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Sounding Board

Competitive Athletes with Cardiovascular Disease — The Case of Nicholas Knapp

A VARIETY of congenital cardiovascular abnormalities are the principal causes of sudden death in young competitive athletes,[1-5] and some of these tragedies have been widely publicized.[6] The identification of important cardiovascular abnormalities in highly trained athletes often leads to medical and legal controversy over the decision to disqualify such athletes from competition.[6,7] The criteria for assessing medical eligibility in such circumstances have been of interest to athletes and their families, their physicians, and representatives of the schools or teams involved, as well as the legal profession.[8-10] Sometimes such debates have attracted the attention of the general public and the medical community.[6]

There are no well-established procedures for determining whether amateur athletes with cardiovascular disease are eligible to participate in competitive sports. Organizations such as the National Collegiate Athletic Association (NCAA) do not have standards for excluding athletes with heart disease but do permit member institutions to establish physical qualifications and assign responsibility to team physicians for making such medical determinations.[11] Furthermore, in 1994 a consensus panel known as the 26th Bethesda Conference (sponsored by the American College of Cardiology) addressed the medical-eligibility criteria for participation in competitive sports in a systematic, prospective fashion and provided specific, unbiased recommendations with respect to over 70 cardiovascular abnormalities.[7] Because of recent developments in this area of cardiovascular medicine and the law, as reflected in the case of *Knapp* v. *Northwestern University*,[12] it is timely to discuss the evolving medical and legal framework influencing the approach to evaluating amateur athletes (in high school and college) with medical impairments.

CASE REPORT

In September 1994, Nicholas Knapp, a 17-year-old, 6 ft 5 in. (196 cm) high-school senior who was a highly regarded basketball player and honors student, unexpectedly collapsed at the end of an informal game. Ventricular fibrillation was documented; a bystander initiated resuscitation, and sinus rhythm was restored after intubation, two electrical defibrillation shocks, and the administration of epinephrine and lidocaine. Knapp recovered full physical and neurologic function.

An electrophysiologic-stimulation protocol failed to induce arrhythmias; coronary arteriographic studies ruled out coronary anomalies. There was no history of illicit-drug use. An implantable cardioverter–defibrillator was placed 10 days after the cardiac arrest. The device monitors cardiac rhythm and delivers pacing or shock therapy on recognition of potentially lethal ventricular tachyarrhythmias, thereby restoring sinus rhythm within seconds.[13-15]

Echocardiograms showed mild asymmetric left ventricular hypertrophy confined to the anterior ventricular septum, associated with a nondilated and hyperdynamic left ventricle, and mild mitral-valve systolic anterior motion.[16,17] Also, the 12-lead electrocardiogram showed diffuse, symmetric T-wave inversion.[18] Together, these findings suggested a mild morphologic expression of hypertrophic cardiomyopathy without outflow obstruction.[16,17]

Knapp had previously accepted Northwestern University's oral offer of an athletic scholarship. Seven weeks after his cardiac arrest, he signed a letter of intent to accept an NCAA Division I athletic scholarship to begin the following September. Northwestern University is a private institution in Evanston, Illinois, that has competed in the Big 10 Conference for over 100 years. Before signing the letter of intent, Knapp had not been assured that he would receive medical clearance to play college basketball.

THE UNIVERSITY'S DECISION

Knapp enrolled at Northwestern University in the fall of 1995. Shortly thereafter, the university's team physicians declared him medically ineligible for the team, and he was excluded from playing intercollegiate basketball for the university. He was, however, allowed to retain his full athletic scholarship for the four-year matriculation period. In making their decision, the team physicians relied on a review of the student's medical record, which included the recommendation of several treating or consulting cardiologists that Knapp not participate in competitive basketball and the report of a team physician who performed a physical examination, as well as on the guidelines of the 26th Bethesda Conference.[7]

The team physicians concluded that Knapp's participation in high-intensity intercollegiate basketball posed an unacceptable risk of sudden death and would be contrary to the published medical guidelines and consulting physicians' recommendations. Indeed, this risk could well be viewed as inconsistent with the perceived mandate and goals of an institution of higher education.

THE DISTRICT COURT'S DECISION

In response to the university's decision to bar him from its basketball program because of his medical condition, Knapp promptly filed a complaint in federal district court, asserting that Northwestern Uni-

versity had violated section 504(a) of the Rehabilitation Act of 1973[19] by preventing him from participating in intercollegiate basketball, a longtime aspiration. This statute prohibits discrimination against an athlete who is disabled (as defined by the act) if that person has the capabilities and skills required to play a competitive sport. If such an athlete has a physical impairment, he or she is entitled to an individual evaluation in the light of the medical evidence and can be excluded from competitive sports if there is a substantial risk of serious harm to the athlete or others. The Rehabilitation Act requires a careful balancing of the impaired athlete's right to participate in sports, the physician's assessment of the associated medical risks, and the interests of the team or school in conducting a safe athletic program.[8-10]

Knapp maintained that he should be permitted to assume the risks associated with playing intercollegiate basketball, even if they included possible death. He claimed that the university's decision to remove him from its athletic program was medically unjustified and legally discriminatory. The legal argument was based on the Rehabilitation Act's mandate that "no otherwise qualified individual with a disability in the United States . . . shall, solely by reason of her or his disability be excluded from the participation . . . in any program or activity receiving Federal financial assistance."[19] To support his claim of discrimination, Knapp was required to show that he was disabled under the act — that is, that he had "a physical impairment which substantially limits major life activities." This raised the critical question of whether playing college basketball is, in fact, a major or essential life activity.

The evidence was presented in federal district court nine months after the lawsuit had been filed. All the medical experts (three for the plaintiff and two for the defense) agreed on the following points: Knapp had had a cardiac arrest with ventricular fibrillation while playing basketball, he was at increased risk for another serious cardiac event if he played college basketball (as compared with the risk for other male college-basketball players), implantable cardioverter–defibrillators had never been tested under the intense competitive conditions of intercollegiate basketball, and no one had ever played college or professional basketball after a cardiac arrest and placement of a permanently implanted defibrillator.

Northwestern University's experts maintained that Knapp was at significantly increased risk for recurrent, potentially lethal arrhythmias during competitive basketball, emphasizing that his prior cardiac arrest had in fact occurred while he was playing basketball. Although implantable cardioverter–defibrillators usually function reliably, there is a small chance of failure or malfunction.[14] For example, the accurate functioning of the device depends on the integrity of its lead system, and lead fracture, dislodgment, or other technical problems could result in malfunction and failure to restore sinus rhythm. Also, discharges triggered inappropriately during intense competition could result in traumatic injury and expose other players to physical harm. The guidelines of the 26th Bethesda Conference,[7] which directly addressed this clinical situation, were offered as substantiation: "For athletes with implantable defibrillators . . . all moderate and high-intensity sports are contraindicated. Athletes with those conditions that result in cardiac arrest in the presence or absence of structural heart disease cannot participate in moderate or high-intensity competitive sports."[20]

Knapp's experts argued that the risks associated with an implantable cardioverter–defibrillator under the conditions of competitive basketball were exceedingly small and, consequently, tolerable and acceptable. They maintained that Knapp's episode of ventricular fibrillation was not associated with underlying heart disease[21,22] (one expert suggested that dehydration and electrolyte depletion might have been responsible) and that, consequently, another catastrophic event would be highly unlikely. In their view, it was medically unjustified to exclude Knapp from participation in college basketball solely because of his physical condition, as long as he was willing to accept the possible risk of harm to himself and waive any legal claims against Northwestern University in the event of adverse consequences.

The federal district court, citing conflicting medical testimony by the experts, found that Knapp was disabled under the Rehabilitation Act and was medically eligible to play college basketball, despite the team physicians' medical judgment. Therefore, the court ruled that Northwestern University had violated the Rehabilitation Act. Knapp was granted full medical eligibility for participation in intercollegiate basketball.

THE APPELLATE COURT'S DECISION

Northwestern University appealed the ruling, and in November 1996, the U.S. Court of Appeals for the Seventh Circuit reversed the district court's decision.[12] The appellate court ruled that Knapp was not a disabled person under the Rehabilitation Act, because "playing intercollegiate basketball obviously is not in and of itself a major life activity, as it is not a basic function of life. . . . Playing or enjoying intercollegiate sports therefore cannot be held out as a *necessary* part of learning for *all* students."[12]

Most important, the appellate court emphasized that medical determinations of eligibility to participate in competitive sports should be the domain of team physicians and schools, not of the courts, as long as the decision-making process is carried out reasonably and is based on reliable scientific evidence.[12] In particular, the court emphasized that it

is proper for the team physician to rely on consensus medical guidelines and recommendations in the pertinent field (e.g., the 26th Bethesda Conference guidelines) in assessing an individual athlete's physical condition,[12] even when there are conflicting medical opinions.

It should be emphasized that the appellate court's decision did not obligate other NCAA member schools to restrict Knapp from their intercollegiate-sports programs, but held only that Northwestern University had a valid medical justification for excluding him from its basketball team. Indeed, in 1997, Knapp enrolled at another Chicago-area Division I school and played briefly. During a basketball practice (38 months after his cardiac arrest), his defibrillator discharged because of a tachyarrhythmia. Knapp did not complete the 1997–1998 basketball season.

DISCUSSION

By affirming the importance of the team physician's judgment in disqualifying an athlete with a medical impairment, as well as the reliance on the objective recommendations of a panel of medical experts in making the decision,[7] the Seventh Circuit Court clarified the issues in this area of sports medicine and the law. Indeed, the appellate court's decision has established precedent with respect to the medical exclusion of competitive amateur athletes with cardiovascular disease, the legal framework for resolving future disputes over participation in sports, and the appropriateness of relying on consensus guidelines for clinical practice.

Specifically, the decision in *Knapp* v. *Northwestern University* established that, under the team-physician model,[8,10,11] a school has the legal prerogative to disqualify an athlete who has a medical disability without violating the Rehabilitation Act — if the team physician's judgment is medically reasonable and based on an individual evaluation of the athlete's medical records and history, the opinions of appropriate specialists, and consensus guidelines on the risks of athletic participation (such as those established by the 26th Bethesda Conference).[7] Although the Seventh Circuit Court's decision recognized that the Bethesda guidelines cannot be regarded as absolute medical authority for determining eligibility to participate in sports, the court indicated that such consensus recommendations should carry substantial weight in resolving future disputes. This view is consistent with the recent Supreme Court ruling (in *Bragdon* v. *Abbott*)[23] that professional medical guidelines are a respected source of information if they are based on scientific evidence and may be relied on in resolving claims brought under federal disability and discrimination laws. However, we cannot be certain whether the medical and legal framework for disputes involving amateur athletes will be similar to that for disputes involving professional athletes, for whom the pursuit of a livelihood could in some instances prevail over concern about health and safety.[8]

Engaging in amateur sports at any level of competition is generally considered a privilege rather than a legally protected right, and participation in interscholastic, intercollegiate, and Olympic sports is not a constitutionally protected liberty. However, although the Rehabilitation Act[19] and the Americans with Disabilities Act of 1990[24] were enacted primarily to protect physically disabled citizens from discrimination in the workplace, over the past several years these laws have been tested by competitive athletes with physical impairments attempting to retain their eligibility for participation in organized sports. For example, in *Stephen Larkin* v. *Archdiocese of Cincinnati*,[25] the trial court held that Cincinnati Moeller High School could exclude a student from its football team because he had hypertrophic cardiomyopathy, on the basis of the recommendations of examining cardiologists, even though the student's family was willing to waive any future legal claims against the school if he was permitted to play.

Although the legal claims of discrimination made by Nicholas Knapp and Stephen Larkin, both of whom had cardiovascular disorders, were unsuccessful, athletes with other physical disabilities (not posing a risk of sudden death during sports) have also sought legal recourse to retain their status in the athletic arena. For example, Mark Seay, who played in Super Bowl XXIX, used the Rehabilitation Act to support his claim that he should be eligible to play college football even though he had only one kidney.[25] More recently, Casey Martin, a professional golfer who is partly disabled because of a congenital circulatory abnormality in one leg, successfully used the Americans with Disabilities Act to secure the right to use a motorized cart in professional golf tournaments.[26] It is likely that in the future, athletes with various physical impairments will use these statutes in an effort to maintain their eligibility to participate in sports and pursue their athletic careers, and the medicolegal issues involved will undoubtedly be revisited frequently.

At stake in *Knapp* v. *Northwestern University* was the question of who ultimately has the right to decide which medical risks an amateur athlete is permitted to assume. In the face of an uncertain risk, an athlete with a physical impairment does not have an absolute right to decide whether to participate in competitive sports. Indeed, such issues cannot be broadly regarded as a simple matter of civil liberties in which the sole consideration is individual responsibility and autonomy. In fact, these are complex issues in which educational institutions have legitimate interests in medical and scientific matters and, in particular, those involving a risk of serious injury or sudden death.

The paramount interest of the school is to protect the health and safety of the athlete, but additional interests include protection against legal liability in the event of a catastrophe (e.g., failure to provide adequate medical protection), the reputation of the institution, and protection of other athletes from psychological and physical harm. The tragic deaths of Hank Gathers at Loyola Marymount University in 1990[6] and Reggie Lewis of the Boston Celtics in 1993[27] have made institutions aware of the potential ramifications of such events.

Indeed, all the interests of the school are important and cannot be easily dismissed as misguided and overzealous paternalism. However, the issues addressed in *Knapp* v. *Northwestern University* (e.g., the risk of death for a physically impaired athlete) clearly differ from those associated with participation in inherently dangerous sports, such as mountain climbing and auto racing, for which all individual participants voluntarily assume the same risk of personal injury.

As a result of the decision in *Knapp* v. *Northwestern University*,[12] difficult medical decisions involving participation in competitive sports can now be resolved as they should be, by responsible physicians exercising prudent judgment (which will be necessarily conservative when definitive scientific evidence is lacking or conflicting) and relying on the recommendations of specialist consultants or guidelines established by panels of experts. This approach to such decisions substantiates the fundamental responsibility of the school and team physician to protect the health and welfare of the athlete and appropriately places such matters directly in the medical arena.

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Drs. Maron and Zipes were medical experts for Northwestern University, Mr. Quandt was one of the attorneys representing Northwestern University, and Mr. Mitten was counsel for a group of sports-medicine organizations that filed an amicus curiae brief.

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