Injured Athletes and the Risk of Suicide

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Abstract: *Research on the emotional responses of athletes to injury shows significant depression that may be profound and may last a month or more, paralleling the athlete's perceived recovery. Injured athletes cared for by athletic trainers are often between the ages of 15 to 24, the high-risk age group for suicide, which is currently a leading cause of death for young Americans. The purposes of this paper are to discuss postinjury depression, the incidence and risk factors of suicide, athletic injury as a psychosocial risk factor, the features common to suicide attempts in case studies of five injured athletes, and the motivation of athletes for sport participation. We also suggest ways in which athletic trainers can assess injured athletes for depression and risk of suicide. The five injured athletes who attempted suicide shared several common factors. All had experienced 1) considerable success before sustaining injury; 2) a serious injury requiring surgery; 3) a long, arduous rehabilitation with restriction from their preferred sport; 4) a lack of preinjury competence on return to sport; and 5) being replaced in their positions by teammates. Also, all were in the high-risk age group for suicide. As a primary care provider, the certified athletic trainer is in an ideal position to detect serious postinjury depression and to determine whether the injured athlete is at risk for suicide.*

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Approximately 3 to 5 million athletic and recreational injuries occur annually in the United States, constituting a major portion of accidental injuries suffered by adolescents and young adults.[6] In 1989, the National Athletic Trainers Association (NATA) reported that 37% of high school football players are injured at least once and that 1 million injuries occur annually in high school sports alone.[13] These reported injuries have physical[10,12,13,15] and psychological consequences, ranging from minor to catastrophic.[1,4,8,14,20,22] Some injured athletes experience minimal postinjury mood disturbance, while others experience more serious and lasting depression.[20]

The purposes of this paper are to 1) review the research on emotional responses of athletes to injury, 2) consider the incidence and risk factors for suicide, 3) propose that athletic injury can be a psychosocial stressor and risk factor for suicide, and 4) review factors common to five young athletes who have attempted suicide postinjury. Furthermore, we will discuss conscious[5] and unconscious[11] sources of motivation for sport, which may help explain what is lost to the athlete when injury occurs.

Discussion of the role of psychosocial variables such as personality traits, coping resources, and history of stress as predictors of injury and rehabilitation from injury are beyond the scope of this paper and have been reviewed in detail elsewhere.[25]

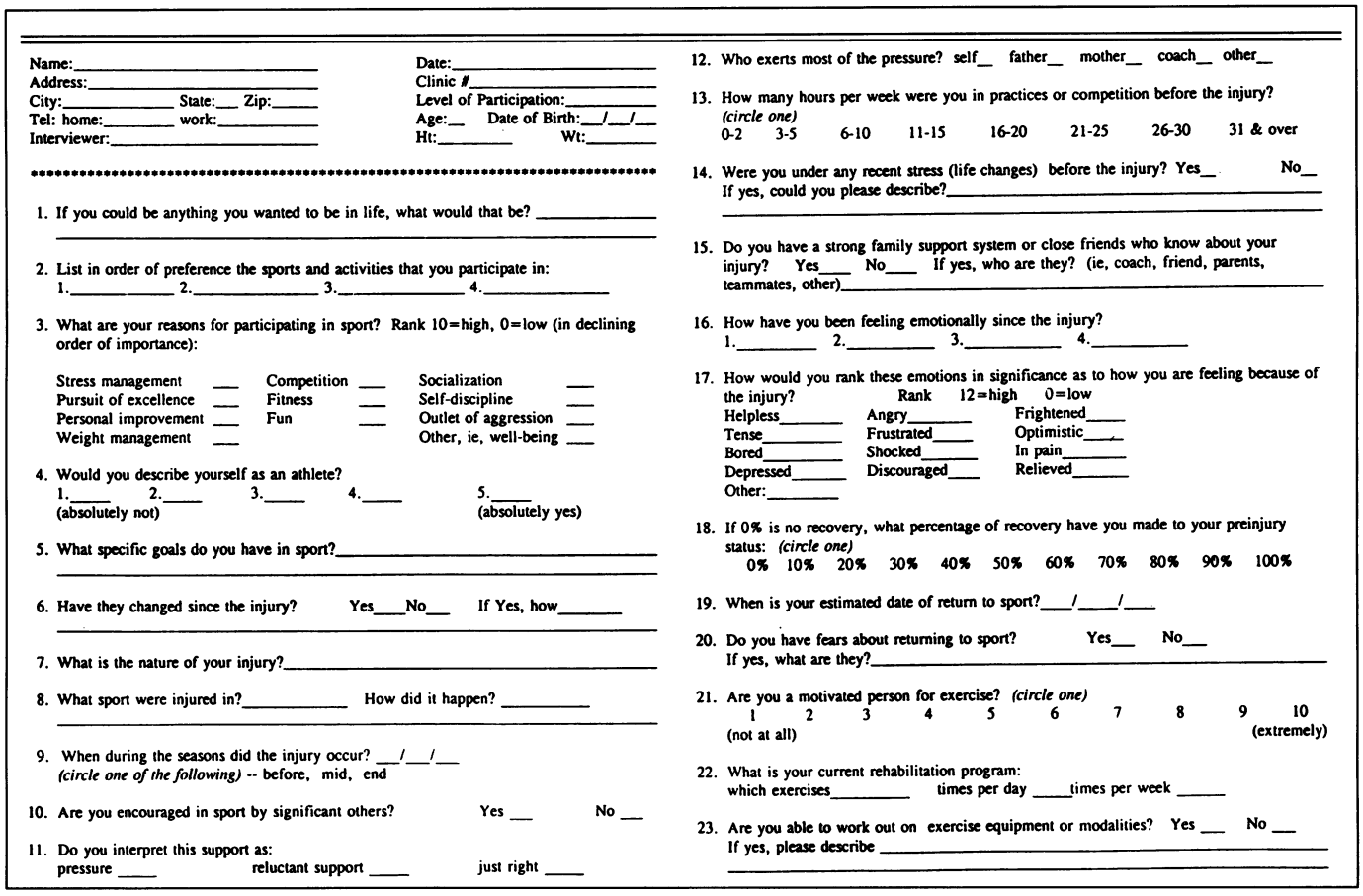
As primary care providers, athletic trainers are central to the athlete's care from the onset of injury until the return to sport.[24] Because of this relationship, athletic trainers are in direct contact with the injured athlete and may be able to detect postinjury depression, which can impede rehabilitation[19] and, on occasion, be life threatening.

Athletes' Emotional Responses to Injury

Researchers have described the emotional responses to injury of runners,[1] recreational athletes,[20] college athletes,[8] injured sports persons,[14] and competitive athletes.[22] The Profile of Mood States (POMS), which has documented reliability and validity,[9] was used in each of these five studies to measure postinjury tension-anxiety, depression-dejection, anger-hostility, vigor-activity, fatigue-inertia, and confusion-bewilderment. Use of this standardized measure of affect or mood has permitted between-study comparisons.

Chan and Grossman[1] compared the mood state (POMS) and self-esteem (Rosenberg Self-Esteem Inventory) of 30 noninjured runners to 30 injured runners. Both groups consisted of 16 men and 14 women matched for age, weekly mileage, hours of exercise per week, racing frequency, and years of preinjury running experience. Injured runners showed significantly more depression, anger, confusion, and lower self-esteem than did the noninjured runners. Deprivation of consistent running may have resulted in the loss of a coping strategy for those runners who ran for stress management and who depend on running to stabilize their moods.

The emotional response to injury of 72 recreational athletes[20] was studied using the Emotional Responses of Athletes to Injury Questionnaire (ERAIQ)[21] (Fig 1) and the POMS.[9] When injured athletes were divided into severity of injury groups based on the length of time they were out of sport, athletes with minor injuries experienced less mood disturbance than did the college student normative group to which they were compared.[20] Conversely, the more seriously injured athletes experienced significant elevations in depression, anger, tension, and decreased vigor compared to the college norms. These mood disturbances persisted for approximately 1 month af-



Name:_____ Date:_____
Address:_____ Clinic #_____
City:_____ State:___ Zip:_____ Level of Participation:_____
Tel: home:_____ work:_____ Age:__ Date of Birth:__/__/__
Interviewer:_____ Ht:_____ Wt:_____

1. If you could be anything you wanted to be in life, what would that be? _____

2. List in order of preference the sports and activities that you participate in:
1._____ 2._____ 3._____ 4._____

3. What are your reasons for participating in sport? Rank 10=high, 0=low (in declining order of importance):

Stress management	___	Competition	___	Socialization	___
Pursuit of excellence	___	Fitness	___	Self-discipline	___
Personal improvement	___	Fun	___	Outlet of aggression	___
Weight management	___			Other, ie, well-being	___

4. Would you describe yourself as an athlete?
1.____ 2.____ 3.____ 4.____ 5.____
(absolutely not) (absolutely yes)

5. What specific goals do you have in sport?_____

6. Have they changed since the injury? Yes___No___ If Yes, how_____

7. What is the nature of your injury?_____

8. What sport were injured in?_____ How did it happen? _____

9. When during the seasons did the injury occur? __/__/__
(circle one of the following) -- before, mid, end

10. Are you encouraged in sport by significant others? Yes ___ No ___

11. Do you interpret this support as:
pressure ____ reluctant support ____ just right ____

12. Who exerts most of the pressure? self__ father__ mother__ coach__ other__

13. How many hours per week were you in practices or competition before the injury?
(circle one)
0-2 3-5 6-10 11-15 16-20 21-25 26-30 31 & over

14. Were you under any recent stress (life changes) before the injury? Yes__ No__
If yes, could you please describe?_____

15. Do you have a strong family support system or close friends who know about your injury? Yes___ No___ If yes, who are they? (ie, coach, friend, parents, teammates, other)_____

16. How have you been feeling emotionally since the injury?
1._____ 2._____ 3._____ 4._____

17. How would you rank these emotions in significance as to how you are feeling because of the injury? Rank 12=high 0=low

Helpless_____	Angry_____	Frightened____
Tense_____	Frustrated____	Optimistic____
Bored_____	Shocked_____	In pain_____
Depressed_____	Discouraged___	Relieved_____
Other:_____		

18. If 0% is no recovery, what percentage of recovery have you made to your preinjury status: *(circle one)*
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

19. When is your estimated date of return to sport?___/____/____

20. Do you have fears about returning to sport? Yes___ No___
If yes, what are they?_____

21. Are you a motivated person for exercise? *(circle one)*
1 2 3 4 5 6 7 8 9 10
(not at all) (extremely)

22. What is your current rehabilitation program:
which exercises_____ times per day ____times per week _____

23. Are you able to work out on exercise equipment or modalities? Yes ___ No ___
If yes, please describe _____

Fig 1.—The emotional responses of athletes to injury questionnaire. (Adapted from Smith, et al.[21] *Sports Med.* 1990;9:352–369 with permission of Adis International.)

ter injury (Fig 2). These more seriously injured athletes were out of sport from 4 to 22 weeks with torn ligaments, torn menisci, or fractures that often required operations, casts, and crutches. Mood disturbances decreased as the athletes perceived that recovery was occurring.[20] A similar study to those above reported that five seriously injured collegiate athletes experienced significant depression, tension, anger, and decreased energy postinjury, a mood state that was statistically correlated to their rating of perceived recovery.[8]

Pearson and Jones[14] compared a matched group of 61 injured and 61 noninjured recreational athletes or sports persons in Great Britain. Injured sports persons experienced more negative scores on all POMS scales than did those from the noninjured group. A qualitative interview portion of this study questioned injured athletes about their social support and the attitudes of their health care professionals. Suggestions for interventions that injured athletes believed would be helpful were also obtained.

A recently completed study of 13 athletic teams representing the sports of hockey, basketball, volleyball, and baseball compared the preinjury and postinjury mood state (POMS) and self-esteem (Rosenberg Self-Esteem Inventory)[1] of injured athletes.[22] It examined the presence of stress, social support, attitudes, sport preferences, and goals of athletes (ERAIQ[21] Forms A, B, and C) and reported that severity of injury was the greatest predictor of postinjury depression.[22] In this prospective, blinded study (performed with the assistance of certified athletic trainers), the researchers found significant preinjury and postinjury differences in mood state, suggesting that the experienced postinjury mood disturbance is likely attributable to the injury and not to a preexisting disturbed mood state.[22]

Overall, the results of these studies[1,8,14,20,22] indicate postinjury mood disturbance, a finding most significant in the more seriously injured athletes.[8,20,22] Although thoughts of suicide were not investigated in these reported studies, the large standard deviations reported for depression raises concern about the possible coexistence of thoughts or impulses toward suicide. The significant depression scores reported in the five studies[1,8,14,20,22] prompted us to examine the incidence of suicide in adolescents to better understand the recent suicide attempts of several young athletes who had sustained serious athletic injury.

Incidence of Suicide

Suicide has tripled in the past 20 years and is currently the second leading cause of death in young Americans (aged 15 to 24 years). If the rate is adjusted for probable underreporting, the actual suicide rate may equal accidents as the number one cause of death in this age group,[7] accounting for 42 to 64 deaths per

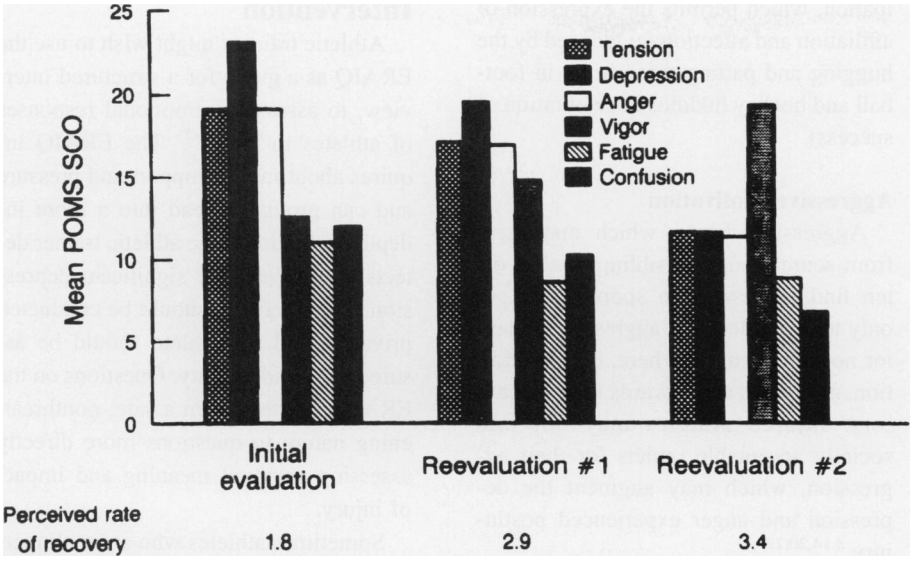


Fig 2.—The emotional responses (measured by the POMS) of 23 more seriously injured athletes shows improvement over time. The improved mood state parallels the athletes' perception that recovery is occurring. (Reprinted with permission from the *Mayo Clinic Proceedings*[20] 1990;65:38–50).

100,000 in white men. Furthermore, members of this age group make 10 suicide attempts for each completed suicide.[18]

Many injured athletes belong to this high-risk age group. For example, in the study on recreational athletes, 33 of the 72 injured athletes were 16 years old.[20] Because of the popularity of youth sport and the incidence of injuries sustained in contact sports,[22] many injured athletes seen by athletic trainers are between the ages of 15 and 24. Consequently, athletic trainers and all members of the sports medicine team should be aware of some risk factors for suicide and should attempt to evaluate the psychosocial impact of a serious injury on a young athlete.

Risk Factors for Suicide

A model of five intersecting rings describes the risk factors for suicide. We have drawn the model to show that the degree of overlap of the risk factors may be proportionate to the degree of risk (Fig 3). These risk factors include 1) stressful psychosocial life events, 2) chronic mental illness, 3) personality traits consistent with maladjustment, 4) a family history of suicidal tendency/genetic predisposition, and 5) a psychiatric disorder.[16] Individuals dealing with issues of homosexuality, drug use, previous suicide attempts, and chronic low self-esteem are also at increased risk.[7,18] The risk factors illustrated in the model depicted in Figure 3 are dynamic; they relate to each other in varying degrees at different times in a person's life, and are subject to significant case-by-case variation.

Eintzen and Sage[3] describe the world of sport as a microcosm of society. Although research assessing the suicide risk among athletes is minimal,[2] risk factors are believed to transcend socioeconomic and cultural boundaries. Therefore, athletes are believed to be at least at equal risk (under normal circumstances) as members of the general population.[2] Clearly, during times of injury when athletes have lost their ability to achieve in sport, postinjury depression may place them at an added risk for suicide, particularly if other risk factors are present.

Common Factors in Attempted Suicides of Injured Athletes

Initially, we considered presenting five case studies of athletes seen in our clinical practice who attempted suicide postinjury. To better protect patient confidentiality, we decided instead to present the factors that were common to all members of this small group. All had 1) sustained a serious injury that required surgical intervention; 2) experienced a long, arduous rehabilitation that restricted participation in their preferred sport for 6 weeks to 1 year; 3) experienced a deterioration in their athletic skills, despite adherence to a vigorous rehabilitation program; 4) felt they lacked their preinjury competence on return to the sport; and 5) been replaced in their positions by teammates, a devastating blow to self-esteem, which may have already been low. Furthermore, these injured athletes were all in the high-risk age group (16 to 18 years) for suicide and had enjoyed considerable athletic success before sustaining their injuries.

The features shared by these injured athletes all related directly to injury, the risk factor identified in Figure 3 as a stressful life event. In some cases, although we did not know the family psychiatric history, strained family dynamics and discord in the parent/athlete relationship were apparent.

Although the hypothetical model posited in Figure 3 may enhance the general practitioner's risk assessment for suicide of adult nonathlete populations[16] and heighten the athletic trainer's awareness of the problem, it will need to be modified to accurately predict suicidal tendencies in injured athletes.

The importance of team affiliation, the influence of a coach on self-esteem, the shattering of dreams, the blow sustained to invincibility when injury occurs in this high-risk age group of young athletes, and other adolescent stressors are not well accommodated by the model and probably need to be considered. It is to be hoped that, as empirical data appear on the psychosocial factors that influence the occurrence of injury and the athlete's rehabilitation to injury, more insight into the prediction of suicide in injured athletes will emerge.

Motivation for Athletic Participation

To understand why athletic injury is a significant stressor capable of precipitating a reactive depression, it is necessary to consider why the athlete is involved in sport.

Conscious Motivation

Children and high school students are involved in sport to have fun, to improve

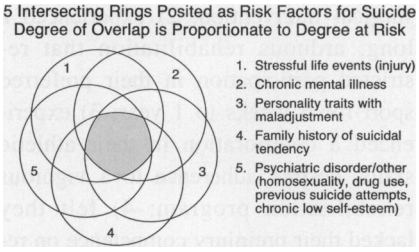


Fig 3.—Each intersecting ring represents a risk factor for suicide. The degree of overlap may be proportional to the degree of risk.

their sport skills, to be with friends and make new friends, to find thrills and excitement, to succeed or win, and/or to become physically fit.[5] Recreational athletes[20] and competitive, college varsity athletes[22]who were queried in various studies stated that they were in sport primarily for fun, pursuit of excellence, and competition. Recreational athletes 18 years or older also valued the fitness, stress reduction, and weight management afforded by exercise.[20] Athletes have been socialized by a culture that values fitness and achievement of the American sport dream, in which openly acknowledged, selfish, aggressive, and exhibitionistic motivations are unacceptable.

Unconscious Motivation

Other motivations may not be acknowledged, expressed, or easily researched, because either the athlete is not conscious of them, or they are socially unacceptable and are therefore retained as private thoughts and fantasies. Sources of these private and often unconscious motivating factors are usually related to either sexual, aggressive, or narcissistic drives and may all contribute to the athlete's motivation for success in sport.[11]

Sexual Motivation

The notion that some persons participate in sport consciously anticipating sexual success and gratification is supported by several publicized accounts of athletes who have recently reported their sexual prowess. High-rolling lifestyles may motivate some athletes and may represent one aspect of the loss experienced by athletes when injury occurs. For other athletes, the need for approval and acceptance by peers of the same gender may be satisfied during sport participation, which permits the expression of affiliation and affection (evidenced by the hugging and patting that occurs in football and hockey huddles in celebration of success).

Aggressive Motivation

Aggressive drives, which may stem from sources such as sibling rivalry, often find expression in sport. Sport not only allows a level of aggressive behavior not tolerated elsewhere, but, in addition, reinforces and rewards these behaviors. Injured athletes may not find socially acceptable outlets for their aggression, which may augment the depression and anger experienced postinjury.[8,14,20,22]

Narcissistic Motivation

Athletes with low self-esteem may need to compensate for their perceived inadequacy by being the center of attention. These athletes may try to achieve high sport ideals while also fulfilling the expectations of their parents, coaches, and fans. When these athletes do not believe they have measured up to their ideals, slumps may occur. In addition, injuries frequently compromise the athletes' performance and thwart the achievement of both conscious and unconscious goals, which further reduces self-esteem and contributes to postinjury depression.

Ideally, through the process of psychological growth and maturation, healthy athletes will participate in sport comfortably and without inhibition.[11] Even when the inevitable injuries occur, athletes at this level of maturation are likely to take them in stride.

Although more research must be done before we can understand the mechanisms that prompt some injured athletes to consider suicide, consideration of both the athletes' conscious and unconscious motivation for sport provides partial insight into the reasons that a serious injury may be deemed a significant psychosocial stressor and risk factor for suicide. Clearly, when injury occurs, the athlete is unable to experience the fun, competition, and camaraderie of sport participation; and outlets for the expression of sexual, aggressive, and narcissistic drives are thwarted, all of which may contribute to the postinjury depression.

Intervention

Athletic trainers might wish to use the ERAIQ as a guide for a structured interview, to assess the emotional responses of athletes to injury.[21] The ERAIQ inquires about family support and pressure and can provide a lead into a more in-depth evaluation if the athletic trainer detects the presence of significant depression. The interview should be conducted privately and the athlete should be assured of confidentiality. Questions on the ERAIQ progress from a safe, nonthreatening nature to questions more directly assessing personal meaning and impact of injury.

Sometimes athletes who are malingering, using injury to avoid competition, demotion, or loss of a scholarship, or those displaying a lack of ability can be identified and assisted in a constructive way to disengage from sport.[17]

On the other hand, those athletes who are seriously depressed can be asked about thoughts of suicide, potential risk factors, sources of social support, and their coping mechanisms for dealing with injury. Injured athletes who acknowledge suicidal ideation need to be asked whether thoughts of suicide are occasional or constant, whether the athlete has a plan, and, if so, whether or not the athlete has secured the means. If these answers are affirmative, the athletic trainer should suggest that the athlete promptly seek care from a psychiatrist or a psychologist. Although athletic trainers may not have received specific training in management of the suicidal patient, this brief assessment is comparable to the training that lay persons receive and is essential knowledge for all adults who work with young people in high-risk age groups.

Clearly, psychosocial stressors such as a serious athletic injury prompt depression and, on occasion, even suicidal ideation. It seems likely that serious athletic injury is a psychosocial stressor that is most ominous when it is in the presence of other risk factors. Learning about the athlete's personality, his/her coping resources (friends, support systems), recent history of stress, injury severity, and team relationships as well as the athlete's emotional response to injury will en-

hance the athletic trainer's ability to discern which injured athletes are at risk.

In summary, although little is known about the frequency and specific risk factors for suicide in injured athletes, we do know that some athletes are in a high-risk age group and are very depressed. Studies on postinjury depression suggest that depression is apt to be most profound in the more seriously injured athletes. The common factors shared by injured athletes who have attempted suicide should alert athletic trainers to pay particular attention to young, successful athletes who require surgery or a long rehabilitation that necessitates being out of sport for some time, and who may find themselves replaced on the team at the time of their return. In this high-risk group, it is essential that the trainer assess the athletes' motivation, support system, coping methods, and postinjury depression.

Close communication between the athletic trainer and the injured athlete will convey to the athlete that the trainer is concerned about both the physical and psychosocial consequences of injury. Confidential discussion between the injured athlete and the trainer demonstrates the willingness of the trainer to listen, assess, and, when appropriate, intervene or interact with other members of the sports medicine team[21,23–25] to ensure that holistic rehabilitation occurs. The athletic trainer can also promote the athlete's continued affiliation with the coach and the team during the athlete's time out of sport because of the injury. As Frank Gifford commented on NFL Monday night football, "the athlete must heal not only the scar on the knee, but also the scar on the head" before returning to sport.

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