to underlie these effects include neurobiological pathways involving monoaminergic neurotransmission, neurogenesis, neurotrophic factors and inflammation; psychological pathways involving mastery, self-efficacy and the experience of positive affect; and social pathways involving group affiliation, support and structured engagement with the environment [46].

For sexual and gender minority populations who have, in some studies, exhibited reduced physical activity participation relative to comparable heterosexual and cisgender groups, the integration of physical activity promotion with broader minority stress interventions may carry particular significance [46,47]. Initiatives intended to promote sustainable physical activity participation across the lifespan among sexual and gender minority individuals may both directly support mental health and contribute to the broader cultivation of identity-affirming engagement with movement and embodiment [46,47]. The design of physical activity interventions attentive to the specific concerns of these populations — including the cultivation of safe spaces, the integration of community connection and the avoidance of stigmatising or alienating delivery approaches — has been recommended as an area for further development [46,47].

Within elite sport contexts, the relationship between physical activity and mental health may be more complex, given that elite athletes are already engaged in high volumes of training that may exceed those at which protective effects on mental health are most readily observed [10,46]. The translation of general-population physical activity research to elite sport requires attention to the specific demands and conditions of athletic life, including the potential for excessive training to compromise rather than support mental health when recovery is inadequate or when training is associated with intense performance pressure [10,11,12,46]. For minority-stressed athletes, the integration of attention to training load, recovery and identity-related stress may be necessary to ensure that the broader benefits of physical activity for mental health are realised rather than undermined [10,11,12,46].

10.8 Policy and Safeguarding Interventions

Policy-level interventions have been emphasised across multiple frameworks as essential complements to individual- and organisational-level strategies for supporting athlete mental health and minimising harm. The International Olympic Committee consensus statement on harassment and abuse in sport has articulated a comprehensive set of recommendations for the prevention and management of non-accidental violence in sport, including the development of safeguarding policies, the establishment of clear codes of practice, the provision of training for athletes, coaches and other personnel, the implementation of confidential complaints processes and the integration of safeguarding considerations within broader sport governance [40]. The consensus statement has emphasised that all athletes have a right to engage in safe sport and that the obligation to safeguard this right rests with sporting organisations [40].

For sexual and gender minority athletes, the implementation of effective safeguarding policies carries particular importance given the documented elevation of risk for harassment and abuse in this population [24,30,40]. Safeguarding frameworks attentive to the specific vulnerabilities of LGBT athletes, child athletes, athletes with disabilities and athletes from other minority backgrounds have been recommended within the consensus literature, with particular attention to the cultural conditions of disclosure and the accessibility of complaints processes for those who may face additional barriers [40]. The integration of safeguarding with broader cultural change initiatives within sport organisations — including diversity and inclusion programs, leadership development and ongoing monitoring — has been argued to be essential for the effective protection of athletes who occupy stigmatised positions [3,4,40,49].

The contemporary policy landscape concerning transgender participation in sport represents a particularly complex domain in which policy decisions intersect with structural stigma, polarized public discourse and the welfare of individual athletes [29,30,32]. The IOC framework on fairness, inclusion and non-discrimination on the basis of gender identity and sex variations has sought to articulate principles to guide federation-level decision-making, while acknowledging the variability of evidence and circumstance across sports [32]. Implementation of the framework requires sustained engagement with affected athletes, transparent evidence review, attention to the broader cultural conditions in which policy is enacted and ongoing capacity to adapt as new evidence emerges [29,30,32]. The translation of framework principles into specific federation policies has been characterised as uneven, with substantial variability across sports in the criteria, processes and outcomes of policy-making [29,30,32].

Beyond formal policy, organisational culture change initiatives have been highlighted as important sites for intervention. The cultivation of cultural norms within sport organisations that affirm sexual and gender minority identities, that support inclusive language and conduct, that recognise the visibility and contributions of LGBTQ+ leaders, and that respond promptly and appropriately to instances of harassment or discrimination has been argued to require sustained leadership commitment, resource allocation and accountability mechanisms [3,4,40,49]. The integration of culture change with policy change has been emphasised as essential, since policies that are not embedded within supportive cultures may have limited effectiveness, while cultures that lack policy backing may be unable to sustain change in the face of contestation [3,4,17,40,49].

10.9 Mental Health Literacy and Coach Education

Mental health literacy — encompassing knowledge of mental health conditions, the ability to recognise emerging concerns, the awareness of effective interventions and the willingness to engage with help-seeking — has been emphasised as a foundational competency for athletes, coaches and other personnel within sport [3,4,58]. Designing and delivering mental health literacy strategies in elite sport has been argued to require attention to the cultural conditions of sport, the specific concerns of athletes at different career stages, the integration of literacy programs with broader pathways to clinical care and the adaptation of programs to the needs of diverse populations including those from minority backgrounds [58]. The recognition that mental health literacy among athletes, coaches and staff has historically been limited has informed the

development of structured educational programs, with documented effects on knowledge, attitudes and help-seeking intentions in some contexts [58].

Coach education has been particularly emphasised within the literature on mental health literacy in sport, given the central role that coaches play in shaping the cultural climate of teams and in identifying athletes who may be experiencing mental health concerns [3,4,49,58]. Coach education programs addressing mental health literacy have included content on the recognition of common conditions, on appropriate communication with athletes about mental health, on pathways to specialist support and on the modelling of healthy behaviours and help-seeking [3,4,58]. For coaches working with sexual and gender minority athletes, the integration of identity-related considerations with general mental health literacy has been recommended, with attention to inclusive language, cultural competence and the specific concerns of minority-stressed athletes [3,4,49].

The implementation of mental health literacy programs in sport has been argued to require attention to several practical considerations, including the integration of programs with existing organisational structures, the engagement of senior leadership in modelling and reinforcing program content, the provision of ongoing rather than one-off training, the development of evaluation mechanisms to assess program effectiveness, and the adaptation of programs to the specific demands and constraints of athletic schedules [3,4,58]. The sustainability of mental health literacy initiatives over time depends upon their integration with broader organisational priorities, with one-off training events generally insufficient to produce sustained changes in culture and practice [3,4,58].

Stakeholder engagement in the design and delivery of mental health literacy programs has been emphasised as central to their effectiveness. The involvement of athletes, including athletes from minority backgrounds, in the design of educational content; the participation of coaches and support staff in the identification of program priorities; and the consultation with mental health professionals in the design of curriculum components have all been recommended within emerging frameworks for the delivery of literacy programs [3,4,58]. The integration of athlete voice and expertise within program design may both enhance the relevance and credibility of literacy initiatives and support the broader cultivation of inclusive organisational cultures [3,4,58].

Considered together, the intervention literature reviewed in this section provides a multifaceted foundation for efforts to support the mental health and functioning of athletes who occupy minority positions within contemporary sport. Across individual, dyadic, group, organisational and structural levels of analysis, evidence-informed approaches are available, while the integration of these approaches into coherent strategies attentive to the specific concerns of minority-stressed athletes remains an active area for development [3,4,16,17,40,57]. The translation of conceptual frameworks into operational practice, of consensus principles into specific organisational arrangements, and of research evidence into accessible programs of support represents an ongoing project to which research, clinical practice, sport governance and athlete communities each have important contributions to make [3,4,5,16,17,40,49,57,58].

11. Synthesis and Discussion

11.1 An Integrated Conceptual Model

The preceding sections of the review have drawn together literatures that have largely developed independently — the minority stress tradition with its lineage in social stress theory and its progressive elaboration into structural, racial and developmental extensions [15,16,17,18,20,21,22,23]; the literature on affective polarization and its associations with social support, stress and health [33,34,35]; and the substantial body of work on athlete mental health, sport psychiatry, psychological safety and the cultural conditions of elite sport [1,2,3,4,5,6,8,40]. The integration of these literatures offers an account of athlete experience that is multi-level by construction: individual-level minority stress processes, including expectations of rejection, concealment and internalised stigma, are nested within interpersonal interactions characterised by team dynamics, coach behaviour and peer culture; these in turn are nested within organisational practices, eligibility regulations and safeguarding arrangements; and these are nested within broader structural conditions including laws, cultural narratives and polarized public discourse [4,15,16,17,20,33,40].

Within this integrated model, several distinctive features of the sport environment may amplify the salience of minority-stress and polarization-related processes. The visibility of athletes within media and social-media ecosystems may convert what might in other settings remain private experiences into matters of public commentary, with implications for the exposure of athletes from minority backgrounds to identity-targeted hostility [38,39]. The team-based and group-oriented character of much sport may render the cultural climate of teams a particularly consequential moderator of stress, given that athletes often spend substantial portions of their lives within team contexts and may have limited capacity to withdraw from hostile environments without compromising broader career trajectories [3,4,8,24,26]. The hierarchical structure of sport, with its associated power differentials between athletes and coaches or administrators, may further intensify the impact of organisational climates, since the consequences of disclosure or dissent may be unusually high [3,4,40,49].

A further feature of the integrated model concerns the bidirectional and feedback dynamics among levels. Individual-level processes such as concealment may be both responses to, and contributors to, the climates that characterise teams and organisations: athletes who conceal identity may be less visible to coaches and teammates seeking to support them, may be less able to challenge stigmatising language or conduct, and may contribute to the broader perception that minority identity is exceptional or hidden within particular contexts [15,16,26]. Conversely, supportive organisational climates may facilitate

disclosure, which in turn may strengthen identity-affirming community within teams, with attendant benefits for both individual and collective wellbeing [3,4,8,26]. The integration of these dynamics within models that explicitly accommodate feedback loops is likely to be necessary for an account adequate to the complexity of athlete experience [4,8,16,33].

The conceptual integration developed in this review is not, however, intended to deliver a fully specified causal model amenable to direct empirical test. Rather, it aspires to offer a framework within which the multiple literatures bearing on the experience of minority-stressed athletes in polarized environments can be productively related, with attention to the variability of evidence quality, the heterogeneity of populations and the contextual specificity of findings [4,16,17,33,57]. The translation of this framework into specific research designs, intervention strategies and policy initiatives will require continued engagement with the particular conditions of distinct sports, levels, cultures and populations, with the recognition that no single set of recommendations will be adequate to the diversity of conditions encountered [3,4,5,16,17,40,57].

11.2 Vulnerable Subgroups and Within-Population Heterogeneity

A recurrent theme across the literatures reviewed has been the heterogeneity of populations conventionally grouped under broad categories such as "LGBTQ+ athletes," "transgender athletes" or "athletes of colour." Within sexual minority athlete populations, the experiences of lesbian, gay, bisexual, pansexual, asexual and otherwise non-heterosexual individuals may differ in meaningful ways, with bisexual and asexual athletes in particular being comparatively under-researched in the published literature and possibly facing distinctive forms of minority stress including bi-erasure, the assumption of heteronormative or homonormative scripts, and the particular challenges of identity legibility within sporting cultures organised around binary categories [16,19,24]. The development of research specifically attentive to these subgroups remains a priority, as does the design of interventions that do not assume homogeneity within broader minority categories [16,19,24,53].

Transgender athletes likewise constitute a heterogeneous population whose experiences may vary considerably by gender identity (including transgender women, transgender men, non-binary individuals and others), by stage of social and medical transition, by sport context, by national jurisdiction and by intersection with other dimensions of identity [16,19,29,30,32]. The empirical literature has paid particular attention to transgender women, partly because of the policy controversies surrounding their participation in elite female sport, while transgender men and non-binary athletes have been comparatively under-studied [29,30,32]. The development of research and practice attentive to the full range of transgender athletic experience — including the specific concerns of those who do not seek medical transition, those navigating fluid gender identifications, and those who occupy positions outside binary gender categories — has been argued to be necessary for a literature adequate to its subject [16,19,29,30,32].

Athletes of colour, including athletes from indigenous, migrant and racially minoritised backgrounds, constitute a further population whose experiences require focused attention [23]. The historical legacies of segregation in sport, the ongoing under-representation of people of colour in coaching, administration and governance, and the persistence of racialised stereotypes regarding athletic capacity all contribute to a distinctive stress environment that operates alongside other forms of minority stress [23]. For athletes located at the intersection of multiple stigmatised positions — including Black sexual minority athletes, transgender athletes of colour and indigenous LGBTQ+ athletes — the cumulative burden of structural disadvantage may be particularly consequential, and yet such athletes are comparatively under-represented in the published research [16,20,23,26].

Adolescent and student-athletes constitute an additional population of particular concern. The developmental specificity of adolescence — including the centrality of identity development, the salience of peer relationships and the navigation of compulsory contexts such as family and school — interacts with minority stress in ways that may differ substantially from those observed in adults [18]. Within sport, student-athletes negotiate the additional demands of academic performance, the visibility of collegiate sport, the cultural dynamics of campus environments and the regulatory regimes of organisations such as the National Collegiate Athletic Association [26,27,39]. The qualitative literature on LGBTQ student-athletes in collegiate sport has documented the specific configurations of stress and resource that characterise this population, with implications for the design of developmentally appropriate intervention strategies [18,26,27].

Cross-cultural variability constitutes a final dimension of within-population heterogeneity that warrants explicit attention. The empirical literature has demonstrated that the broad contours of minority stress are recognisable across Western and non-Western contexts, while the specific configurations of cultural norms, religion, family expectations and political conditions shape the meaning and impact of stigma in distinctive ways [16,27,28,48]. Studies in China have documented the salience of Confucian traditions, filial piety and family expectations regarding marriage and reproduction in shaping the experience of sexual minority student-athletes [27,28]. Work in Mexico has highlighted the role of LGBTQ+ specific sporting events such as the Gay Games in providing identity-affirming participation opportunities within a context of broader cultural variability [48]. Australian community surveys have documented the specific patterns of trans participation, barriers and facilitators in that jurisdiction [31]. The integration of cross-cultural perspectives within the broader literature reinforces the necessity of context-sensitive research and practice, while highlighting the limitations of generalisation from any single national context [16,27,28,31,48].

Disabled athletes constitute a further population whose experiences have been recognised within consensus statements on harassment and abuse as warranting particular attention, given documented elevations of risk for various forms of maltreatment [40]. The intersection of disability with sexual or gender minority status, with race and ethnicity, or with other

dimensions of identity may produce specific configurations of vulnerability that require focused inquiry, although direct empirical investigation of these intersections in sport-specific contexts remains limited [16,23,40]. The broader inclusion of disabled athletes within minority stress and polarization frameworks represents an important direction for future research.

11.3 Critical Gaps in the Literature

The integration developed in this review has been constrained by several persistent gaps in the underlying evidence base. Among the most significant is the comparative scarcity of longitudinal and prospective designs capable of supporting causal inference about the relationships among minority stress, polarization, sport-specific stressors and health outcomes [16,35,41]. While cross-sectional studies have produced substantial bodies of correlational evidence, the within-person dynamics of these relationships remain incompletely characterised, and recent longitudinal work has cautioned against the uncritical extrapolation of cross-sectional findings to causal claims [35]. The development of longitudinal cohorts of athletes from minority backgrounds, with repeated measurement of identity-related stressors, sport-specific exposures and health outcomes, would provide an important foundation for subsequent advances [16,35,41].

A second gap concerns the under-representation of certain populations within the published literature. As noted above, bisexual, asexual, intersex, transgender male and non-binary athletes are comparatively under-studied, as are athletes from particular national contexts, sports and competitive levels. The systematic inclusion of these populations within research designs, the development of culturally adapted measurement approaches and the engagement of these communities in the design and interpretation of research are all necessary for the development of a literature that adequately represents the diversity of minority-stressed athletes [16,19,24,29,30,32,51].

A third gap concerns the limited body of intervention research conducted specifically within sport-specific minority populations. While the broader minority stress intervention toolkit is well developed, its translation to sport contexts has been less extensively investigated, and randomised controlled trials of identity-informed interventions with athletes are comparatively rare [57]. The development of pilot programs, feasibility studies and randomised trials evaluating adapted interventions for athletes from minority backgrounds would substantially advance the field, with attention to both individual-level outcomes and the broader cultural conditions in which interventions are delivered [3,4,57].

A fourth gap concerns the cultural specificity of the existing literature, much of which has been conducted in North American, Western European and Australian contexts. While work in China, Mexico and other non-Western contexts has begun to broaden the geographic and cultural scope of the evidence base, substantial gaps remain in the representation of athletes from sub-Saharan Africa, South Asia, the Middle East, the Pacific and other regions [16,27,28,48]. The development of research programs grounded in these contexts, attentive to the specific cultural, political and structural conditions within which sport unfolds, is likely to be necessary to support the broader globalisation of minority stress research [16,27,28].

A fifth gap concerns the integration of polarization research with sport-specific empirical work. While the conceptual foundations for such integration have been articulated, direct empirical investigation of polarization within athlete populations remains comparatively underdeveloped [33,34,35]. The application of polarization measurement instruments to athletic samples, the analysis of associations between perceived polarization and athlete outcomes, and the design of studies attentive to the specific exposures of athletes within polarized public discourse all represent productive directions for further research [33,35].

11.4 Methodological Considerations

The methodological challenges associated with research on minority stress, polarization and sport are several. The measurement of minority stress itself has continued to evolve, with instruments such as the Minority Stress Scale and various adaptations providing structured approaches to the quantification of distal and proximal stressors [16,19]. The application of these instruments to athletic populations requires attention to sport-specific stressors that may not be fully captured by generic measures, including the specific concerns associated with locker rooms, team dynamics, eligibility regulations and coach-athlete relationships [16,26]. The integration of qualitative and quantitative methods has been argued to be particularly valuable in this context, given the capacity of qualitative approaches to surface contextual features that may not be readily anticipated within structured instruments [22,26,27].

The measurement of polarization presents complementary challenges. Multiple dimensions of polarization — including ideological, affective, behavioural and perceived — have been operationalised through different instruments, and the relationships among these dimensions are not fully specified [33,34,35]. The application of polarization measures to athletes may require adaptation to address sport-specific exposures, including the perception of polarization within sporting communities, the experience of polarized commentary on athletic performance and the navigation of polarized debates over inclusion [33,34,35]. The development of athlete-adapted polarization instruments and the integration of these with measures of minority stress, sport-specific stressors and health outcomes constitute productive directions for future methodological work [33,35].

The integration of biological measurement within psychosocial research on athletes presents both opportunities and challenges. Elite sport contexts routinely deploy biomarkers including cortisol, testosterone, inflammatory markers, heart rate variability and metabolic indices, providing a measurement infrastructure that could in principle support biopsychosocial research on minority stress [9,10,11,12,14,41,42]. The interpretation of such biomarkers in this context, however, requires

careful disentanglement of the multiple determinants of physiological response in athletes, including training load, nutritional status, sleep, environmental conditions and acute stressors [10,11,12]. Methodological work designed to support such disentanglement — including study designs that incorporate multiple time points, within-person comparisons and contextual covariates — is likely to be necessary before firm conclusions can be drawn about the embodied consequences of minority stress in athletes [9,10,41,42].

Quasi-experimental and natural experimental designs have proven valuable within the broader minority stress and structural stigma literatures, with examples including the analysis of mental health outcomes before and after the introduction of marriage equality laws or the passage of restrictive legislation [17,21]. The application of analogous designs within sport-specific contexts — for example, the analysis of athlete mental health outcomes before and after changes in transgender participation policies, or the comparison of athletes operating in differently polarized contexts — could provide important inferential leverage [17,21,32]. The opportunities for such designs depend upon the availability of relevant data sources and the willingness of sport organisations to participate in research, both of which are likely to require sustained relationships between researchers and sporting communities [17,21,32].

Finally, methodological attention to representation and inclusion in research is itself important. The recruitment of minority-stressed athletes for research studies presents challenges, given the small size of relevant populations, the visibility concerns that may attend participation, and the historical limitations of recruitment strategies developed for general populations [16,19,24]. The development of community-based participatory approaches, the engagement of identity-affirming organisations in recruitment, the protection of confidentiality and the integration of meaningful incentives have all been argued to support the conduct of research that adequately represents minority-stressed populations within sport [16,24].

11.5 Practical Implications for Stakeholders

The implications of the literature reviewed for sport practice are several, with relevance for athletes, coaches, support staff, administrators, clinicians, policy makers and researchers. For athletes from minority backgrounds, the literature suggests that engagement with identity-affirming communities, the cultivation of diverse social identities, the development of adaptive coping skills, and the careful management of disclosure decisions in context-sensitive ways may all contribute to wellbeing, though no single set of strategies is appropriate to all contexts [16,24,26,53,56]. The recognition that individual-level efforts cannot fully compensate for structural-level conditions reinforces the case for athlete advocacy, collective action and engagement with the broader organisational and policy contexts within which sport unfolds [16,17,57].

For coaches, support staff and administrators, the literature points to the importance of intentional cultivation of inclusive cultural climates, the modelling of supportive behaviours, the active addressing of harassment and discrimination, the integration of identity-affirming practices into routine operations and the visibility of LGBTQ+ leadership within organisations [3,4,49]. Coach education on mental health literacy, on the specific concerns of minority-stressed athletes and on the cultural competencies required to support diverse populations has been recommended as a high-leverage intervention point, with the recognition that coaches occupy positions of substantial influence within team and organisational climates [3,4,49,58].

For clinicians and other practitioners within sport medicine and sport psychiatry, the literature emphasises the importance of culturally competent care, attentive to the specific concerns of athletes from minority backgrounds, integrated with multidisciplinary support teams and informed by both general minority stress research and sport-specific evidence [2,5,30]. The development of clinical capacity for gender-affirming care, for trauma-informed approaches to athletes who have experienced victimisation, and for the integration of identity-related considerations within broader mental health assessment and intervention has been highlighted across multiple frameworks [2,5,30,40].

For policy makers and sport governing bodies, the literature suggests the importance of structural-level interventions, including the development and enforcement of anti-discrimination policies, the implementation of robust safeguarding mechanisms, the design of eligibility regulations attentive to both inclusion and fairness considerations, and the cultivation of organisational accountability for cultural conditions [17,32,40]. The integration of athlete voice within policy development processes, the engagement with affected communities in the design of regulations and the commitment to evidence-informed adaptation over time have been emphasised as essential features of effective governance [3,4,32,40].

For researchers, the literature points to several priorities for future inquiry, including the development of longitudinal and prospective designs, the inclusion of under-represented populations within research, the integration of qualitative and quantitative methods, the cultural diversification of research programs, the empirical investigation of polarization within sport and the systematic evaluation of interventions adapted for minority-stressed athletes [16,17,23,33,35,57]. The cultivation of researcher-practitioner partnerships, the integration of community-based participatory approaches and the development of research infrastructure that supports sustained programs of inquiry are all likely to be valuable [3,4,16,57].

A cross-cutting implication of the literature concerns the integration of research, practice and policy within coherent strategies for the support of minority-stressed athletes. The compartmentalisation of these domains — with researchers, clinicians, coaches and policy makers operating largely independently — has been argued to limit the effectiveness of efforts within any single domain, while the cultivation of integrated approaches attentive to the interdependencies among research, practice and policy may support more substantial progress [3,4,17,40,57]. The recognition that minority-stressed athletes

navigate environments shaped by all of these domains simultaneously underscores the importance of integrated approaches to their wellbeing.

Taken together, the synthesis articulated in this section indicates that the literature on minority stress, polarization and sport, while incomplete in important respects, provides a sufficient foundation for purposeful action across multiple stakeholder groups. The translation of conceptual frameworks into operational practice, of consensus principles into specific organisational arrangements, and of research evidence into accessible programs of support represents an ongoing project to which a wide range of actors have important contributions to make. The trajectory of progress is likely to depend upon sustained engagement with the lived experiences of athletes from minority backgrounds, attentive to the diversity of their circumstances and to the cumulative impact of the contextual conditions within which they participate in sport [3,4,16,17,33,40,57].

12. Conclusions

The present narrative review has examined the convergence of minority stress, social polarization and the sporting environment in shaping mental wellbeing and functioning among athletes who occupy minority positions. Drawing on minority stress theory and its developmental, structural and intersectional extensions [15,16,17,18,20,21,22,23], on the literature on affective polarization and its associations with stress and health [33,34,35], and on the rapidly expanding body of work concerning athlete mental health, sport psychiatry, psychological safety and the cultural conditions of elite sport [1,2,3,4,5,6,8,40], the review has sought to articulate how these literatures may be productively integrated to illuminate the experiences of sexual minority, gender minority, racially minoritised and otherwise marginalised athletes within contemporary sport.

A central pattern emerging from the literature is the convergence between general findings on minority stress, on the one hand, and sport-specific accounts of the experience of LGBTQ+, racially minoritised and otherwise stigmatised athletes, on the other. Distal stressors such as discrimination, victimisation and harassment have been documented across sporting contexts at rates that, while variable, suggest meaningful elevation relative to non-sporting environments, with team-based, male-dominated and traditionally masculine sports particularly identified as sites of concern [24,25,26,27,40]. Proximal stressors including expectations of rejection, concealment of identity and internalised stigma have been described in qualitative work with sexual and gender minority athletes in terms broadly consistent with the original formulations of minority stress theory, while also exhibiting sport-specific features that may not be fully captured by generic measures [15,16,26,27]. The mental health consequences of these stressors, including elevated risks of depression, anxiety, sleep disturbance, eating disorders, substance use and suicidality, appear in patterns consistent with the broader minority stress literature, although direct epidemiological evidence in athletic populations remains incomplete [16,19,24,26,30,50].

The structural conditions within which these processes unfold — including eligibility policies, organisational cultures, safeguarding arrangements, media environments and broader legal and policy contexts — have been increasingly recognised as central determinants of athlete experience [17,22,32,40,49]. The empirical literature on structural stigma, while developed largely outside sport, provides a robust foundation for understanding how institutional conditions may shape the trajectory of mental health among athletes from minority backgrounds, with quasi-experimental and observational evidence indicating that policy environments may exert measurable effects on health outcomes [17,21]. Applied to sport, structural stigma operates through mechanisms including the regulation of eligibility, the design of facilities and uniforms, the visibility of LGBTQ+ leadership within organisations, the practices of media coverage and the cultural narratives surrounding minority identity, with cumulative impact that may be substantial even where any specific interpersonal interaction is unremarkable [17,22,32,40,49].

Social polarization constitutes an additional contextual dimension whose relevance to athlete experience has only recently begun to be articulated [33,34,35]. Polarized public discourse may amplify the visibility of identity-related conflicts, concentrate hostility toward minority athletes within particular ideological factions, and interact with structural stigma to produce environments in which minority athletes are simultaneously exposed to abuse, scrutinised over participation eligibility and embedded as symbols within broader cultural debates [22,30,32,33,38,39]. While direct empirical investigation of polarization within athletic populations is at an early stage, the conceptual integration of polarization research with minority stress theory and sport-specific work offers a productive framework within which the convergence of these dynamics may be examined [16,17,33]. Online abuse, in particular, has emerged as a concrete mechanism through which polarized affect may translate into direct psychological exposure for athletes whose visibility brings them to the attention of polarized commentators [38,39].

Across these convergences, the literature has documented a range of mediating and moderating factors that may attenuate or amplify the consequences of stress exposure. Social support, adaptive coping strategies, mindfulness, self-compassion, resilience, community connectedness and the cultivation of diverse social identities have all been implicated as protective resources, with variable evidence concerning their magnitude and the conditions under which their effects are most pronounced [8,16,52,53,54,55,56]. The recognition that these resources are unevenly distributed across athletes, contexts and developmental stages reinforces the case for environmental conditions that actively cultivate protective processes, rather than relying upon individual athletes to manage structurally determined stressors through personal resources alone [3,4,16,57].

The intervention literature reviewed in this work spans individual, dyadic, group, organisational and structural levels of analysis, with the cumulative implication that the most promising approaches are likely to be multi-component and to operate

across several layers of the socioecological framework [57]. Within elite sport, frameworks for the promotion of mental wellbeing, the cultivation of psychological safety, the integration of sports psychiatry, the development of mental health literacy and the safeguarding of athletes against harassment and abuse provide complementary foundations for evidence-informed practice [2,3,4,5,40,58]. The translation of these frameworks into specific organisational arrangements attentive to the experiences of minority-stressed athletes remains an active area for development, with the recognition that no single intervention is likely to be sufficient and that integrated approaches will be required to address the multi-level character of the conditions involved [3,4,40,57].

The methodological challenges of research in this area are not trivial. The relative scarcity of longitudinal and prospective designs, the under-representation of certain populations within the published literature, the limited body of intervention research conducted specifically within sport-specific minority populations, the cultural specificity of much existing work, and the early stage of polarization research within sport all constitute meaningful constraints on the inferences that can be drawn at present [16,17,33,35,41,57]. The development of research programs designed to address these gaps — including longitudinal cohorts, inclusive sampling strategies, culturally adapted measures and adapted intervention designs — represents an important agenda for the coming period. The integration of qualitative and quantitative methods, of psychosocial and biological indicators, and of researcher-practitioner partnerships is likely to be particularly valuable [16,22,26,41,42].

A further reflection concerns the broader social and political context within which sport unfolds. The contemporary period has been characterised by simultaneous trends of expanded protection in some jurisdictions and reaction or rollback in others, generating a landscape in which structural stigma may increase, decrease or fragment depending on context [17,32,33]. Sport organisations, athletes and broader sporting communities must navigate this fluid environment while continuing to provide the conditions under which competitive participation may be sustained [3,4,32,40]. The capacity of sport governance to anticipate these changes, to design adaptive responses and to maintain commitment to athlete welfare under conditions of polarized public discourse is likely to be tested in important ways over the coming years [3,4,32,40].

The continued relevance of minority stress theory, despite the substantial social and policy changes of the past several decades, has been emphasised across recent reviews [15,16]. Although legal protections, attitudinal climates and institutional cultures have improved in many contexts, sexual and gender minority individuals continue to experience meaningful disparities in mental and physical health relative to non-minority counterparts, and the underlying mechanisms articulated within minority stress theory continue to operate even where overt hostility has diminished [15,16,17,19,30,32]. The application of the framework to athletes, situated within the specific demands of competitive sport and the broader contexts of structural stigma and polarization, may contribute to a more comprehensive understanding of athlete experience while also providing a foundation for the design of supportive practices and policies [3,4,16,17,40,57].

The case for socially-aware, ecologically-informed approaches to athlete mental health is, on the cumulative evidence reviewed in this work, considerable. The recognition that mental health in sport does not unfold within a vacuum but is shaped by the cultural, organisational and structural conditions of sporting environments — and by the broader social-political contexts within which sport is embedded — has important implications for the priorities of research, practice and policy [3,4,16,17,40]. The integration of attention to identity-related stressors with the broader literature on athlete mental health, of structural and individual perspectives within intervention design, and of cross-disciplinary collaboration across sport medicine, sport psychiatry, sport psychology, sociology and political psychology may collectively support more substantial progress than any single disciplinary perspective can offer [3,4,5,16,17,33,40].

Finally, the central concerns of this review — the protection and support of athletes who occupy minority positions in contemporary sport — connect to broader questions about the values, purposes and contributions of sport within wider societies. Sport occupies a culturally significant position within many communities, and the conditions of participation within it carry implications that extend beyond the immediate experience of competitive athletes to include the broader cultural narratives surrounding identity, inclusion and human flourishing [3,4,17,32]. The cultivation of sporting environments that support the wellbeing of athletes from minority backgrounds may therefore contribute not only to the immediate experience of those athletes but also to broader social processes through which minority identity is recognised, respected and valued within wider communities [3,4,17,32,49].

The literature reviewed in this work, while incomplete and uneven in important respects, indicates that the integration of minority stress, polarization and sport-specific frameworks offers a productive foundation for both inquiry and action. Continued attention to the experiences of athletes from minority backgrounds, sustained engagement with the structural conditions of sport, and ongoing efforts to support evidence-informed practice and policy are likely to be necessary if the conditions of participation are to align with the values that sporting communities profess [3,4,16,17,40,57]. The trajectory of progress will depend upon the contributions of researchers, clinicians, coaches, administrators, policy makers, athletes and broader communities, working in concert across the multiple levels of the socioecological framework that this review has sought to articulate [3,4,8,16,17,20,33,40,57].

DISCLOSURE:

Conceptualization: Jarosław Tsukerman, Igor Smędowski
Methodology: Jarosław Tsukerman, Arkadiusz Psiuk
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Supervision: Arkadiusz Psiuk, Jarosław Tsukerman
Project administration: Igor Smędowski

Funding statement:
This study received no external funding.
Informed consent statement:
Not applicable.
Institutional Review Board Statement:
Not applicable.
Conflict of interest:
The authors declare no conflict of interest.

Declaration of the use of generative AI and AI-assisted technologies in the writing process. In preparing this work, the authors used Claude for the purpose of checking grammar and improving readability. After using this tool, the authors have reviewed and edited the content as needed and accept full responsibility for the substantive content of the publication

References

1. Rice, S. M., Purcell, R., De Silva, S., Mawren, D., McGorry, P. D., & Parker, A. G. (2016). The mental health of elite athletes: A narrative systematic review. *Sports Medicine*, *46*(9), 1333–1353. https://doi.org/10.1007/s40279-016-0492-2
2. Reardon, C. L., Hainline, B., Aron, C. M., Baron, D., Baum, A. L., Bindra, A., Budgett, R., Campriani, N., Castaldelli-Maia, J. M., Currie, A., Derevensky, J. L., Glick, I. D., Gorczynski, P., Gouttebarge, V., Grandner, M. A., Han, D. H., McDuff, D., Mountjoy, M., Polat, A., … Engebretsen, L. (2019). Mental health in elite athletes: International Olympic Committee consensus statement (2019). *British Journal of Sports Medicine*, *53*(11), 667–699. https://doi.org/10.1136/bjsports-2019-100715
3. Purcell, R., Pilkington, V., Carberry, S., Reid, D., Gwyther, K., Hall, K., Deacon, A., Manon, R., Walton, C. C., & Rice, S. (2022). An evidence-informed framework to promote mental wellbeing in elite sport. *Frontiers in Psychology*, *13*, 780359. https://doi.org/10.3389/fpsyg.2022.780359
4. Walton, C. C., Purcell, R., Pilkington, V., Hall, K., Kenttä, G., Vella, S., & Rice, S. M. (2024). Psychological safety for mental health in elite sport: A theoretically informed model. *Sports Medicine*, *54*(3), 557–564. https://doi.org/10.1007/s40279-023-01912-2
5. Claussen, M. C., Currie, A., Koh, E. B. Y., Nishida, M., Martínez, V., Burger, J., Creado, S., Schorb, A., Nicola, R. F., Pattojoshi, A., Menon, R., Glick, I., Whitehead, J., Edwards, C., & Baron, D. (2024). First international consensus statement on sports psychiatry. *Scandinavian Journal of Medicine & Science in Sports*, *34*(4), e14627. https://doi.org/10.1111/sms.14627
6. Jean-Bindley, G., Sauriol-Gauthier, A., Corbin-Berrigan, L. A., & Girard, S. (2025). Mental health in elite sports. A continuum of strategies that athletic trainers can use to support competitive athletes with psychological issues: a scoping review. *Frontiers in psychology*, *16*, 1619802. https://doi.org/10.3389/fpsyg.2025.1619802
7. Henriksen, K., Huang, Z., Bartley, J., Kenttä, G., Purcell, R., Wagstaff, C. R. D., Si, G., Ge, Y., & Schinke, R. (2024). The role of high-performance sport environments in mental health: An International Society of Sport Psychology consensus statement. *International Journal of Sport and Exercise Psychology*. Advance online publication. https://doi.org/10.1080/1612197X.2024.2437923
8. Stevens, M., Cruwys, T., Olive, L., & Rice, S. (2024). Understanding and improving athlete mental health: A social identity approach. *Sports Medicine*, *54*(4), 837–853. https://doi.org/10.1007/s40279-024-01996-4
9. Juster, R.-P., McEwen, B. S., & Lupien, S. J. (2010). Allostatic load biomarkers of chronic stress and impact on health and cognition. *Neuroscience and Biobehavioral Reviews*, *35*(1), 2–16. https://doi.org/10.1016/j.neubiorev.2009.10.002
10. Hackney, A. C. (2006). Stress and the neuroendocrine system: The role of exercise as a stressor and modifier of stress. *Expert Review of Endocrinology & Metabolism*, *1*(6), 783–792. https://doi.org/10.1586/17446651.1.6.783
11. Schwellnus, M., Soligard, T., Alonso, J.-M., Bahr, R., Clarsen, B., Dijkstra, H. P., Gabbett, T. J., Gleeson, M., Hägglund, M., Hutchinson, M. R., Janse Van Rensburg, C., Meeusen, R., Orchard, J. W., Pluim, B. M., Raftery, M., Budgett, R., & Engebretsen, L. (2016). How much is too much? (Part 2) International Olympic Committee consensus statement on load in sport and risk of illness. *British Journal of Sports Medicine*, *50*(17), 1043–1052. https://doi.org/10.1136/bjsports-2016-096572
12. Cadegiani, F. A., Silva, P. H. L., Abrao, T. C. P., & Kater, C. E. (2020). Diagnosis of overtraining syndrome: Results of the endocrine and metabolic responses on overtraining syndrome study: EROS-DIAGNOSIS. *Journal of Sports Medicine*, *2020*, 3937819. https://doi.org/10.1155/2020/3937819
13. Walsh, N. P., Halson, S. L., Sargent, C., Roach, G. D., Nédélec, M., Gupta, L., Leeder, J., Fullagar, H. H., Coutts, A. J., Edwards, B. J., Pullinger, S. A., Robertson, C. M., Burniston, J. G., Lastella, M., Le Meur, Y., Hausswirth, C., Bender, A. M., Grandner, M. A., & Samuels, C. H. (2021). Sleep and the athlete: Narrative review and 2021 expert consensus recommendations. *British Journal of Sports Medicine*, *55*(7), 356–368. https://doi.org/10.1136/bjsports-2020-102025
14. Clark, A., & Mach, N. (2016). Exercise-induced stress behavior, gut-microbiota-brain axis and diet: A systematic review for athletes. *Journal of the International Society of Sports Nutrition*, *13*, 43. https://doi.org/10.1186/s12970-016-0155-6

15. Meyer, I. H. (2003). Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. *Psychological Bulletin*, *129*(5), 674–697. https://doi.org/10.1037/0033-2909.129.5.674
16. Frost, D. M., & Meyer, I. H. (2023). Minority stress theory: Application, critique, and continued relevance. *Current Opinion in Psychology*, *51*, 101579. https://doi.org/10.1016/j.copsyc.2023.101579
17. Hatzenbuehler, M. L. (2016). Structural stigma and health inequalities: Research evidence and implications for psychological science. *American Psychologist*, *71*(8), 742–751. https://doi.org/10.1037/amp0000068
18. Goldbach, J. T., & Gibbs, J. J. (2017). A developmentally informed adaptation of minority stress for sexual minority adolescents. *Journal of Adolescence*, *55*, 36–50. https://doi.org/10.1016/j.adolescence.2016.12.007
19. Grigoreva, D., & Szaszkó, B. (2024). Minority stress and psychological well-being in queer populations. *Scientific Reports*, *14*, 27084. https://doi.org/10.1038/s41598-024-78545-6
20. van der Star, A. (2024). The socioecology of sexual minority stigma: Advancing theory on stigma-based mechanisms underlying sexual orientation-based disparities in health. *Social Science & Medicine*, *363*, 117484. https://doi.org/10.1016/j.socscimed.2024.117484
21. Flentje, A., Clark, K. D., Cicero, E., Capriotti, M. R., Lubensky, M. E., Sauceda, J., Neilands, T. B., Lunn, M. R., & Obedin-Maliver, J. (2022). Minority Stress, Structural Stigma, and Physical Health Among Sexual and Gender Minority Individuals: Examining the Relative Strength of the Relationships. *Annals of behavioral medicine : a publication of the Society of Behavioral Medicine*, *56*(6), 573–591. https://doi.org/10.1093/abm/kaab051
22. Ford, J. V., Dodge, B., Clark, K. A., Lattanner, M. R., Shah, A., & Hatzenbuehler, M. L. (2024). (Re)conceptualizing structural stigma: Insights from a qualitative study of sexual minority men in a longitudinal, population-based cohort. *Stigma and Health*. https://doi.org/10.1037/sah0000571
23. Williams, D. R. (2018). Stress and the mental health of populations of color: Advancing our understanding of race-related stressors. *Journal of Health and Social Behavior*, *59*(4), 466–485. https://doi.org/10.1177/0022146518814251
24. Rovira-Font, M., & Vilanova-Soler, A. (2022). LGTBIQA+, mental health and the sporting context: A systematic review. *Apunts Educación Física y Deportes*, *147*, 1–16. https://doi.org/10.5672/apunts.2014-0983.es.(2022/1).147.01
25. Kavoura, A., & Kokkonen, M. (2021). What do we know about the sporting experiences of gender and sexual minority athletes and coaches? : A scoping review. *International Review of Sport and Exercise Psychology*, *14*(1), 1-https://doi.org/10.1080/1750984X.2020.1723123
26. Xiang, M., Soh, K. G., Xu, Y., Ahrari, S., & Zakaria, N. S. (2023). Experiences of LGBTQ student-athletes in college sports: A meta-ethnography. *Heliyon*, *9*(7), e16832. https://doi.org/10.1016/j.heliyon.2023.e16832
27. Xiang, M., Soh, K. G., Xu, Y., Ahrari, S., & Zakaria, N. S. (2025). Experiences and minority stress of sexual minority student athletes in Chinese collegiate sports. *Archives of Sexual Behavior*, *54*, 1391–1407. https://doi.org/10.1007/s10508-025-03107-4
28. Xiang, M., Soh, K. G., Xu, Y., Ahrari, S., & Zakaria, N. S. (2024). Navigating sexual minority identity in sport: A qualitative exploration of sexual minority student-athletes in China. *BMC Public Health*, *24*, 2304. https://doi.org/10.1186/s12889-024-19824-9
29. Jones, B. A., Arcelus, J., Bouman, W. P., & Haycraft, E. (2017). Sport and transgender people: A systematic review of the literature relating to sport participation and competitive sport policies. *Sports Medicine*, *47*(4), 701–716. https://doi.org/10.1007/s40279-016-0621-y
30. Chan, A. S. W., Choong, A., Phang, K. C., Leung, L. M., Tang, P. M. K., & Yan, E. (2024). Societal discrimination and mental health among transgender athletes: A systematic review and meta-analysis. *BMC Psychology*, *12*, 24. https://doi.org/10.1186/s40359-023-01493-9
31. Bailey, S., Trevitt, B., Zwickl, S., Newell, B., Staples, E., Storr, R., & Cheung, A. S. (2024). Participation, barriers, facilitators and bullying experiences of trans people in sport and fitness: Findings from a national community survey of trans people in Australia. *British Journal of Sports Medicine*. Advance online publication. https://doi.org/10.1136/bjsports-2023-107852
32. Lundberg, T. R., Tucker, R., McGawley, K., Williams, A. G., Millet, G. P., Sandbakk, Ø., Howatson, G., Brown, G. A., Carlson, L. A., Chantler, S., Chen, M. A., Heffernan, S. M., Heron, N., Kirk, C., Murphy, M. H., Pollock, N., Pringle, J., Richardson, A., Santos-Concejero, J., … Hilton, E. N. (2024). The International Olympic Committee framework on fairness, inclusion and non-discrimination on the basis of gender identity and sex variations does not protect fairness for female athletes. *Scandinavian Journal of Medicine & Science in Sports*, *34*(3), e14581. https://doi.org/10.1111/sms.14581
33. Bakker, B. N., & Lelkes, Y. (2024). Putting the affect into affective polarisation. *Cognition and Emotion*, *38*(4), 418–436. https://doi.org/10.1080/02699931.2024.2362366
34. Fraser, T., Aldrich, D. P., Panagopoulos, C., Hummel, D., & Kim, D. (2022). The harmful effects of partisan polarization on health. *PNAS Nexus*, *1*(1), pgac011. https://doi.org/10.1093/pnasnexus/pgac011
35. McMurtrie, B., Roemer, A., Philipp, M., Hebden, R., & Williams, M. (2025). Political polarization and wellbeing: Investigating potential intrapersonal harm from affective polarization. *International Review of Social Psychology*, *38*(1), 15. https://doi.org/10.5334/irsp.1052
36. Ipekci, A. M., Filsinger, M., Buitrago-Garcia, D., Kobler Betancourt, C. I., Frahsa, A., & Low, N. (2024). Polarization and health-related behaviours and outcomes during the COVID-19 pandemic: A systematic review protocol. *F1000Research*, *13*, 488. https://doi.org/10.12688/f1000research.145852.1
37. Kędra, K., Michalik, I., Zarańska, J., Aab, A., & Bielak, M. (2023). Impact of COVID-19 outbreak on the mental health in sport and among society. *Journal of Education, Health and Sport*, *35*(1), 125–146. https://doi.org/10.12775/JEHS.2023.35.01.010
38. World Athletics, & Signify Group (Threat Matrix). (2024). *Online abuse in athletics: A 4-year comparative insight analysis into online abuse of athletes during major sporting championships* [Research report]. World Athletics.

39. National Collegiate Athletic Association & Signify Group (Threat Matrix). (2025). *Online abuse in NCAA championships: NCAA analysis report 2024/25* [Research report]. NCAA Sport Science Institute.
40. Mountjoy, M., Brackenridge, C., Arrington, M., Blauwet, C., Carska-Sheppard, A., Fasting, K., Kirby, S., Leahy, T., Marks, S., Martin, K., Starr, K., Tiivas, A., & Budgett, R. (2016). International Olympic Committee consensus statement: Harassment and abuse (non-accidental violence) in sport. *British Journal of Sports Medicine*, *50*(17), 1019–1029. https://doi.org/10.1136/bjsports-2016-096121
41. Flentje, A., Sunder, G., & Tebbe, E. (2025). Minority stress in relation to biological outcomes among sexual and gender minority people: A systematic review and update. *Journal of Behavioral Medicine*, *48*(1), 22–42. https://doi.org/10.1007/s10865-024-00539-6
42. Dosanjh, L. H., Franklin, C., Castro, Y., Goosby, B., Conway, F. N., Champagne, F. A., Parra, L. A., Goldbach, J. T., & Kipke, M. D. (2025). Inflammation and minority stress: A moderated mediation model of childhood adversity and mental health in young men who have sex with men. *Social science & medicine (1982)*, *376*, 118119. https://doi.org/10.1016/j.socscimed.2025.118119
43. Valentim, O., & de Sousa, C. (2018). Psychological vulnerability, anxiety and personal well-being in athletes. *NURSID 2018 — Novas Perspetivas Da Enfermagem*. ROL Novembro–Dezembro, 64.
44. Yamaguchi, S., Kawata, Y., Murofushi, Y., Shibata, N., & Ota, T. (2022). Psychological vulnerability associated with stress coping strategies in Japanese university athletes. *Journal of Clinical Sport Psychology*. Advance online publication. https://doi.org/10.1123/jcsp.2021-0084
45. Ramesberger, R. (2022). Psychological training in sports. *Quality in Sport*, *8*(2), 33–44. https://doi.org/10.12775/QS.2022.08.02.003
46. Romaniuk, S., Jurczuk, A., Bałdyga, P., Marciniak, K., & Wilczyńska, A. (2025). The role of physical activity in the prevention and management of mental health disorders: A review. *Journal of Education, Health and Sport*, *81*, 66622. https://doi.org/10.12775/JEHS.2025.81.66622
47. Calzo, J. P., Roberts, A. L., Corliss, H. L., Blood, E. A., Kroshus, E., & Austin, S. B. (2014). Physical activity disparities in heterosexual and sexual minority youth ages 12–22 years old: Roles of childhood gender nonconformity and athletic self-esteem. *Annals of Behavioral Medicine*, *47*(1), 17–27. https://doi.org/10.1007/s12160-013-9570-y
48. Voyles, C. H., Cruz Bañares, A. L., Ahedo Rocha, C. I., & Vermandere, H. (2025). Measuring the association between sports and mental health among Mexican LGBTQ people: Psychological distress among athletes, spectators/volunteers, and non-attendees during the 2023 Gay Games. *International Journal of Environmental Research and Public Health*, *22*(9), 1353. https://doi.org/10.3390/ijerph22091353
49. O'Connell, C. S., & Bottino, A. (2024). A systematic review of LGBTQ+ identities and topics in sport leadership. *Frontiers in Sports and Active Living*, *6*, 1414404. https://doi.org/10.3389/fspor.2024.1414404
50. Bedford, C. E., Trotter, A. M., Potter, M., & Schmidt, N. B. (2023). Minority stress and mental health in lesbian, gay, bisexual, transgender, and queer survivors of sexual assault. *Journal of Traumatic Stress*, *36*(6), 1031–1043. https://doi.org/10.1002/jts.22970
51. Hamdan, J. L., Shipper, A. G., Roth, S., & Zisman-Ilani, Y. (2023). Disparities in sport participation of transgender women: A systematic and scoping review protocol. *BMJ Open*, *13*(8), e074054. https://doi.org/10.1136/bmjopen-2023-074054
52. Mereish, E. H., & Poteat, V. P. (2015). A relational model of sexual minority mental and physical health: The negative effects of shame on relationships, loneliness, and health. *Journal of Counseling Psychology*, *62*(3), 425–437. https://doi.org/10.1037/cou0000088
53. Xu, Y., Hall, W. J., Scott, M., Gao, Y., Chiang, P.-C., Williams, D. Y., Srivastava, A., Ramon, M. E., & Englert, A. R. (2024). Strategies for coping with minority stress among queer young adults: Usage frequency, associations with demographics, and mental health. *International Journal of Environmental Research and Public Health*, *21*(8), 1052. https://doi.org/10.3390/ijerph21081052
54. Helminen, E. C., Ducar, D. M., Scheer, J. R., Parke, K. L., Morton, M. L., & Felver, J. C. (2023). Self-Compassion, Minority Stress, and Mental Health in Sexual and Gender Minority Populations: A Meta-Analysis and Systematic Review. *Clinical psychology : a publication of the Division of Clinical Psychology of the American Psychological Association*, *30*(1), 26–39. https://doi.org/10.1037/cps0000104
55. Sun, S., Guy, A. A., Murphy, M. J., Zelaya, D. G., Fernandez, Y., & Operario, D. (2024). Minority Stress, Mental Health, and Mindfulness and Self-Compassion as Moderators among Young Sexual Minority Men: A Moderated Structural Equation Analysis. *Journal of contextual behavioral science*, *33*, 100804. https://doi.org/10.1016/j.jcbs.2024.100804
56. Pereira, H., & Silva, P. (2021). The importance of social support, positive identity, and resilience in the successful aging of older sexual minority men. *Geriatrics*, *6*(4), 98. https://doi.org/10.3390/geriatrics6040098
57. Chaudoir, S. R., Wang, K., & Pachankis, J. E. (2017). What reduces sexual minority stress? A review of the intervention "toolkit." *Journal of Social Issues*, *73*(3), 586–617. https://doi.org/10.1111/josi.12233
58. Gorczynski, P., & Baron, D. (2024). Designing and delivering mental health literacy strategies in elite sport. *World Psychiatry*, *23*(1), 169–170. https://doi.org/10.1002/wps.21180