





## ORIGINAL ARTICLE

# Impact of deep vein thrombosis on adolescent athletes: Navigating an invisible disability

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## Abstract

**Background:** Injury in adolescent athletes that threatens their sport participation can result in a sense of identity loss during critical years for identity development, creating the potential for significant mental health challenges. The specific effect of deep vein thrombosis (DVT) in this vulnerable population has not been characterized.

**Purpose:** To describe the impact of DVT diagnosis, treatment, and long-term complications on the mental well-being of athletes who sustained a DVT during adolescence and to identify strategies to improve the quality of care for these patients.

**Methods:** Using a qualitative study design, athletes with a history of DVT during adolescence and their parents were recruited to participate in semistructured interviews. Interviews were transcribed and analyzed using thematic analysis. Participants were recruited until reaching thematic saturation.

**Results:** In total, 19 participants (12 athletes, 7 parents) were recruited. Athletes were mainly males (67%), median age at time of DVT was 15 years (range, 12–18 years), and median age at study participation was 19 years (range, 16–34 years). Thematic analysis revealed four main themes: Theme 1: DVT posed a threat to sport participation; Theme 2: at a personal level, there were significant mental health challenges; Theme 3: at a societal level, DVT is an invisible disability; and Theme 4: physical, psychological, and transition support are important to improve the care of these patients.

**Conclusion:** Deep vein thrombosis threatens an athlete's participation in sport, resulting in a significant and complex impact on their mental well-being. Heightened awareness and a multidisciplinary approach are needed to help young athletes navigate the consequences of DVT.

## KEYWORDS

adolescent, mental health, quality of health care, thrombosis, vulnerable population

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## Essentials

- The impact of deep vein thrombosis (DVT) on the well-being of young athletes is unknown.
- We conducted a qualitative study with semistructured interviews to explore the impact of DVT.
- Themes: threat to sport, mental health challenges, invisible disability, and a need for support.
- Heightened awareness and a multidisciplinary approach are critical to help athletes navigate DVT.

## 1 | INTRODUCTION

Athletes who dedicate significant time to their sport and prioritize their sport over other aspects of their life develop a sense of identity within their sport.<sup>1</sup> Although identity is dynamic throughout the course of life, the adolescent years are when identity is consolidated.<sup>2,3</sup> Hence, athletes heavily involved in sports during adolescence often develop a sense of who they are that is primarily oriented around their role as an athlete.<sup>1,4,5</sup>

Athletic identity refers to the degree to which someone identifies with their athlete role and feels a personal connection to their sport.<sup>1,6</sup> Since an athlete's identity can be profoundly intertwined with their sport, a threat to sport participation can result in a sense of identity loss.<sup>5,7-9</sup> Personal achievements help build confidence and are critical to develop a sense of self.<sup>3</sup> When athletes are taken from their sport, it can hinder their source of success. Those with higher perceptions of athletic identity (e.g., solely view their identity as an athlete) and who fail to explore identities outside of sport (i.e., identity foreclosure) will experience a greater impact.<sup>1,5,10,11</sup> In addition, the loss of sport impacts their social networks, particularly for those who do not develop friendships outside of their sport.<sup>5,8</sup> Furthermore, athletes are less likely to seek help when struggling with mental health challenges due to a complex set of psychosocial barriers, including the emphasis on mental toughness and the stigma and shame associated with help-seeking behaviors in this population.<sup>9,12-16</sup>

Deep vein thrombosis (DVT) diagnosis, treatment, and potential long-term complications (i.e., postthrombotic syndrome [PTS], DVT recurrence) can affect young athletes.<sup>17,18</sup> At the time of DVT diagnosis, acute symptoms and anticoagulation management limit participation in sports. Even after a DVT resolves, approximately 25% of pediatric patients will develop PTS, a long-term complication of DVT.<sup>17,19,20</sup> PTS is characterized by poor endurance, swelling, and pain in the affected limb.<sup>21</sup> These symptoms create an additional barrier to an athlete's sport participation. Recognized and widely studied threats to sport participation include injury and retirement. However, the unique effects of DVT in this vulnerable population have not been characterized. Understanding the impact of DVT to sport is particularly relevant not only to hematologists and thrombosis experts but also to all health care professionals involved in the care of patients with DVT.

The purpose of this study was to explore the impact of DVT on the mental well-being of athletes who sustained a thrombotic event during adolescence and to explore potential strategies to improve the quality of health care for these patients.

## 2 | METHODS

### 2.1 | Participants and procedures

Using a cross-sectional qualitative study design and purposive sampling, athletes with a history of DVT and their parents were invited to participate in a single semistructured interview. Eligibility included the following: (1) patients with an objectively documented upper- or lower-extremity DVT, (2) 18 years of age or younger at the time of their thrombotic event, and (3) identified as athletes at the time of their thrombotic event. This also included former patients who had been transferred to adult care, which allowed us to obtain a broader patient perspective on the impact of DVT. Patients were identified through the Thrombosis Clinic at The Hospital for Sick Children (SickKids), the SickKids Thrombosis database, and study databases. Participants were recruited until reaching thematic saturation (i.e., no new themes were observed in at least two consecutive interviews). Participants were invited to participate in the study via mail, telephone, and face to face. The study was conducted between July 2021 and January 2022. Ethics Review Board approval and informed consent were obtained before study participation. During the consent process, participants were informed that the goal of the study was to understand the impact of DVT to them as athletes.

Athletes participated in a semistructured interview that was conducted in person in the hospital setting or virtually. During the interviews, patients and parents were asked to share their perspective and experiences in relation to the impact of DVT symptoms, anticoagulation, and long-term complications on them/their child (Appendix S1). In addition, they were asked what aspects of their care were perceived as helpful and what else could have been done to improve care during this challenging time. These semistructured interview questions were researcher generated and informed by the experience of the clinical team and in consultation with sport scientists.

Two members of the research team, a clinician (JV, nurse practitioner) and a research assistant (RD, DB) with training in research methods, were present for all interviews. Whereas the clinician knew most participants through involvement in their clinical care, the research assistants were not involved in their care. Only the participants and researchers were present at the time of the interviews. Field notes were made by the research assistant during the interviews.

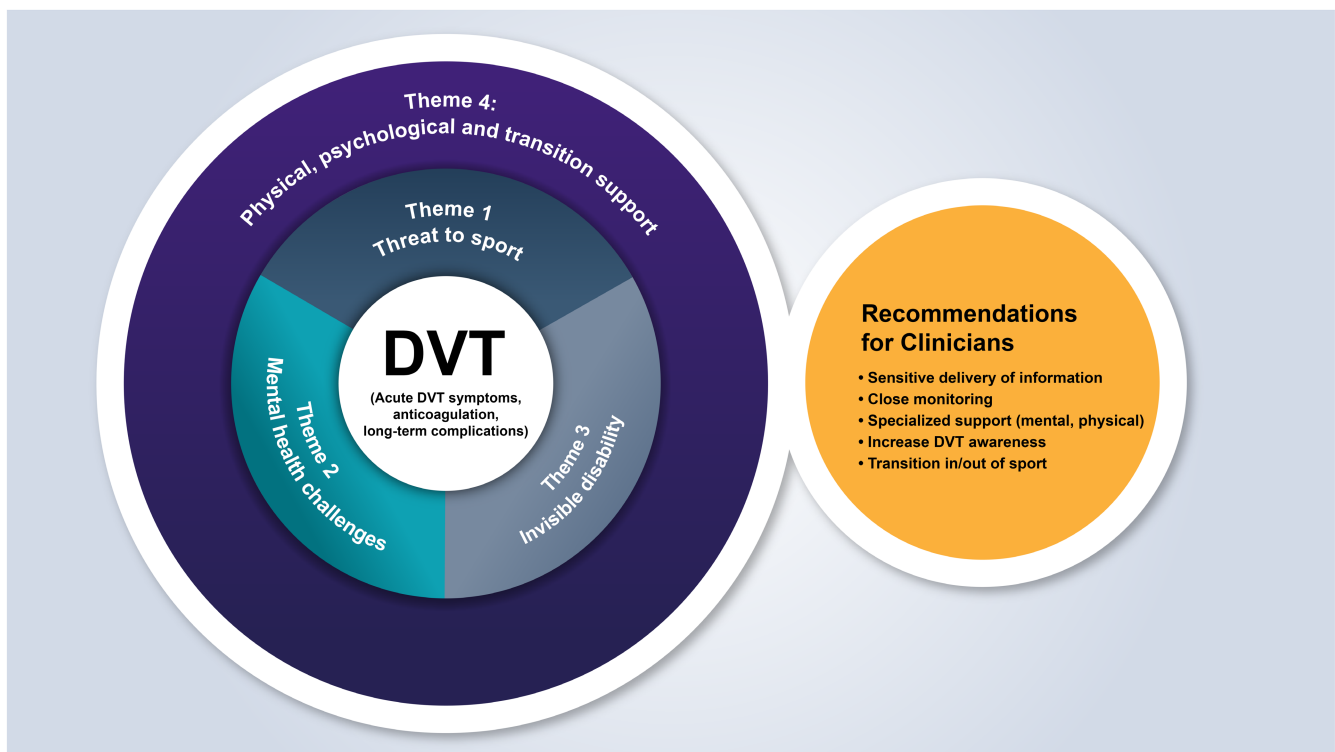
Immediately before the interview, two questionnaires were administered by the research team, the Athletic Identity Measurement Scale (AIMS)<sup>1</sup> and the symptoms questionnaire of the index for

**TABLE 1** Demographic characteristics of athletes ( $n = 12$ )

Variable	Value
Male sex, $n$ (%)	8 (67)
Age at DVT diagnosis in years, median (range)	15 (12–18)
Age at study participation in years, median (range)	19 (16–34)
Time since DVT diagnosis in years, median (range)	3 (1–18)
Upper extremity DVT, $n$ (%)	7 (58)
CAPTSure PTS symptoms score at participation, <sup>a</sup> median (25th–75th percentile)	30 (2–42)
PTS classification <sup>a</sup>	
No PTS (score < 11), $n$ (%)	6 (50)
Mild (score 11–30), $n$ (%)	1 (8)
Moderate to severe (score > 30), $n$ (%)	5 (42)
AIMS score, median (25th–75th percentile)	48 (44–54)

Abbreviations: AIMS, Athletic Identity Measurement Scale; DVT, deep vein thrombosis; PTS, postthrombotic syndrome.

<sup>a</sup>Partial CAPTSure score (only PTS symptoms assessed).



**FIGURE 1** Themes and solutions for athletes impacted by DVT. Abbreviation: DVT, deep vein thrombosis.

the Clinical Assessment of Postthrombotic Syndrome in children (CAPTSure).<sup>22,23</sup> AIMS was completed to assess for the degree of athletic identity at the time of study participation. It consists of 10 items assessing the degree to which an athlete identifies with their sport. AIMS evaluates athletes based on three components: social identity (the belief of fulfilling an athlete role), exclusivity (the degree to which identity and self-worth are derived from the athlete role), and negative affectivity (negative affect from poor performance).<sup>1,10,12</sup> The total score ranges from 10 to 70 points, with 10 points representing low athletic identity, 40 points representing

moderate athletic identity, and 70 points indicating high athletic identity. CAPTSure was completed to assess the severity of PTS symptoms at the time of study participation. CAPTSure is a valid and reliable tool for the assessment of PTS severity<sup>23,24</sup> that consists of a questionnaire to assess PTS symptoms and a form for clinicians to record PTS signs. The final score ranges from 0 to 100 points, with 100 points representing the worst possible PTS. A score of less than 11 represents no PTS, a score of 11–30 represents mild PTS, and a score of greater than 30 represents moderate to severe PTS.<sup>25</sup> Given that many interviews were conducted virtually, only

PTS symptoms were collected. The maximum score for symptoms is 72 points for the assessment of lower extremities and 78 points for the upper extremities.<sup>25</sup>

## 2.2 | Data analysis

Descriptive statistics were used to summarize the demographic characteristics of the included patients. Interpretive phenomenological analysis was used to explore and interpret the participants' perceptions of the impact of DVT in relation to sport, according to their lived experiences.<sup>26</sup> Interviews were audio recorded and transcribed using Microsoft Teams live transcription; a member of the research team checked all transcripts to ensure accuracy. Transcripts were not returned to participants for comments, as the advantages of this technique appear to be small.<sup>27</sup> Three researchers read the transcripts independently to develop familiarity with the data and gain a sense of general meaning. Following this, two researchers coded the interviews using NVivo and consolidated these codes to form the foundation for themes. The team then collaborated to find common meanings and relationships across themes to discover a constitutive pattern that reflected patient and parent perception of the impact of DVT.<sup>28,29</sup> Perspective (patient and parent) and investigator triangulation, rather than member checking, were used to explore the credibility of results.<sup>30</sup>

## 3 | RESULTS

Sixteen eligible patients were approached for study participation. Thematic saturation was reached after interviewing nine participants, after which three additional participants were enrolled and interviewed to ensure no new themes were identified. Hence, 19 participants (12 athletes and 7 parents) were recruited in the study. Interviews were approximately 30min in duration.

Table 1 shows their characteristics and AIMS scores. Athletes were involved in ice hockey at the time of DVT (4/12, 33%), followed by rowing, baseball, soccer, and basketball (2/12, 17%, respectively). Only two athletes had a central venous catheter-related DVT (17%). Both had a history of cancer and central line placement. The remaining patients had no underlying conditions or comorbidities.

Four main themes were identified through content analysis (Figure 1). These included (1) a threat to sport participation following DVT; (2) mental health challenges from the DVT and not being able to participate in the athlete's sport; (3) DVT being an invisible disability; and (4) physical, psychological, and transition support to improve patient care after DVT diagnosis.

### 3.1 | Theme 1: Threat to sport participation

Following DVT diagnosis, there is a threat to sport participation in patients due to acute symptoms, anticoagulation, and/or acute or

long-term complications from DVT. For example, patients expressed that acute DVT symptoms such as limb edema and fear of the thrombus dislodging prevented them from participating in their sport. Further, when on anticoagulation, athletes were advised to avoid contact sports due to the risk of bleeding. This was the case for a volleyball player and team captain, who feared a brain bleed if she continued to play her sport.

Just having the blood clots and being on the blood thinners probably makes it more of "Uh, **don't play volleyball anymore**' because if I, say, fall or dive [or] hit my head [...], **I could get the brain bleed [...]. It's just a really big risk, so that makes a lot of impact on me not playing.**

(Volleyball player, 17)

Some can return to their sport following treatment completion but with a level of deconditioning from the time away from sport. However, others develop PTS. Half of the athletes described symptoms of PTS following their DVT (Table 1), and for some of them, those symptoms further impaired their ability to participate in sport. For one competitive rower, PTS symptoms restricted her from participating in certain aspects of her sport and impacted her abilities long term.

I think what was the more frustrating part because I, like, was fully able to get back into [my sport]. But I think where, like, **the frustration started to grow** was when I was **still having symptoms after** the fact rather than the actual treatment.

(Rower, 21)

A multisport athlete shared the complex and long-lasting impact of PTS symptoms on sport participation.

It's **discouraged me a lot** and it's taken me out of a lot of opportunities that I should have gone for. [...] I don't want to tell people that I have that problem. And so **I just don't participate** when I know I'd have to let them know.

(Multiple sports, 18)

These are various sources of threats to an athlete's sport participation that can have a serious impact on the athlete's mental health.

### 3.2 | Theme 2: Mental health challenges

Athletes experienced complex mental health challenges related to the condition itself as well as time away from the sport. They experienced a range of emotions, and while some were able to adapt, others were not. A football player shared how significant sport was to his life and the consequences following the DVT.

I played hockey and football, and **that was, like, my life**. I was constantly active, always practicing playing football, like I played football year-round except for hockey, and then **after the diagnosis I did nothing**. I gained a bunch of weight. **My mental health completely dropped.**

(Football player, 18)

One athlete involved in several sports shared how “the biggest stressor overall was [the] change in [my] identity” when he was unable to continue in sports to the same extent as before the DVT.

So, for me, I think a lot of who I was, was tied to my athletic identity because I was so athletic, and it **threw me into depression for probably like a year, year and a half. Had really bad anxiety** as well as a result of it, and [was] **just trying to figure out who I was because so much of myself at that point was tied to, like, a physical identity.**

(Multiple sports, 34)

In addition to the loss of identity, fear and anxiety were raised by the athletes, in relation to their health. This fear and anxiety was centered around the potential for thrombus recurrence.

I [...] developed a **really bad anxiety** from the blood thinners of a **constant fear of death**. And I still carry that [...] I will call my mom at three in the morning and say [...] do we need to go to the hospital? [...]. It's like kind of like a **PTSD scaredness** from it, but then **general anxiety ruled over my life** as well. Really bad to the point where in grade nine I left school almost half of the time because **I physically and mentally could not handle the stress of just my life** [...]. I just sit there and sleep.

(Football player, 18)

For one volleyball player the stress of “the whole change of lifestyle” resulted in somatic manifestations of the stress in the form of pseudo seizures.

Because for me **the stress that came on started giving me those seizures.**

(Volleyball player, 17)

[From studies], we realized there's no change to oxygen, heart, brain activity, blood pressure [...] but she would still [have them] [...] It got to the point where the pediatrician was coming in and I'd say OK, she's [going to] have another one [...] And then she would just go into one.

(Parent of volleyball player)

The athlete and her mother shared how this was a “traumatic” experience. Overall, there was a negative emotional response as a

result of the DVT and the impact to sports. Athletes described feeling “empty,” “defeated,” “helpless,” “isolated,” and “depressed.” One athlete who was on track to pursue his sport professionally shared how heart-breaking the advice to quit baseball was.

**The diagnosis was disheartening** to say the least, especially when it came with another surgeon's advice to quit playing sport and at the time I wasn't ready to hear that.

Yeah, it was such a **strong part of my identity** at that moment in time that that was **pretty heartbreaking.**

(Baseball player, 30)

While some athletes were open about the impact to their mental health, others were not as open. For these athletes, they described the impact more minimally compared to their parents, who shared the significant impact it has had on their child.

### 3.3 | Theme 3: Invisible disability

Through athletes' experiences in various settings of their lives, there was a theme of DVT being an invisible disability. Patients and parents voiced a lack of awareness of thrombosis in children in their social network in general, which led to negative experiences for them. For one athlete, the teachers' lack of knowledge about DVT resulted in his being questioned and singled out.

**I hated it.** I'll be completely honest. And like everybody [...] constantly asking questions, like how did it happen? And then [...] another half an hour conversation with every teacher and then **people not believing me** and it's—just **it sucked** to be honest.

(Football player, 18)

The lack of knowledge about PTS at school further impacted the physical health of this athlete, who avoided standing up to alleviate his symptoms:

I'm in a **lot of pain**. I'm cramping up, but I really don't want to raise my hand and then get **scolded** by the teacher.

(Football player, 18)

Another athlete experienced a similar lack of knowledge at work, when not able to complete certain tasks.

I'm walking around [work] and people [are] like, oh why can't you do this? Like, why can't you lift this at work? **And I'm like, I have blood clots. I know it's weird, but I do.**

(Volleyball player, 17)

This lack of awareness was also present in sport settings, with some coaches being unknowledgeable about DVT in children and, as a result, were more cautious about having an athlete with a history of DVT on the team. One athlete's mother shared how the lack of knowledge of DVT within the sports setting made her son hesitant to disclose his condition.

I don't think he's super comfortable telling a lot of people, especially I think [...] he's worried that it's [going to] **label him** as kind of like, you know, **disabled** in some way or, you know, **not as good of an athlete as somebody else**.

(Parent of hockey player)

The invisibility of DVT coupled with the lack of knowledge and awareness of this condition further complicate the challenges athletes with a DVT are presented with.

### 3.4 | Theme 4: Physical, psychological, and transition support to improve patient care

Two main ideas for how athletes can be supported during this vulnerable time emerged; providing physical and psychological support through a multidisciplinary team, and facilitating the transition back to activity, or out of sport if needed, with sensitivity and awareness.

Athletes and parents shared the benefit from having both physical and psychological assistance during this time.

If I could [...] have a therapist or a psychologist that [...] I could talk to [...] about my problems that would have **completely changed every aspect of my life**.

(Football player, 18)

Two athletes had seen a psychologist and shared the positive impact it had on their coping. For one multisport athlete, the positive impact of the counseling was significant and lifelong.

I think **the most helpful thing for me was the [...] psychologist**. [...] They did cognitive behavioral science and getting [me] to reframe things and understanding what's causing me to feel worried about certain things or just feel feeling depressed during this whole thing and how to kind of like turn that into positive, so that was **extremely, extremely, helpful**.

(Multiple sports, 34)

Patients and parents voiced that having consistency within the care team was also found to be helpful.

Another strategy identified by athletes was finding activities they could participate in, rather than only telling them what they cannot do. One football player and his parent shared how they were told, "Don't play baseball. Don't play soccer. Don't go for a motorcycle

ride. Don't do anything that's going to put you at risk," rightly so," but how "some sort of exercise would have been major [...] even knowing the options." Finding ways to reengage athletes in sport or activity may have significant impacts to their mental health. For this athlete, once he was able to return to the gym and football, he shared how his "mental health has absolutely skyrocketed compared to when I was on the blood thinners."

In addition to carefully considering whether athletes can engage in other activities while recovering, it is important that the clinical team remains highly aware of the difficulties that these athletes face after DVT diagnosis to plan and approach a transition back to sports or out of sports, if needed, with sensitivity. A baseball player shares the lack of alternatives to quitting sports that he was provided, despite other options, and the frustration with this advice 16 years after his diagnosis.

**There is frustration still that I was told that I would have to quit the sport**. I think there are **more options outside of that**, and what I found after returning to sport was I, at the time of the diagnosis, I was, uh, back catcher, so I was involved in every play, I was throwing right excessively, and if the repetitive motion that is part of the mechanism that drove like the blood clot [...] [What] I ended up doing was changing, uh, position, so I ended up being an outfielder and reducing the amount of throws, and that was helpful, so **that could have been an option that was suggested, but it wasn't**.

(Baseball player, 30)

However, some may not be able to return to sports altogether, depending on the DVT and associated risks. For one multisport athlete, the transition out of sports and the loss of his athlete identity "threw [him] into depression." As he was away from sports for some time, he shifted his focus to his academic identity, which was positive to his coping.

It's just the first like year or two [...] **switching your identity** like I am, like, an athlete and, like, the physical part to OK well, uh, like I started to then focus on science and then on business. So I took some, like, business courses in university. [...] I was really motivated to do well in those things because I didn't have—I wasn't as focused now on sports, so just shifting my, my focus and I think **once I kind of was able to shift that and started to see some success in other areas then, then it was—it was easier for me to overcome that, that obstacle thing**. [...] So just like the transition period to getting there to, to finding these new skills and things to focus on, that's the hardest period. But then once you get there, um, it's easier, I would say.

(Multiple sports, 34)

## 4 | DISCUSSION

Deep vein thrombosis can impact young athletes, whether it be a short-term threat to participation during the acute phase (e.g., acute symptoms, anticoagulation) or a long-term impact in those that suffer complications such as PTS. Some patients can return to sports following the acute phase, others may return but not to their previous abilities, and some are unable to return altogether. As pediatric hematologists are likely the first point of care for treating the thrombotic event, it is critical that they are aware of the impact of DVT on both the physical and mental health of these patients to offer adequate support and thus improve clinical care.

The impact of DVT and the consequent threat to sport participation in adolescent athletes is complex and multifaceted. Athletes experienced negative emotional responses, feeling “devastated,” “alone,” and “terrible.” In a consensus statement by the American College of Sports Medicine (ACSM) et al.<sup>7</sup> normal emotional responses to injury include sadness, anger, frustration, isolation, irritation, and disengagement. However, when symptoms fail to resolve over time, it can lead to problematic emotional reactions.<sup>7</sup> Common reactions include loss of identity, fear and anxiety, and loss of confidence.<sup>7</sup> In addition, athletes may experience depression, alienation, substance abuse, pain behaviors, and disordered eating.<sup>7,9,31</sup> Some of the athletes we interviewed also experienced a fear of DVT recurrence. This is similar to the experiences of injured athletes, with some experiencing an unreasonable fear of reinjury.<sup>7</sup>

For one athlete, the stress of the entire lifestyle change resulted in pseudo-seizures. Pseudo-seizures may be a symptom of posttraumatic stress disorder (PTSD), which has been observed in previous studies in both injured athletes<sup>32</sup> and adults with pulmonary embolism.<sup>33</sup> Padaki et al.<sup>32</sup> examined the prevalence of PTSD among athletes aged 21 years or younger who had suffered an anterior cruciate ligament injury. They found that most athletes experienced avoidance, intrusion, and hyperarousal symptoms of PTSD, with 88% experiencing symptoms of avoidance. Moreover, in a mixed-methods study, Tran et al.<sup>33</sup> investigated the psychological impact of pulmonary embolism in adults (two-thirds of whom were aged 60 years or older). The authors identified PTSD in 3% of the respondents and psychological stress in half of them. These adults experienced anxiety from the diagnosis, symptoms, and a fear of recurrence. Overall, the delivery of the diagnosis and resulting fear were found to have a significant psychological impact.<sup>33</sup> Several athletes in our study also experienced a profound negative impact from the tone of the delivery of diagnosis and consequences in relation to sport, with one athlete recalling the experience as “horrifying.” Thus, when delivering a diagnosis of DVT or explaining consequences that are life and identity altering in these patients, it is warranted to find the right balance to explain risks, benefits, uncertainty, and options to avoid further harming their well-being (Figure 1).

Despite the multiple negative consequences of DVT in athletes' lives, DVT is invisible to others, and the challenges they face and their impairments are not always obvious. This created struggles for some of the athletes, from the lack of awareness and knowledge regarding

thrombosis, having to explain the DVT to others and, within a sports context, fear of being regarded differently. Dissemination of DVT awareness resources to their social networks would be beneficial, to shift the burden placed on athletes when they have to educate others about their condition (Figure 1).

Although athletes did not describe some of the negative coping reactions (e.g., substance abuse) identified in other studies,<sup>7</sup> it is important to be aware of the potential for these outcomes when caring for a patient who is removed from the sport, particularly for longer periods of time. In line with the ACSM et al.<sup>7</sup> recommendations for sport team physicians, clinicians involved in the care of these patients should closely monitor the emotional responses and reactions and provide mental health support resources to athletes (Figure 1).<sup>7</sup>

Access to a psychologist or sports psychologist was discussed with athletes and parents, who agreed this would be helpful to their coping. Despite the significant impacts to mental health, only two athletes had seen a psychologist. This is in line with the study by Tran et al.<sup>33</sup> who reported that despite the emotional distress that followed the diagnosis of pulmonary embolism, most adults (64%) did not access mental health services. The two athletes who had seen a psychologist shared the benefits from mental health support for developing coping strategies, such as learning how to reframe their negative thoughts (e.g., worries, fear) to positives. Reframing maladaptive thoughts is part of cognitive behavioral therapy, a reference standard treatment for anxiety, including in youth.<sup>34</sup> As young patients in general<sup>35</sup> and athletes in particular<sup>14,15</sup> are less likely to seek mental health support, it is critical for providers to connect them with the appropriate resources. Parents may also be helpful in identifying struggles in these patients not seeking help.

To further minimize the impacts to mental health, involving athletes in some form of activity or modified sport, safely, should be a priority. Athletes shared the need to be told what activities they can safely perform, rather than only the ones they cannot participate in. To effectively transition athletes back to sport or activity safely, interprofessional collaboration is warranted. Kinesiologists and physical therapists would be useful members of the care team to help with the recovery of these athletes. For those who do not have any alternatives to transitioning out of their sport, helping these athletes prepare to shift their focus to other identities is relevant.

There are limitations to our study. First, this qualitative study explored the lived experiences of athletes, who described significant impacts to their mental health after DVT. These findings could be complemented by quantitative analysis (e.g., diagnostic measures) to fully characterize the impact to well-being. In addition, and in line with the interpretivist tradition underpinning our study, the results pertain to the setting and context in which the study was developed.<sup>36,37</sup> This, nonetheless, does not preclude extension of findings to other settings and that the experiences of our patients is likely to be similar to the experience of other patients in a similar context.<sup>36</sup> Also, while recognizing that race and ethnicity are important socio-cultural determinants of health, we did not collect this information to protect participant confidentiality.

In conclusion, the impact of DVT in athletes is unique and complex, with a threat to sport participation that results in significant mental health challenges. Clinicians treating these patients should be aware of these challenges to improve the quality of health care and to provide resources that can minimize the impact of DVT, treatment, and long-term complications in the lives of these young patients. It is critical for clinicians to treat not only the physical (i.e., DVT), but also the psychological (i.e., mental health).<sup>7</sup>

## AUTHOR CONTRIBUTIONS

DB coordinated the study, conducted interviews, carried out thematic analysis, and wrote the manuscript; JV and RD conducted interviews and critically reviewed the manuscript; EB reviewed the translations, carried out thematic analysis, and critically reviewed the manuscript; SG and LB critically reviewed the manuscript; LA designed the study, conducted thematic analysis, and critically reviewed the manuscript.

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## RELATIONSHIP DISCLOSURE

The authors declare no conflicts of interest.

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## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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