

Depressive symptom profiles in Icelandic team sport athletes: nine quantitative case analyses over a 6-month period

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Abstract

Most studies to-date have used mean difference analyses to explore group differences in depressive symptoms among athletes. However, these traditional group mean analyses may mask important information concerning symptom profiles such as the severity, type, and number of symptoms. In this study, we examined idiographic depressive symptom profiles in nine Icelandic team sport athletes with recurrent clinically significant depressive symptoms (clinical symptoms at baseline and six-month follow-up) and those with depressive symptoms only at one time point. The aim was to explore depressive symptom patterns in these two groups and their relationship with daily functioning and changes in sport-specific factors. Among those with recurrent clinical symptoms, depressive symptom profiles were stable, both in terms of type and severity of symptoms, while those with clinically significant symptoms observed only at one time point showed generally fewer symptoms, symptom profiles were more variable, and total symptom scores were less severe. Interestingly, no clear associations were observed between sport-specific variables, such as satisfaction with the head coach or subjective evaluation of athletic performance, and depressive symptoms, as several cases reported satisfaction in these areas despite significant depressive symptoms. This idiographic approach highlights the need for targeted and continuous assessment to better understand depressive symptoms in athletes.

Keywords: *Self-compassion, Screening, Performance, Coach-athlete relationship, Injury*

Depression is one of the most prevalent mental health disorders in the world (James et al., 2018). Approximately 16% of the world's population will meet the criteria for a major depressive disorder (MDD) during their lifetime (American Psychiatric Association, 2013), and an estimated 4-6% is currently living with depression (World Health Organization, 2017). Depression is an episodic and highly recurrent disorder as it is estimated that a major depression episode is likely to recur in approximately 40-60% of individuals (Eaton et al., 2008; Moffitt et al., 2010). Research suggests that recurrence in depression episodes may reflect individual differences in an underlying vulnerability (Burcusa & Iacono, 2007) and may indicate a worsening in the progression (e.g., severity) of the disorder (Burcusa & Iacono, 2007; Kessler & Bromet, 2013; Malhi & Mann, 2018).

Depressive symptoms include depressed or sad mood, decreased interest or anhedonia, appetite or weight changes, sleeping problems, psychomotor-related issues, fatigue, feelings of guilt, concentration problems, and suicidal thoughts (American Psychiatric Association, 2013). According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association, 2013), MDD is characterized by the presence of at least five specific symptoms, which must occur nearly every day for a minimum of two weeks. Crucially, at least one of the symptoms must be a core depressive symptom –either depressed mood or a marked loss of interest or pleasure in all, or most, activities. Additionally, the manifestation of these symptoms should represent a significant change from the individual's previous level of functioning (American Psychiatric Association, 2013).

Recent studies have suggested that the prevalence of depressive symptoms in athletes may be similar to rates found in the general population (Belz et al., 2018; Gorczynski et al., 2017; Nixdorf et al., 2020). Most studies have utilised self-report measures to assess depressive symptoms in athletes, and recent findings suggest that rates are highly variable across samples (e.g., 6.7% to 34%; Golding et al., 2020). This inconsistency in estimated prevalence rates across studies could be partly explained by differences in assessment methods and differences in the characteristics of the different study samples. For example, in a recent scoping review including 157 studies on depressive symptoms in athletes, Tahtinen et al. (2021) showed that studies utilized 28 different depressive symptoms screening tools. Furthermore, it was shown that only 17.2 % of the studies assessed depressive symptoms at multiple time points (Tahtinen et al., 2021). Considering that depression is an episodic and highly recurrent disorder (Eaton et al., 2008; Moffitt et al., 2010), assessing symptoms of depression at multiple time points within the same athletes is vital to capture specific symptom patterns across time.

Assessment of depressive symptoms

A formal diagnosis of major depression requires a carefully conducted diagnostic interview (Dawes et al., 2016). To date, however, most research on athletes has assessed depressive symptoms via self-report questionnaires (i.e., screening tools) (Golding et al., 2020; Tahtinen et al., 2021). Even though some screening tools, such as the patient health questionnaire (PHQ-9) (Kroenke et al., 2001), assess the same symptoms as when conducting diagnostic interviews, the diagnostic procedures (e.g., identification of the presence of core symptoms, functional impairment, and differential diagnosis) cannot be properly applied when utilising screening tools in research (Edmondson et al., 2013). While some screening tools, such as the PHQ-9, allow for an assessment to be made on the symptoms' influence on functioning in daily life, few if any previous studies among athletes have taken advantage of this aspect of the measure.

While recognizing the importance of conducting research using diagnostic interviews, practical constraints such as cost, time, and the availability of qualified clinicians often make this method less feasible. As a result, screening tools are likely to remain the predominant method for evaluating depressive symptoms in sport psychology research. Consequently, it is essential to critically assess and address the characteristics, weaknesses, and opportunities of these measures to optimise their utility in future research within the field.

When depressive symptoms are assessed via screening tools, scores from individual symptoms are summed to generate a total depressive symptoms score. Specific cut-off scores are then applied to determine whether individuals have clinically significant symptoms (Nixdorf et al., 2020; Tahtinen et al., 2021). Hence, the purpose of screening tools is to assess self-reported symptom severity and to identify *potentially* depressed individuals (rather than to diagnose depression) while trying to maintain an optimal trade-off between false negative and positive cases (Fried & Nesse, 2015b; Kroenke & Spitzer, 2002).

Since assessment via screening tools is often based on the summed total symptom score, each individual symptom weighs equally toward the total score. Consequently, core symptoms of depression, such as lack of interest/anhedonia and depressed mood - which must be present for a clinical diagnosis - do not necessarily need to

be present for an individual to attain a clinically significant score on screening tools. Indeed, as demonstrated by Tahtinen et al. (2021), 37.5% of all athletes who attained a clinically significant sum score on PHQ-9 did not exhibit the core symptoms of depression. The method of constructing sum scores and categorizing individuals with different symptoms under the same category (e.g., clinical vs. non-clinical symptoms) is based on the assumption that depression is a consistent syndrome (Fried & Nesse, 2015b). However, research on MDD suggests that individuals with the same diagnosis might present with highly variable individual symptom profiles (American Psychiatric Association, 2013). Since screening tools do not require any specific symptom to be present but rely merely on summed scores to determine the clinical significance of symptoms, the variability in specific symptoms noted among individuals diagnosed with MDD could be further amplified when utilizing screening tools. This emphasizes the need for careful consideration of specific symptoms when using screening-based evaluations. The significance of this notion is further highlighted in research showing that specific depressive symptoms can have varying effects on individuals' psychosocial functioning and may manifest differently across various life domains (Fried & Nesse, 2014). Therefore, focusing merely on the summed scores gained via depression screening tools may mask important information concerning the type of symptoms individuals may or may not be dealing with.

Sport-specific correlates of depressive symptoms

Schaal et al (2011) suggested that elite athletes may exhibit similar rates of psychological disorders as the general population; however, in athletes, they might be triggered by stressors within the sports environment. For instance, athletic injury can trigger depressive symptoms and other maladaptive responses (Rice et al., 2018). It has also been indicated that the coach-athlete relationship (Berntsen & Kristiansen, 2018), the environment, and training demands (e.g., overtraining) may significantly influence athletes' mental health and well-being (Saw et al., 2016). For example, Rice et al. (2018) showed that a poor coach-athlete relationship significantly correlated with worse mental health outcomes (Rice et al., 2018). It is also possible that when athletes experience issues with a specific depressive symptom, such as trouble sleeping, it could be a significant source of distress and performance impairment for athletes (Reardon et al., 2019). This, in turn, could potentially contribute to increased distress and even depression over time. Other sport-specific issues that research often highlights as potential triggers for depressive symptoms in athletes include public evaluation of performance (Doherty et al., 2016), career transitions (Stambulova, 2017), post-competition and post-Olympic blues (Howells & Lucassen, 2018), and involuntary retirement (Stambulova, 2017).

Far fewer studies have, however, explored individual-level factors that may potentially explain how these sport-specific triggers may lead to increased distress in some athletes but less so in others (Nixdorf et al., 2020; Tahtinen et al., 2021). One individual-level factor that has recently gained increased attention in sport psychology is self-compassion (Cormier et al., 2023). According to Neff (2003), self-compassion encompasses treating oneself with kindness and understanding when facing suffering, seeing one's failures as part of the human condition rather than feeling isolated and having a balanced awareness of painful thoughts and emotions. Research has shown that higher levels of self-compassion are related to psychological well-being (Stutts et al., 2018) and less depressive symptoms (e.g., Neff, 2003; Neff et al., 2007; Carvalhó et al., 2020).

The empirical literature, both among athletes and non-athletes, hence suggests that self-compassion may be an important protective factor against various psychopathologies, such as depression, mixed anxiety-depressive disorder, eating disorder, and post-traumatic stress disorder (MacBeth & Gumley, 2012; Odou & Brinker, 2014).

Moreover, several scholars have pointed out that little is known about the temporal relationship between potential (sport-specific) risk factors and depressive symptoms in athletes (Golding et al., 2020; Kuettel & Larsen, 2020; Rice et al., 2016; Tahtinen et al., 2021). Furthermore, most longitudinal (and cross-sectional) research has focused on group differences based on mean scores; however, mean difference analyses are not sensitive to the clinical relevance of the observed differences (Tahtinen, 2021). Hence, traditional group mean analyses may mask important information concerning more specific symptom profiles across time such as severity, type, and number of symptoms. Therefore, novel analytical approaches to exploring depressive symptoms in athletes are needed.

With this backdrop, an increased understanding of specific (idiographic) symptom profiles among athletes dealing with clinically significant depressive symptoms across time could contribute to improved awareness and, subsequently, improved prevention of depressive symptoms in athletes. The overall aim of this study was to explore depressive symptom profiles in athletes who experienced clinically significant depressive symptoms at least once across two time points (baseline to six-month follow-up). The specific objectives were; 1) to explore potential changes in overall depressive symptom severity and the manifestation of individual symptoms; 2) to assess how symptoms influenced athletes' daily functioning, and; 3) to analyse potential changes in selected sport-specific factors in parallel to depressive symptoms.

Methods

Participants

The sample at baseline (T1) consisted of 84 team sport athletes ($M_{age} = 22.9$, $SD = 5.0$) in the Northeast region of Iceland. The inclusion criteria for participating in this study at baseline (T1) were being 18-45 years old, being fluent in Icelandic, and being a player within a competitive team in the Northeast region during the competition season 2021-2022.

At the six-month follow-up (T2), a total of 21 team sport athletes ($M_{age} = 24.7$, $SD = 6.7$) provided valid responses. The athletes were competitive and elite-level athletes (level ranging from third highest league to top-level leagues) in football (soccer) ($N=4$, 19.05%), team handball ($N=4$, 19.05%), basketball ($N=4$, 19.05%), volleyball ($N=5$, 23.81%), and ice hockey ($N=4$, 19.05%). Of these 21 athletes, nine reported total depressive symptoms scores above clinically significant cut-off. Consequently, in the current study, the depressive symptom profiles of these nine athletes were analysed (all competing at the highest national level in their sport).

Measures

Injury and retirement. Injury was assessed by asking participants to report the number of current injuries that negatively influenced their ability to perform. Response options ranged from one to three (1 = yes, one injury, 2 = yes, more than one injury, and 3 = no injuries). Having sustained an injury did not necessarily mean that the athlete was not competing, hence, playing status was

assessed by a follow-up question (are you currently competing despite your current injury/injuries?). Retirement was assessed based on whether the athlete had retired at the time of the second assessment (T2), with a binary "yes" or "no" item.

Satisfaction with head coach and personal performance were assessed on five-point Likert scales, ranging from 1 (very dissatisfied) to 5 (very satisfied). Both items assessed athlete perceptions in the past two weeks to temporally match with the assessment of depressive symptoms.

Self-Compassion was assessed by the Self-Compassion Scale (SCS; Neff, 2003) to measure individuals' extent of self-compassion. The SCS is a 26-item self-report measure and is currently the most widely utilised measure of self-compassion (Neff, 2003). The SCS is based on Neff's (2003) theoretical model of self-compassion. Items are scored on a five-point rating scale ranging from 1 "almost never" to 5 "almost always" (Neff, 2003). To generate a total score, the mean of each subscale is taken, and thereafter the average of the six subscales is calculated. The internal consistency of the SCS has been reported to range from $\alpha = .73$ to $.94$ (Leary et al., 2007; Neff, 2003) in university student samples. Furthermore, the SCS has also shown good internal reliability within a group of female athletes ($\alpha = .87$; Mosewich et al., 2013). Additionally the Icelandic version of SCS has been found to be good for four out of six factors (Gunnarsdóttir, 2019), self-kindness, isolation, self-judgement and over-identification (all except common-humanity and mindfulness). In the current sample, reliability was shown to be acceptable ($\alpha = .84$) at T1.

Depressive symptoms were assessed by the PHQ-9 (Kroenke et al., 2001). The PHQ-9 assesses the same nine symptoms as defined by the DSM diagnostic criteria, including the two core or defining symptoms of depression (depressed mood and lack of interest/anhedonia) and seven additional symptoms (i.e., appetite or weight changes, fatigue, sleeping problems, psychomotor-related issues, feelings of guilt, concentration problems, and suicidal thoughts).

The items are scored on a four-point Likert scale ranging from 0 (not at all) to 3 (nearly every day) (Kroenke et al., 2001). The total score ranges from 0-27, where higher scores represent more severe symptoms. Kroenke and Spitzer (2002) suggested a cutoff score of 10 for identifying individuals with clinically relevant symptoms. More specific cut-off scores can also be utilised to determine severity; a total score of 1-4 suggests minimal symptoms, 5-9 mild symptoms, 10-14 moderate symptoms, 15-19 moderately severe symptoms, and 20-27 severe symptoms. When exploring the severity of individual symptoms, symptoms scored ≥ 2 can be considered clinically significant (Manea et al., 2012).

A follow-up question on the PHQ-9 scale assesses functional impairment, "if you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people". The items are scored on a four-point Likert scale ranging from 0 (not difficult at all) to 3 (extremely difficult). The PHQ-9 has been shown to have good internal ($\alpha = .78-.89$) and test-retest reliability ($r = .84$). Additionally, the Icelandic version of the PHQ-9 has displayed good internal reliability among the general and clinical populations. In the current sample, reliability was also shown to be acceptable at T1 ($\alpha = .79$).

Procedures

A non-probability (convenience) sampling method was utilized to recruit athlete participants competing in

team sports in the Northeast region of Iceland. Firstly, head coaches from the teams that met the inclusion criteria were contacted via email, asking about interest in participating in the research. All potential participants received an introduction letter where the research was thoroughly explained with a link to the questionnaire. As well as being informed about the purpose of the study and confidentiality provisions, they were told that participation was voluntary and that they could withdraw without explanation at any time. After giving consent, participants completed online questionnaires at baseline (T1, April-May) and six months later (T2, November-December) respectively. Demographic items (age, gender, sport) were recorded only at T1. One week after each time point, participants received a reminder containing a link to the assessment. All participants who consented to participate in the study were encouraged to answer within two weeks of receiving the questionnaire.

Ethical Considerations

Participants received all relevant information about the study, its purpose, voluntariness of participation, and anonymity. All data was collected and stored securely by the University of Akureyri Research Center (RHA) and researchers were blinded to any potentially identifiable information, such as email addresses. All participants were informed that by participating in the study, they had a chance of winning a lottery for a gift card to the local shopping center. The study was approved by the Icelandic Bioethics Committee (application number VSN-22-022).

Analytical strategy

Cross-sectional analyses at baseline (T1). All statistical analyses were performed using IBM SPSS version 28.0. An independent t-test was performed to compare gender and mean depressive symptom differences between dropouts (responded only at T1, $N = 63$, male = 66.7%) and non-dropouts (responded at T1 and T2, $N = 21$, male = 28.6%). A chi-square test was utilised to determine proportional differences in gender among dropouts and non-dropouts. Self-compassion total scores at T1 for each athlete were reported as percentile ranks using the fractional rank as a percentage function in SPSS. This approach allowed for a basic and meaningful interpretation of individuals' relative ranking on self-compassion within the total sample at T1 ($N=84$). A higher rank percentile score represented a higher self-compassion score relative to other scores in the sample at T1.

Longitudinal idiographic analyses from baseline (T1) to 6-month follow-up (T2). The focus was on exploring specific symptom profiles among athletes who reported clinically significant depressive symptoms at T1 and/or T2 ($N = 9$). Research has shown that depression is a highly recurrent disorder (Eaton et al., 2008; Moffitt et al., 2010), with increasing number of episodes reflecting a progression in the severity of the disorder (Burcusa & Iacono, 2007; Kessler & Bromet, 2013; Malhi & Mann, 2018). Therefore, athletes were classified into two groups based on the recurrence of clinically significant symptoms (PHQ-9 total score ≥ 10): those who reported clinically significant symptoms at both T1 and T2 (CS2, $N = 3$) or only at one time point (CS1, $N = 6$).

Each depressive symptom was categorized based on the PHQ-9 item scoring criteria, where response options ranging from 0 (not at all) to 1 (several days) were considered *clinically non-significant*, and symptoms from 2 (more than half of the days) to 3 (nearly every day) were considered *clinically significant*. Any change across the two categories was considered clinically significant (e.g.,

change from T1 score = 1 to T2 score = 2 would be considered clinically significant increase). However, if symptom scores changed within the severity category (i.e., T1 score = 0, T2 score = 1), these changes were merely referred to as an increase or decrease in severity.

For the assessment of the coach-athlete relationship and performance satisfaction, athletes scoring 4-5 were defined as satisfied, 3 as neutral, and 1-2 as dissatisfied. Any change across these three categories from T1 to T2 was considered significant.

Results

The dropout rate from T1 to T2 was 75%. There was a significant difference in mean depressive symptom score on the PHQ-9, with athletes participating at both time points showing significantly higher scores ($M = 8.2$, $SD = 6.0$) than athletes who dropped out ($M = 4.8$, $SD = 3.6$), $t(24.9) = 2.45$, $p = 0.01$. There was also a significant gender difference between dropouts ($N = 63$, male = 66.7%) and non-dropouts ($N = 21$, male = 28.6%), $\chi^2(1) = 9.3$, $p = 0.02$.

Descriptive analyses

In total, three female athletes, 23, 28, and 41 years old ($M_{\text{age}} = 30.7$, $SD = 9.3$) were included in the CS2-group, and all of them were experiencing moderate to severe depressive symptoms. Six athletes were included in the CS1 group, five of whom were female and one male. Age in the CS1 group ranged from 18 to 25 years old, ($M_{\text{age}} = 20.3$, $SD = 2.7$) and their depressive symptom ranged from minimal to severe.

Case descriptions: Depressive symptom profiles, sport-specific factors, and self-compassion

The CS2 - group profiles

Jenny's total depressive symptoms score increased in severity from moderate (T1) to moderately severe (T2) (Table 1). At T1, she experienced one core symptom (depressed mood) and five additional symptoms. There was little change in her overall symptom profile as she manifested with the same clinically significant symptoms at both time points. There was only one significant change in her symptom profile; At T1, the core depressive symptom "lack of interest" was clinically non-significant (score=1) but increased significantly at T2 (score=2). Furthermore, her concentration issues became more severe (T1 score = 2, T2 score = 3). She reported that her symptoms significantly impaired her daily functioning at both time points.

Jenny expressed more satisfaction with her coach at T2 (satisfied) than at T1 (neutral) and was satisfied with her performance despite competing with an injury at both T1 and T2. Jenny's percentile ranking (21.4) on self-compassion suggested that around 79% of the total sample ($N = 84$) at T1 had the same or higher self-compassion total score than her.

Sarah experienced severe symptoms of depression at both time points, and there was little change in most of her symptoms from T1 to T2. At T1, all symptoms except for depressed mood and suicidal thoughts were clinically significant. The only notable changes from T1 to T2 were that at T2, she was now also experiencing clinically significant depressed mood (T1 = 1, T2 = 3), and her lack of interest/anhedonia became more severe (T1 = 2, T2 = 3). She also reported that her symptoms at both time points significantly impaired her daily life functioning.

Table 1. Depressive symptoms and correlates at baseline (T1) and six-month follow-up (T2)

Group	CORS			Additional symptoms							PHQ-9		SCS		Sport-specific					
	DM	LI	SL	FA	AP	WO	CO	PM	ST	No. *	CORS	Severity/IF	%rank	Injury	Coach	Performance				
CS2 (N=3)																				
T1 Jenny (23)	2*	1	2*	2*	2*	2*	2*	2*	2*	2*	1	0	0	6	Yes	Moderate/3	21.4	Yes	Neutral	Satisfied
T2 Jenny	2*	2*	2*	2*	2*	2*	2*	2*	2*	2*	3*	1	0	7	Yes	Msevere/2	-	Yes	Satisfied	Satisfied
T1 Sarah (28)	1	2*	3*	3*	3*	3*	3*	3*	3*	2*	0	0	7	Yes	Severe/2	66.7	Yes	Satisfied	Satisfied	
T2 Sarah	3*	3*	3*	3*	3*	3*	3*	3*	3*	1	0	0	7	Yes	Severe/3	-	No	Neutral	Dissatisfied	
T1 Louise (41)	1	1	3*	3*	2*	2*	2*	2*	2*	1	1	1	4	No	Msevere/2	2.4	Yes	Neutral	Neutral	No response
T2 Louise	2*	2*	3*	3*	2*	2*	2*	2*	2*	0	0	1	6	Yes	Msevere/2	-	Yes	Neutral	Neutral	Dissatisfied
CS1 (N=6)																				
T1 Karen (20)	3*	3*	0	1	2*	0	1	0	0	1	0	0	3	Yes	Moderate/2	9.5	No	Dissatisfied	Dissatisfied	
T2 Karen	0	0	0	1	0	1	0	0	0	0	0	0	0	No	Minimal/0	-	No	Neutral	Satisfied	
T1 Helen (25)	2*	2*	2*	1	1	1	1	1	1	0	0	1	3	Yes	Moderate/2	67.9	Yes	Satisfied	Satisfied	
T2 Helen	1	2*	0	1	1	1	0	1	0	0	1	0	1	Yes	Mild/1	-	No	Satisfied	No response	
T1 Jessica (18)	3*	3*	1	3*	3*	3*	3*	2*	3*	3*	2*	3*	8	Yes	Severe/2	10.7	Yes	Neutral	Satisfied	
T2 Jessica	1	1	1	1	0	2*	0	0	0	0	0	0	1	No	Mild/1	-	Yes	Satisfied	Satisfied	
T1 Rachel (18)	1	2*	0	1	2*	3*	1	0	0	0	0	0	3	Yes	Moderate/1	4.8	No	Satisfied	Satisfied	
T2 Rachel	0	2*	0	0	1	3*	0	0	0	0	0	0	2	Yes	Mild/1	-	No	Satisfied	Satisfied	
T1 Annie (19)	1	1	1	1	0	1	1	0	0	0	0	0	0	No	Mild/-	19.1	No	Neutral	Satisfied	
T2 Annie	2*	2*	3*	3*	1	1	1	1	1	1	0	0	4	Yes	Moderate/1	-	No	Satisfied	Dissatisfied	
T1 Mike (22)	2*	2*	2*	1	1	1	1	1	1	1	1	1	3	Yes	Moderate/1	13.1	Yes	Neutral	Dissatisfied	
T2 Mike	1	1	1	1	1	1	1	1	2*	1	0	0	1	No	Mild/2	-	Yes	Neutral	Neutral	

Note. T1=timepoint 1, T2= timepoint 2, CORS= core symptoms, DM=depressed mood, LI=lack of interest, SL=sleep, FA=fatigue, AP=appetite, WO=worthlessness, CO=concentration, PM=psychomotor, ST=suicidal thoughts. Symptom scores: 0-1=not at all/several days, 2-3= more than half the days/nearly every day. No. * = number of clinically significant symptoms (symptom score ≥2). IF=injured/functional (0-1=not at all/severely much). SCS = Self-compassion, %rank = the percentile rank of athlete's self-compassion score within the total sample at T1 (N=84). Injury = currently dealing with an injury/injuries, coach=satisfaction with head coach in past two weeks, performance = satisfaction with performance in competition in the past two weeks.

Sarah reported poorer performance satisfaction at T2 (dissatisfied) than at T1 (satisfied) and had a more neutral perception of her coach (satisfied T1 to neutral at T2). Sarah reported competing with an injury at T1 but no injury at T2. Her percentile ranking (66.7) on self-compassion suggested that around 33% of the total sample ($N = 84$) at T1 had the same or higher self-compassion total score than her.

Louise did not show a change in her total depressive symptoms score, experiencing moderately severe symptoms both at T1 and T2. However, she showed notable changes in her symptom presentation: at T1, Louise was experiencing clinically relevant issues with sleep, appetite, fatigue, and worthlessness, yet she did not experience clinically significant core symptoms of depression. By T2, she, however, also reported clinically significant core symptoms, depressed mood, and lack of interest (both symptom scores changed from $T1 = 1$ to $T2 = 2$). She reported that her symptoms significantly impaired her daily life functioning at both time points.

Louise's perception of her relationship with her coach did not change (neutral) and she competed injured at both time points. While she did not report her perceived performance satisfaction at T1, she was dissatisfied with her performance at T2. Louise's percentile ranking (2.4) on self-compassion suggested that around 97% of the total sample ($N = 84$) at T1 had the same or higher self-compassion total score than her.

Overall summary CS2 group

All three athletes had similar profiles experiencing issues with sleep, fatigue, appetite, and worthlessness at both time points. While Jenny and Sarah experienced at least one core symptom of depression at both time points, Louise did not exhibit the core symptoms at T1. Nevertheless, at T2, all three athletes reported experiencing both core symptoms of depression. There were few significant changes in the type of symptoms athletes were experiencing across time points - the changes mostly involved an increase in the already clinically significant symptoms. Experiencing psychomotor issues and suicidal thoughts were rare. Injuries were highly prevalent, but athletes were mostly satisfied or neutral with their coach. A clear link between depressive symptoms and sport-specific factors was only observed for Sarah. More specifically, decrease in coach satisfaction and performance satisfaction were paralleled by a significant increase in depressed mood (score increased from 1 to 3) and a further increase in severity of lack of interest (score increased from 2 to 3). All athletes reported that their symptoms significantly impaired their daily functioning.

The CS1 group

Karen's total depressive symptoms score decreased in severity from moderate (T1) to minimal (T2). At T1 she experienced clinically significant core symptoms (both scores = 3) and issues with appetite. All her clinically significant symptoms had dissipated at T2. Her symptoms significantly impaired her daily life functioning at T1 but not at T2.

Karen expressed significant improvements from T1 to T2 in her relationship with her coach (dissatisfied at T1 to neutral at T2) and with her performance (dissatisfied T1 to satisfied T2). She was not dealing with an injury at either time point; however, her percentile ranking (9.5) on self-compassion suggested that 90% of the total sample ($N = 84$) at T1 had the same or higher self-compassion total score than her.

Helen's total depressive symptoms score decreased in severity, experiencing moderate symptoms at T1 and mild symptoms at T2. At T1, she experienced depressed mood, lack of interest, and issues with sleep (all scores = 2). However, at T2, she reported only experiencing lack of interest. She reported that her symptoms significantly impaired her daily life functioning at T1 but not at T2.

Helen went from competing injured at T1 to no injuries at T2. Her perception of her relationship with her coach did not change (satisfied) and she was also satisfied with her performance at T1 (not competing at T2). Helen's percentile ranking (67.9) on self-compassion suggested that 32% of the total sample ($N = 84$) at T1 had the same or higher self-compassion total score than her.

Jessica's total depressive symptoms decreased from severe at T1 to mild symptoms at T2. In total, she had eight clinically significant symptoms at T1, where sleep issues were the only non-significant symptom. At T2 the only clinically significant depressive symptom was feelings of worthlessness. She reported that her symptoms significantly impaired her daily functioning at T1, but not at T2.

Jessica's perception of her relationship with her coach changed (neutral T1 to satisfied T2), while she experienced satisfaction with her performance at both time points. She reported competing injured at both time points. Jessica's percentile ranking (10.7) on self-compassion suggested that around 91% of the total sample ($N = 84$) at T1 had the same or higher self-compassion total score than her.

Rachel reported a moderate total symptoms score at T1 and mild at T2. At T1, she experienced a lack of interest, issues with appetite, and worthlessness; however, at T2, she experienced only a lack of interest and worthlessness. She reported that her symptoms did not significantly impair her daily life function at either time point.

Rachel reported no injuries at T1 and T2. She was satisfied with her relationship with her coach and performance at both time points. Her percentile ranking (4.8) on self-compassion suggested that around 95% of the total sample ($N = 84$) at T1 had the same or higher self-compassion total score than her.

Annie experienced mild depressive symptoms at T1 that increased to moderate symptoms at T2. She had no clinically significant depressive symptoms at T1, however, she experienced both core symptoms as well as issues concerning sleep and fatigue at T2. She reported that her symptoms did not impair her daily life function at T2 (no answer at T1).

Annie's perception of her relationship with her coach improved (neutral T1 to satisfied T2), however, her performance rating decreased (satisfied T1 to dissatisfied T2). She reported no injuries at T1 or T2. Her percentile ranking (19.1) on self-compassion suggested that around 82% of the total sample ($N = 84$) at T1 had the same or higher self-compassion total score than her.

Mike's depressive symptoms significantly decreased in severity, experiencing moderate symptoms at T1 and mild symptoms at T2. Both core symptoms and issues with sleep were present at T1, while at T2 the only significant symptom was feelings of worthlessness. At T1, his symptoms did not impair his daily functioning, however, at T2 his symptoms significantly impaired his daily functioning.

Mike's perception of the relationship with the coach did not change (neutral), but his performance satisfaction improved (dissatisfied T1 to neutral T2). Mike competed injured at both time points, and his percentile ranking

(13.1) on self-compassion suggested that around 87.0% of the total sample ($N = 84$) at T1 had the same or higher self-compassion total score than he did.

Overall summary CS1 group

For this group, five athletes out of six reported clinically significant total symptom scores at T1 but non-significant symptoms at T2. Annie was the only athlete in the group who showed a significant increase in severity at T2. Mood and motivational issues were the most common symptoms (i.e., core symptoms) but additional symptoms were highly variable across athletes. However, experiencing worthlessness was common and self-compassion scores were low. Athletes usually reported 3-4 clinically significant symptoms when their total scores were above the clinical cut-off (while in the CS2 group most athletes usually had 6-7 symptoms). Hence, athletes often reported a range of symptoms that they had experienced only a few days in the past two weeks (symptom score = 1). Athletes also varied in their perceptions concerning impairment in functioning – most athletes reported impairment only when experiencing moderate or higher symptoms, while others (i.e., Mike) perceived significant impairment despite the total score not being above the clinical cut-off. Athletes were mostly free of injury and reported general satisfaction with their relationship with the coach. Personal performance ratings followed different profiles for Karen, Annie, and Mike who all reported dissatisfaction with performance when they experienced clinically significant depressive symptoms, but when symptoms were mild or minimal, they all reported satisfaction with their performance. The remaining athletes were satisfied with their performance independent of changes in their depressive symptom severity.

Discussion

Research is sparse regarding athletes' symptom profiles and profiles over time, with most studies having used merely total sum scores to assess prevalence rates or mean differences between specific athlete groups. These traditional approaches are limited in their ability to provide meaningful interpretations concerning the complexity and severity of these symptoms. Furthermore, considering the general lack of longitudinal studies on depressive symptoms in athletes, the overall aim of this study was to utilise an alternative approach to analysing results gained from depressive symptoms screening tools. By examining the specific depressive symptom patterns across two time points, our study aimed at increasing awareness of longitudinal profiles in depressive symptoms among specific cases of athletes.

Research suggests that recurrence in depression episodes may indicate a worsening in severity of the disorder (Burcusa & Iacono, 2007; Kessler & Bromet, 2013; Malhi & Mann, 2018). Considering that depression is an episodic and highly recurrent disorder (Eaton et al., 2008; Moffitt et al., 2010), we categorised athletes depending on the recurrence of clinically significant depressive symptoms (per total symptoms scores). The CS2 group consisted of three athletes that reported clinically significant symptoms at both time points and the CS1 group consisted of six athletes reporting clinically significant symptoms at one time point. The specific symptom profiles for CS2 group athletes were highly homogeneous with little change in the type of symptoms and symptom severity and across time. The overall changes that were noted were mostly related to changes in severity rather than symptomatology. In other words, symptoms that were considered clinically significant

(scored two or three) remained clinically significant across time, despite increases or decreases in scores (i.e., score changed from two to three or vice versa). Two out of three athletes experienced at least one core symptom, five symptoms in total, and experienced significant functional impairment at both time points. Louise was the only one of the three athletes who did not report significant core symptoms on T1. Despite that, her sum score resulted in moderately severe depressive symptoms. At T2 the total symptom severity remained the same, but there was a significant increase in core symptoms severity, while concentration and psychomotor decreased in severity (from scores = 1 to scores = 0). Some of Louise's symptoms, such as neurovegetative symptoms (appetite/weight and sleep), fatigue, and worthlessness may have contributed over time to the observed increase in mood and motivational issues. Hence in Louise's case, interventions exploring specific symptomatology early on and focusing on specific problems and symptoms may have prevented the development of significant core symptomatology (Fried & Nesse, 2015a).

The symptom patterns and functional impairments among the CS2 group athletes mimicked the symptom criteria for a formal diagnosis. Our findings raise the question of whether these three athletes were similar in symptomatology due to the overall severity and recurrence of their problems. However, according to Fried (2017), individuals with an MDD diagnosis often show highly heterogeneous symptom profiles. Although the CS2 group only included three athletes and direct comparisons between previous studies, such as Fried (2017), are not possible, our findings suggested that the symptom profiles of athletes with more severe and recurrent symptoms were, in fact, more homogeneous than those observed among the CS1 group. It has been noted that identifying homogeneous subtypes of depression could guide treatment selection and inform clinical judgment (Toenders et al., 2020). Furthermore, there is some indication that symptoms may vary in their influence on the severity and context (e.g., work or social life) of impairment (Fried & Nesse, 2014). Thus, for athletes in our study, exploring specific symptom profiles may have not only informed referral to treatment but also potential preventative initiatives. For example, Fried and Nesse (2014) showed that sad mood and concentration issues explained the largest variation in psychosocial functioning. Future studies may want to conduct similar analyses among athletes to identify potential symptoms that may predict future depressive episodes and decreased functioning and subsequently, inform future early intervention initiatives.

For the CS1 group, we found that total symptoms scores were overall milder; however, all athletes experienced at least one core symptom when scoring above the clinical cutoff. Previously, Tahtinen's et al., (2021) showed that approximately 40% of athletes with clinically significant symptoms did not exhibit the core symptoms of depression. It must, however, be noted that only nine athletes with depressive symptoms were included in this study, while in the Tahtinen's et al (2021) study 72 athletes with clinically significant symptoms were included. Another interesting finding among the CS1 group was that most of the athletes reported that their depressive symptoms significantly impaired their daily functioning when total symptoms reached clinical cut-off. However, it was also observed that Mike, who at T2 did not report clinically significant symptoms, still reported significant impairment in functioning due to his symptoms. Our findings, alongside with the general lack of use of the functional impairment item on the PHQ-9 in previous sport psychology research,

further highlight the need for a careful idiographic approach to evaluating depressive symptoms and their relative impact on individuals' functioning.

Considering that some athletes also reported satisfaction with both coach and individual performance despite experiencing significant depressive symptoms and impairment in daily functioning, it may be challenging for stakeholders in sport to identify athletes at risk. This underlined not only the importance of the role of psychologists or other mental health professionals in sport, but also the importance of coaches and teammates in understanding each athlete as a whole person rather than merely as an athlete. Depressive symptoms can vary in their impact on individuals' psychosocial functioning and impact differently on specific life domains (e.g., work and interpersonal relationships; Fried & Nesse, 2014). Hence, while athletes may have experienced severe distress in their personal lives, this may not have translated to impairment in the context of sport. In fact, for some, being involved in the sport may also function as an escape from distress (Doherty et al., 2016). While engagement in sport may serve as a relieving outlet in the short-term, it may also contribute to poorer early identification of the underlying distress and a potential increase in severity when faced with life events that remove the athlete from this protective environment (e.g., injury). Interestingly, most athletes in our sample competed injured, however, whether this may have been due to a high need to "stay in the game" to escape distress is an interesting empirical question for future studies. Furthermore, injury prevalence in this sample among athletes with significant depressive symptoms is in line with previous studies that have shown that depressive symptoms are common in athletes following sport injury (Appaneal et al., 2009).

Results from these analyses show that most of the athletes who experienced clinically significant symptoms had generally low scores on self-compassion based on their relative ranking within the initial study sample at T1 (N=84). This is in line with recurrent findings that higher levels of self-compassion are related to less depressive symptoms (e.g., Neff, 2003; Neff et al., 2007; Carvalhó et al., 2020). Furthermore, according to Neff (2023) self-compassion is not just a fixed personality trait but a skill that can be learned and practiced. **Given the positive outcomes associated with self-compassion, it could be highly beneficial to introduce and integrate this concept into sports early on.**

This research is not without limitations. Sport-specific variables were assessed by single items, and therefore future research could explore the relationship between coach and athlete and performance with more standardized measures. Although the internal reliability of PHQ-9 and SCS was good, very few studies have assessed their psychometric properties among athletes. The dropout rate from T1 to T2 was 75% and the athletes who participated at both time points had significantly higher depressive symptoms than the athletes who dropped out. Additionally, the dropout rate was much higher for male than female athletes. What caused this dropout rate is unknown; however, previous studies have shown that females are more likely to participate in studies than males (Smith, 2008). Although gender differences were not measured in these analyses, due to the lack of male participants, previous results have shown that female athletes report a higher prevalence of depressive symptoms than males (Golding et al., 2020; Tahtinen et al., 2021; Wolanin et al., 2015). Regardless of these limitations, the findings in this study highlight the importance of idiographic approaches to exploring

depressive symptoms and encourage future studies to utilise novel analytical strategies to advance current knowledge.

Conclusion

This study underscores the complex relationship between depressive symptoms and sport-specific variables such as satisfaction with coaches and subjective evaluations of athletic performance. The findings suggest that athletes can experience significant psychological distress while being content or even highly satisfied in their sport roles. This highlights the challenges with early identification of mental health issues in athletes. Future research should continue to utilise novel analytical approaches to explore the relationship between sport-related factors and mental health issues over time. Our findings also underscore the need for holistic, tailored approaches in sports psychology to effectively address and understand the mental health challenges faced by athletes.

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