Mental Health and Legal Implications of Access to the Outdoors during Incarceration

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The prevalence of mental disorders and substance use disorders among incarcerated populations has called attention to the availability of mental health services in U.S. jails and prisons. Yet, structural factors, such as access to outdoor recreation, can also shape mental health in correctional environments, and U.S. jails and prisons often restrict incarcerated people from going outside. This article examines correctional policies on outdoor access, including mental health implications and related litigation. Research supports the widely held view that outdoor access can be an important determinant of mental health; nevertheless, U.S. courts have come to varying conclusions about the rights of incarcerated people to such access, leading to a patchwork of legal precedents and institutional practices with some striking inequities. For example, in California, pretrial detainees who have not been convicted of any crimes may be denied outdoor access for years, whereas convicted individuals on death row typically have access to weekly outdoor time. By examining mental health literature and case law, the authors suggest general principles for the provision of outdoor access to incarcerated individuals, as well as call for additional research on the adverse effects of the common practice of restricting such access.

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Mental and substance use disorders are common among incarcerated populations,^{1,2} and U.S. jails and prisons oversee millions of incarcerations within a given year.³ Ending mass incarceration in the United States has rightfully been a major goal of activists, public health experts, policymakers, and others in recent decades. Even as decarceration has drawn national attention, a pragmatic, human rightsoriented view also demands that efforts must continue to address the mental health and wellbeing of those who still face incarceration. In this vein, considerable attention has been paid to the availability of mental health services in correctional facilities, such as screening for psychiatric illness and addiction, referrals to mental health professionals, and medication management.⁴ Structural factors related to incarceration

(such as building design, overcrowding, security measures, indoor temperatures, and natural light), as well as social and educational programming, visitor policies, and access to reading and writing materials, can also shape mental health-related outcomes.⁵ Access to outdoor recreation is one such structural factor that may influence someone's mental health during incarceration.

In a 1981 article, Barbee and Calloway examined U.S. court cases on the topic, noting that there has been "considerable controversy and discussion around the issue of outdoor recreation for inmates" (Ref. 6, p 41). At that time, the authors also concluded that, "outdoor recreation seemingly has not established itself as an essential element in a constitutional jail" (Ref. 6, p 42). In 1996, Lee published an article exploring the rights of incarcerated people to recreation, including outdoor recreation. With regard to U.S. case law, Lee wrote that, "a right to outdoor recreation as distinguished from other forms does not exist, but some federal courts have come close to requiring that inmates have an opportunity to be outdoors and some state courts have made such rulings" (Ref. 7, p 175).

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During the intervening decades, new research findings and more recent court cases have changed medical and legal understanding of the potential role of outdoor access in the wellbeing of incarcerated people. In addition, the COVID-19 pandemic has highlighted the risks of indoor infectious disease spread among overcrowded correctional facilities and led to widespread restrictions on the movement and activities of incarcerated populations to mitigate the risks of contagion.⁸⁻¹¹ These additional pandemic-related restrictions on movement and activities have further limited the degree to which incarcerated people may access outdoor recreation,¹¹ while simultaneously highlighting the utility of outdoor spaces as potentially safer alternatives to indoor spaces, at least where respiratory illnesses are concerned. This article examines U.S. jail and prison policies related to outdoor recreation, potential mental health implications of these policies, and litigation over access to the outdoors in correctional settings.

Outdoor Access during Incarceration

A number of existing standards for correctional institutions indicate that jails and prisons should provide incarcerated people with access to outdoor recreation. The American Correctional Association has called for providing incarcerated people with access to the outdoors; as of 2021, its standards for adult correctional institutions recommended that "both outdoor and covered/enclosed exercise areas for general population inmates [should be] provided in sufficient number to ensure that each inmate is offered at least one hour of access daily" (Ref. 12, p 63), adding that, "Use of outdoor areas is preferred" (Ref. 12, p 63). Similarly, standards for the treatment of prisoners published by the American Bar Association have referred to lack of outdoor recreation as a contributor to conditions of extreme isolation,¹³ and these standards noted that "conditions of extreme isolation should not be allowed regardless of the reasons for a prisoner's separation from the general population" (Ref. 13, p 95). Human Rights Watch,¹⁴ as well as the United Nations Standard Minimum Rules for the Treatment of Prisoners (i.e., "the Nelson Mandela Rules"),¹⁵ have called for incarcerated people to have access to at least one hour of outdoor time each day, weather permitting.

Despite standards from prominent organizations recommending outdoor access for incarcerated populations, U.S. jails and prisons vary widely as to whether

and when to allow incarcerated people to go outside. In recent decades, several surveys have sought to characterize patterns of recreation opportunities and use in U.S. correctional facilities.^{16–21} Evidence suggests many U.S. correctional facilities have outdoor exercise or recreation areas available for use by incarcerated people. For example, a nationwide survey published in 1972 of approximately 25 correctional facilities that offered psychiatric services to incarcerated people with mental disorders found 88 percent provided opportu-nities for outdoor sports.²⁰ A 2019 national survey of U.S. prison systems found 33 (97%) of 34 responding jurisdictions had outdoor exercise areas for incarcerated people in restrictive housing, even though restrictive housing areas typically permit less movement and activities compared with general population and other housing areas.¹⁷ Still, these types of surveys of U.S. jails and prisons have often found inconsistent patterns regarding the types and actual use of outdoor recreation spaces, as several factors may shape whether facilities permit incarcerated people to go out-doors.¹⁶⁻²¹

First, the type of correctional facility can influence whether incarcerated people are permitted access to outdoor settings. It is important to note that jails, prisons, and other detention facilities may fall under the broad category of correctional facilities, but these various facilities can have considerable differences in terms of size, location, intended purpose, and types of incarcerated populations. For example, jails tend to have rapid turnover of incarcerated populations, during which time incarcerated people may be undergoing the various initial stages of criminal proceedings (e.g., booking, arraignment, legal visits, release). Since correctional staff may just be gaining familiarity with newly incarcerated people in jails, and because these individuals may be clearing from substance use, in need of medical attention, or called to repeated court dates, coordinating regular access to outdoor recreation areas can be challenging in jail settings. In contrast, prisons tend to have more long-term and stable incarcerated populations, as individuals may have been sentenced to years, if not decades. As a result of more stable incarcerated populations, familiarity between staff and incarcerated people, and daily routine schedules, regular access to outdoor areas may be more practical to facilitate on an ongoing basis in prison settings. These differences notwithstanding, jails still frequently house people for prolonged periods of time, including many pretrial detainees who

Morris and Izenberg

have not been convicted of crimes and those with mental illness awaiting competency proceedings or transfer to community-based treatment programs. Beyond the general differences in jails and prisons, some correctional facilities are designed to hold specific types of incarcerated populations, which may also affect the degree of outdoor access offered to those inside.²⁰ Correctional facilities designed for therapeutic purposes (e.g., managing and treating people with mental disorders) may have a different emphasis on outdoor access compared with facilities designed for high-risk security purposes (e.g., supermax settings).

Second, regardless of facility type, security concerns may lead correctional staff, justifiably or not, to restrict incarcerated individuals or groups from accessing the outdoors. For instance, in response to violent incidents or threats of violence in correctional settings, correctional staff may transfer incarcerated individuals to more restrictive housing or even lock down entire facilities. These types of restrictions may limit the degree to which incarcerated individuals are allowed access not only to the outdoors but even to out-of-cell time. In supermax facilities, which are designed to hold individuals deemed to pose high security risks in correctional settings, individuals may be kept in their cells for as many as 23 to 24 hours per day for months or even years.²² Potential justifications for restricting outdoor access in these situations may include protecting incarcerated people or staff from threatened or actual violence, disrupting illicit activities (e.g., contraband distribution), and punishment related to rules violations. Despite the real security concerns often present in these institutions, some scholars have questioned the degree to which these types of restrictions, such as preventing people from going outdoors, is "rationally related to the penological interest in reducing violence" (Ref. 22, p 51).

Third, the costs of constructing outdoor spaces may also factor into whether or not correctional facilities offer these types of areas. Correctional authorities may focus more on the potential security risks rather than the potential health and other benefits of building outdoor spaces for incarcerated people.²³ As a result, correctional authorities may not wish to dedicate financial and other resources to building and maintaining green spaces (e.g., trees, lawns) or even to the security measures necessary to monitor incarcerated people outdoors (e.g., fenced enclosures, sally ports, watch towers, staffing).²³ Moreover, the geographic location of jails or prisons may affect the feasibility and costs associated with building these types of outdoor spaces. As examples, a jail in New York City may face different challenges (e.g., clearing ice and snow during frigid winters) than a prison in Arizona (e.g., excessive heat during a summer day) in maintaining and operating outdoor areas for incarcerated people. Moreover, jails and prisons located in urban settings may face additional costs and space constraints when seeking to develop outdoor spaces compared with facilities located in rural areas, where open spaces may be more available for these purposes.

Fourth, the political climate surrounding crime and punishment may affect policy decisions regarding access to the outdoors for incarcerated people.²³ Political environments favoring "law and order" or "tough on crime" approaches may limit the incentives for policymakers to improve conditions of incarceration. By comparison, when policymakers view incarceration through a lens of rehabilitation, there may be more political will for facilitating programs that allow greater access to outdoor spaces as part of the rehabilitation process.²³ Norway has attracted attention in this regard, as a wider emphasis on rehabilitation in recent years has shaped the design of its correctional facilities, such as Halden Prison which includes access to green spaces, large cell windows with views of nature, and the ability to open grates in individual cells to let in fresh air.²⁴ Policy-makers might also view access to outdoor spaces and activities from a pragmatic standpoint as a way of relieving tension and reducing violence among incarcerated populations.²⁵

Finally, some jails and prisons may attempt to use alternate methods for capturing the potential benefits of outdoor time without allowing people to go outside at all. As examples, some facilities may provide incarcerated people with indoor exercise areas that offer natural light¹⁷ or design roof structures, such as skylights, that can be opened to let in natural light and outside air.²⁶ It is questionable whether such alternatives provide the same degree of benefits as actual time outdoors and, as noted by Hitchcock in a 1990 discussion on this topic, "the greatest debate in the courts to date has been whether the 'time out of the cell' should be indoors or outdoors" (Ref. 27, p 87).

Mental Health Implications

Narrative accounts have long offered compelling evidence that access to the outdoors can shape the mental health of incarcerated people. Working at a British prison in the mid-1800s, a resident surgeon, "concluded that the move to increase outdoor exercise in association had reduced the incidence of mental illness" (Ref. 28, p 106). Nearly two centuries later, surveys of incarcerated people placed under strict movement and activity restrictions amid the COVID-19 pandemic offer similar findings, with one respondent stating, "Have been given one yard time this last month which is driving me crazy. Spend a lot of time staring out of cell window trying to get fresh air" (Ref. 11, p 2). Another respondent replied, "It endangers our mental health because it is not healthy for human beings to only be allowed to go outside for only 90 minutes every two weeks" (Ref. 11, p 7).

Perhaps not surprisingly, the importance of outdoor recreation for the wellbeing of incarcerated people has frequently been assumed. A 2003 paper on the topic of recreation rights for prisoners noted, for example, that "recreation, especially outdoor recreation, enables individuals to maintain or enhance their physical conditioning or slow the deterioration of their physical bodies. Exercise, movement, fresh air and sunlight all promote the health of persons . . . access to outdoor recreation is a vital antidote to long hours spent in cells that are often cramped, artificially lit and filled with stale air" (Ref. 29, p 35). Nevertheless, controlled experiments and other systematic efforts to understand these matters have been limited given the potential methodological, logistical, and ethics-related barriers to research seeking to specifically examine outdoor access among incarcerated people.

In community samples, some research has examined the relationship between outdoor access and mental health, though here too there are limitations, including variable study quality and the fact that, outside of correctional settings, it can be difficult to find individuals deprived of time outdoors for such prolonged periods and likely unethical to reproduce such conditions experimentally. Much of the existing literature, accordingly, examines factors like exposure to natural environments and green spaces, the amount of time spent outdoors voluntarily, or tangentiallyrelated phenomena such as light and noise pollution in urban environments.^{30–34} Still, while limited, existing data point to a salutary role for the outdoors. A recent review found evidence supporting relationships between exposure to nature and improved cognitive function, mental health, and sleep, as well as certain physical parameters such as blood pressure and brain activity.30 Another meta-analysis focusing on the relationship between green space exposure and physical health outcomes found evidence of benefit across a number of parameters, including diastolic blood pressure, heart rate, and, importantly, salivary cortisol, a potential indicator of physiologic response to stress that has been associated with range of health outcomes including mental health concerns.^{31,33} A 2019 study of more than 19,000 people in the United Kingdom indicated that at least 120 minutes of exposure to nature per week was the threshold at which participants became significantly more likely to report better health or wellbeing compared with no nature contact.³⁴

A number of potential mechanisms have been proposed for why outdoor exposure might support mental health and alleviate psychiatric symptoms. For example, exposure to outdoor sunlight may facilitate regulation of circadian rhythms, which has been associated with improvements in circadian-related outcomes such as mood and sleep.³⁵ Seeing or experiencing outdoor environments may reduce subjective experiences of stress, including activating the parasympathetic nervous system and physiologic pathways associated with relaxation.^{36,37} Confounding variables, such as socioeconomic status or physical activity in the outdoors leading to salutary effects as opposed to exposure to the outdoors alone, could also play a role.³⁸

Of note, vitamin D deficiency has drawn considerable attention as a possible mediator between outdoor exposure and mental health outcomes. In 2015, researchers in Maricopa County, Arizona, one of the sunniest regions in the United States, found widespread deficiency in vitamin D among incarcerated individuals in a jail.³⁹ Evidence suggests vitamin D deficiency may be linked with various health problems,⁴⁰ though data specific to mental health outcomes remain mixed. While low vitamin D levels have been correlated with various psychiatric concerns, such as depressive symptoms, repleting vitamin D levels may not necessarily alleviate these symptoms.41,42 In addition, research suggests approximately 40 percent of U.S. adults may meet criteria for vitamin D deficiency, indicating these health concerns, although important, are not limited to jail and prison settings alone.43

As noted earlier, rigorous studies examining the relationship between outdoors exposure and mental health in incarcerated populations are limited. In a small survey of incarcerated people in the United Kingdom, the majority of respondents reported feelings of calm or finding a sense of peace when asked about green spaces or images of nature.⁴⁴ One small qualitative study comparing experiences in the United Kingdom and the Nordic region found that incarcerated people often reported desiring contact with nature and benefitting from it psychologically, although some noted disappointment when provided merely with views of nature rather than being able to actually access it.²³ A 2021 study reported prisons in the United Kingdom with higher proportions of green space within their perimeters were associated with decreased rates of self-harm and violence, even after controlling for variables such as prison size, prison type, and degree of crowding.⁴⁵

In the United States, much of the literature examining the experiences of those denied access to the outdoors has focused on restrictive housing, which can include prolonged segregation and isolation of incarcerated individuals, often in small single-person cells, for disciplinary or ostensible security reasons. Here, the data clearly point to profound and harmful effects of restrictive housing on mental health including increased risks of suicide and other self-injurious behaviors.^{46–48} In one study of New York City jails, for example, seven percent of incarcerations involved solitary confinement, and yet this relatively small proportion accounted for 53 percent of acts of selfharm during the study period.⁴⁸ Restrictive housing may or may not preclude outdoor access; however, given the many forms of deprivation involved (e.g., restrictions in social interaction, movement, programming), it can be difficult to determine the degree to which lack of time outdoors alone may contribute to the harms involved. In contrast, a 2017 study found exposure to nature videos among people held in solitary confinement in Oregon was associated with fewer violent infractions, as well as reduced stress and irritability among many respondents.⁴⁹ A 2021 study reported virtual nature experiences led to similar findings with regard to decreased stress and increased feelings of calm among men incarcerated in the general population of a Utah prison.⁵⁰

Notwithstanding the dearth of research on outdoor access for incarcerated people and its effect on their mental health, a small body of literature has arisen focusing specifically on horticultural programming in jail and prison settings. Over the last several decades, several published studies and program evaluations have examined horticultural or other similar "green" rehabilitation programs in jails and prisons, indicating benefits to mood and other general improvements in psychological wellbeing.^{51–56} These data remain limited by the size of the programs being studied and lack, in many cases, of experimental study design. It also remains unclear to what extent the potential benefits of these interventions might occur through exposure to nature and outdoor spaces, as opposed to other therapeutic means, such as vocational fulfillment, attention from staff, and participation in a desirable program while in custody. Despite these limitations, the positive experiences typically described by incarcerated people in horticultural programming point to possible benefits of outdoor access, particularly when it involves natural or green spaces, as opposed to, for example, a concrete yard.

Legal Implications

There is considerable case law regarding the right of incarcerated people to recreation of various kinds, including in many instances outdoor access specifically.^{6,7,27} According to a 1981 article, court cases addressing outdoor access during incarceration had already emerged in numerous states, including California, Georgia, Michigan, Mississippi, Missouri, Montana, New Hampshire, New York, and Virginia.⁶ Litigation, commonly pursued by incarcerated people through civil rights actions (e.g., under 42 U.S. Code § 1983), has played a notable role in shaping access to the outdoors in U.S. jails and prisons.^{6,7,27} Outcomes of these court cases have often been mixed and frequently differ across jurisdictions and with respect to different types of incarcerated populations, for example pretrial detainees as opposed to those convicted of a crime.^{6,7,27}

A number of cases have reinforced the importance of access to the outdoors for incarcerated people.^{6,7} For instance, in 1977, the U.S. Court of Appeals for the Fifth Circuit held in Miller v. Carson that "presumably innocent pretrial detainees who are not classified as security risks and who have not been shown to have violated the disciplinary rules of the jail have a [F]ourteenth [A]mendment and 1983 right to regular access to the outdoors" (Ref. 57, p 750). In 1979, the U.S. Court of Appeals for the Ninth Circuit decided Spain v. Procunier, which is another commonly cited case in this area.^{6,7,27,58} The court reviewed case law from across the country, writing, "there is substantial agreement among the cases in this area that some form of regular outdoor exercise is extremely important to the psychological and physical well being of the inmates" (Ref. 58, p 199). In this decision, the court noted that it was cruel and unusual punishment to confine the convicted plaintiffs held in harsh segregation conditions for "a period of years without opportunity to go outside except for occasional court appearances, attorney interviews, and hospital appointments" (Ref. 58, p 200). Several courts have since indicated that prolonged confinement without outdoor access may violate the constitutional rights of incarcerated individuals, typically through the Fourteenth Amendment for pretrial detainees or the Eighth Amendment for convicted individuals.^{6,7}

Rather than making sweeping or universal rulings, courts have usually examined the specific conditions of confinement when deciding these types of cases, with input from expert witnesses or statutory requirements laid out by state legislatures also providing guidance.^{6,7,59,60} The length of time in which someone is kept from outdoor access is often a key consideration in these cases, with some courts finding that periods of years, months, or even weeks without outdoor exercise could support constitutional claims.^{61,62} Courts may be less likely, moreover, to permit restrictions on outdoor access for incarcerated people if these restrictions are for indefinite periods, as opposed to determinable time frames for specific reasons.^{7,63} In a 2012 example, the U.S. District Court for the District of Colorado considered the case of a convicted man in the Colorado prison system who had been "deprived of any form of outdoor exercise, and virtually any meaningful exposure to fresh air, for 12 years," writing, "this prolonged deprivation is a paradigm of inhumane treatment" (Ref. 61, p 1140).

Beyond the length of time restricted from the outdoors, additional circumstances of confinement can influence judicial decision-making in these cases.⁷ For example, courts have held that indoor facilities can offer comparable or sufficient exposure to the natural elements of the outdoors, such as a skylight that can be opened to allow in fresh air in exercise areas²⁶ or windows in cells that let in natural light.⁶⁴ If incarcerated people decline to utilize outdoor recreation when offered to do so, these behaviors may undercut claims in court regarding being deprived access to the outdoors.⁶² If people engage in threatening or unpredictable behaviors during incarceration (e.g., violence, escape attempts), courts may determine that restrictions on outdoor access may be permissible if these restrictions are reasonably related to promoting the safety and security of the facility.⁶⁵ Protecting incarcerated people from infectious disease transmission, such as confining individuals to their cells for prolonged periods during the COVID-19 pandemic, may also serve as a justification for limited out-of-cell time or even access to the outdoors.⁶⁴ As a result, not all courts have found that incarcerated people must have access to the outdoors,^{6,7} and, even when courts have recommended or required certain frequencies of outdoor time during incarceration, these frequencies have varied considerably, such as at least one hour daily, one hour five times per week, one hour three times per week, and two hours per week, among others.^{6,27,59–61}

Recent policies in California further highlight the confusing mix of approaches to outdoor access in jails and prisons. A number of jails in California do not provide access to outdoor recreation spaces, which has led to litigation over wider access to the outdoors.^{60,64,66,67} By comparison, convicted individuals condemned to death in California have been allowed as much as five hours of outdoor exercise time every day of the week.68 In other words, in California, pretrial detainees who have not been convicted of crimes may be denied access to any outdoor recreation for months or even years, whereas individuals convicted of crimes warranting the death penalty are typically afforded weekly access to outdoor recreation.^{54,67,68} Some of these discrepancies may be due to varying degrees of oversight over different incarcerated populations; for example, condemned individuals may attract more public and legal attention than individuals incarcerated for reasons unrelated to the death penalty, which may shape the extent to which these individuals are provided with outdoor access. Still, given the patchwork of court decisions and correctional policies in this area, as well as the degree of litigation over these matters, it is possible the U.S. Supreme Court could at some point provide further guidance regarding the rights of incarcerated people to access the outdoors.⁶⁰

Future Directions

The COVID-19 pandemic led to severe lockdowns both in U.S. correctional facilities and community settings, calling attention to the experience of being confined indoors for prolonged periods and its potential role in shaping mental health outcomes.^{8–11,69} Growing evidence suggests access to the outdoors can have positive effects on mental health and other health-related outcomes, although research remains limited with regard to incarcerated populations. Meanwhile, incarcerated individuals continue to pursue considerable litigation over access to the outdoors, and U.S. courts have come to varying conclusions about the degreeto which incarcerated people require such access. Relying on the mental health literature and case law reviewed in this article, the authors suggest general principles for the provision of outdoor access to incarcerated people, guided by the principle that the harms of depriving someone of access to the outdoors are potentially significant, even if they are understudied because of logistics and ethics challenges.

First, if correctional facilities restrict outdoor access for incarcerated individuals, these restrictions should be justified with specific reasons, and these reasons should be examined critically. Reasons for restricting outdoor access might apply at the individual level, such as someone posing an acute violence risk to others in the facility, or at the population level, such as the impracticality of offering outdoor recreation to certain groups (e.g., people just booked into jail, given the frequency of court visits and releases). If a correctional facility relies on indoor accommodations (e.g., windows with indirect sunlight or a skylight that opens to outdoor air) as a replacement for outdoor access, the facility should justify why outdoor access cannot be feasibly provided under present circumstances, as well as the nature of the outdoor exposures (e.g., light, fresh air) provided by indoor accommodations. Policymakers overseeing the funding, design, and construction of future jails and prisons should question why any planned facility would not incorporate outdoor space from its inception and should consider requiring these features through legislation, agency regulations, or funding guidelines.

Second, restrictions on outdoor access during incarceration should be time limited. For example, if a prison were to restrict an individual's outdoor access due to violence risk, prison staff should continue to reassess this violence risk at regular intervals and lift the restriction at the earliest possible time. Similarly, if a jail's policy were to restrict outdoor access for new bookings because of the rapid turnover of people at intake and release, the policy should still describe timelines by which people incarcerated in that facility might become eligible for outdoor access.

Third, jails and prisons should have clearly written policies regarding outdoor access that describe the potential reasons and time periods for restricting outdoor access, as well as protocols to be followed by correctional staff for implementing or lifting these restrictions. Absent these defined policies, custody and health staff, as well as incarcerated people, may be left with ambiguous guidance about when, or whether at all, incarcerated people may be permitted access to the outdoors, potentially fostering disagreements and conflicts between staff and incarcerated individuals. These types of defined policies can provide guidance for custody and health staff to follow and provide a sense of expectations for incarcerated people who may be subjected to these restrictions, as well as a basis upon which to appeal prolonged or undue restriction.

Fourth, additional research is needed to better understand the mental health and other health-related effects of restricting outdoor access or of providing alternate outdoor exposures (e.g., small windows, enclosed gyms) that correctional authorities claim, generally with limited or no evidence, to be sufficient replacements. Gathering data about the availability and utilization of outdoor access during incarceration can help characterize the types of outdoor recreation afforded in different settings, as well as the ways in which incarcerated people use and respond to different availabilities of outdoor settings.^{70,71} Such data collection may not only enhance understanding about the relationships between outdoor exposure and the mental health needs of incarcerated people but may also help determine how outdoor access relates to use of correctional mental health services, including referrals for care, frequency of appointments, and medication prescribing (e.g., antidepressants, sleep medications).

Fundamentally, U.S. jail and prison authorities should strive to expand access to outdoor recreation wherever and whenever possible, not only because of research indicating its role in supporting mental health and other health-related outcomes, but also in recognition of outdoor access as a basic human right. In a 1996 article, Lee wrote, "a plausible argument can be made that being outdoors is a fundamental aspect of life and that prisoners should be guaranteed some opportunity to see the outdoors and, specifically, to see the outdoors in the daytime" (Ref. 7, p 175). Through litigation and other writings, incarcerated people have understandably lamented going for months, years, or decades without access to fresh air, direct sunlight, nature, or even the feeling of grass under their feet.^{11,61,72} In recent years, advocates, policymakers, public health experts, and others in the United States have sought to begin unraveling mass incarceration and mitigating its profound and inequitable impacts. While much attention is rightfully being paid to efforts to reduce and eliminate imprisonment wherever possible, the frequently appalling conditions of life in jails and prisons, including restrictions on outdoor access, must not be forgotten and require urgent action.

References

- Steadman HJ, Osher FC, Robbins PC, et al. Prevalence of serious mental illness among jail inmates. Psychiatr Serv. 2009 June; 60 (6):761–5
- Prins SJ. Prevalence of mental illnesses in U.S. state prisons: A systematic review. Psychiatr Serv. 2014 July; 65(7):862–72
- Minton TD, Beatty LG, Zeng Z. Correctional populations in the United States, 2019 – statistical tables. Washington, DC: Bureau of Justice Statistics [Internet]; 2021. Available from: https://bjs. ojp.gov/sites/g/files/xyckuh236/files/media/document/cpus19st. pdf. Accessed March 21, 2022
- Metzner JL. Class action litigation in correctional psychiatry. J Am Acad Psychiatry Law. 2002 Mar; 30(1):19–29
- Morris NP, Holliday JR, Binder RL. Litigation over sleep deprivation in U.S. jails and prisons. Psychiatr Serv. 2021 Oct; 72 (10):1237–9
- Barbee JT, Calloway J. The courts and correctional recreation. J Phys Educ Recr. 1981; 52(4):40–3
- 7. Lee RD. Prisoners' rights to recreation: Quantity, quality, and other aspects. J Crim Just. 1996; 24(2):167–78
- Burton PRS, Morris NP, Hirschtritt ME. Mental health services in a U.S. prison during the COVID-19 pandemic. Psychiatr Serv. 2021 Apr; 72(4):458–60
- Stewart A, Cossar R, Stoové M. The response to COVID-19 in prisons must consider the broader mental health impacts for people in prison. Aust N Z J Psychiatry. 2020 Dec; 54(12):1227–8
- Cloud DH, Ahalt C, Augustine D, *et al.* Medical isolation and solitary confinement: Balancing health and humanity in US jails and prisons during COVID-19. J Gen Intern Med. 2020 Sep; 35 (9):2738–42
- 11. John Howard Association. Perceptions and Experiences from People inside Prison during the Pandemic: Yard & Out-of-Cell Time. Chicago, IL: John Howard Association [Internet]; 2020. Available from: https://static1.squarespace.com/static/5beab48285 ede1f7e8102102/t/5f9b3e44d3553d44af1ea255/1604009540162/ JHA+COVID-19+Prison+Survey+Comment+Report+Yard+ and+Out-of-cell+Time+Section.pdf. Accessed May 6, 2022
- American Correctional Association. Performance-based standards and expected practices for adult correctional institutions, Fifth Edition. Alexandria, VA: American Correctional Association; 2021
- American Bar Association. ABA Standards for Criminal Justice: Treatment of Prisoners, Third Edition. Chicago, IL: American Bar Association; 2011
- Human Rights Watch. The Human Rights Watch global report on prisons [Internet]; 1993. Available from: https://www.hrw.org/ legacy/reports/pdfs/g/general/general2.936/general2936full.pdf. Accessed September 26, 2022
- United Nations General Assembly. United Nations standard minimum rules for the treatment of prisoners (the Nelson Mandela rules) [Internet]; 2015. Available from: https://documents-dds-ny. un.org/doc/UNDOC/GEN/N15/443/41/PDF/N1544341.pdf? OpenElement. Accessed March 21, 2022
- Williams LR. Women's correctional recreation services. J Physical Educ Recreat. 1981; 52(4):55–8

- 17. The Correctional Leaders Association & The Arthur Liman Center for Public Interest Law at Yale Law School. Time-in-cell 2019: A snapshot of restrictive housing based on a nationwide survey of US prison systems [Internet]; 2020. Available from: https://law.yale.edu/sites/default/files/area/center/liman/document/ time-in-cell_2019.pdf. Accessed February 22, 2022
- Center on Juvenile and Criminal Justice. Community insights on California jails survey – summary of findings [Internet]; 2021. Available from: https://www.bscc.ca.gov/wp-content/uploads/CJCJ-Commmunity-Insights-on-California-Jails_Survey-Findings_ 8.11.2021.pdf. Accessed February 22, 2022
- Aguilar TE, Asmussen K. An exploration of recreational participation patterns in a correctional facility: A case study. J Offend Counsel Serv Rehab. 1990 Oct; 14(1):67–78
- Eckerman WC. A nationwide survey of mental health and correctional institutions for adult mentally disordered offenders. Rockville, MD: National Institute of Mental Health, Center for Studies of Crime and Delinquency; 1972
- 21. Crutchfield E, Garrette L, Worrall J. Recreation's place in prisons: A survey report. Parks Recreat. 1981; 16(2):35–39
- Hafemeister TL, George J. The ninth circle of hell: An eighth amendment analysis of imposing prolonged supermax solitary confinement on inmates with a mental illness. Denv L Rev. 2012; 90:1–54
- Moran D, Turner J. Turning over a new leaf: The health-enabling capacities of nature contact in prison. Soc Sci Med. 2019 Jun; 231:62–9
- 24. Hyatt JM, Andersen SN, Chanenson SL. Prison cells as a grounded embodiment of penal ideologies: A Norwegian-American comparison. In Turner J, Knight V, editors. The Prison Cell: Embodied and Everyday Spaces of Incarceration. Cham, Switzerland: Palgrave Macmillan; 2020. p. 45-70
- McCall GE. Leisure restructuring. J Physical Educ Recreat. 1981; 52(4):38–9
- 26. Cooper v. Lombard, 64 A.D.2d 130 (N.Y. App. Div. 1978)
- 27. Hitchcock HC. Prisons—exercise versus recreation. J Phys Educ Recreat Dance. 1990; 61(6):84–8
- Cox C, Marland H. "He must die or go mad in this place": Prisoners, insanity, and the Pentonville Model Prison Experiment, 1842-52. Bull Hist Med. 2018; 92(1):78–109
- 29. Lippke RL. Prisoner access to recreation, entertainment and diversion. Punishm Soc. 2003; 5(1):33–52
- Jimenez MP, DeVille NV, Elliott EG, *et al.* Associations between nature exposure and health: A review of the evidence. IJERPH. 2021; 18(9):4790
- Twohig-Bennett C, Jones A. The health benefits of the great outdoors: A systematic review and meta-analysis of greenspace exposure and health outcomes. Environ Res. 2018; 166:628–37
- Ohayon MM, Milesi C. Artificial outdoor nighttime lights associate with altered sleep behavior in the American general population. Sleep. 2016; 39(6):1311–20
- Staufenbiel SM, Penninx BWJH, Spijker AT, et al. Hair cortisol, stress exposure, and mental health in humans: A systematic review. Psychoneuroendocrinology. 2013; 38(8):1220–35
- White MP, Alcock I, Grellier J, et al. Spending at least 120 minutes a week in nature is associated with good health and wellbeing. Sci Rep. 2019 Jun; 9(1):7730
- 35. Burns AC, Saxena R, Vetter C, *et al.* Time spent in outdoor light is associated with mood, sleep, and circadian rhythm-related outcomes: A cross-sectional and longitudinal study in over 400,000 UK Biobank participants. J Affect Disord. 2021 Dec; 295:347–52
- 36. Kondo MC, Jacoby SF, South EC. Does spending time outdoors reduce stress? A review of real-time stress response to outdoor environments. Health Place. 2018 May; 51:136–50

Morris and Izenberg

- 37. van den Berg MMHE, Maas J, Muller R, et al. Autonomic nervous system responses to viewing green and built settings: Differentiating between sympathetic and parasympathetic activity. Int J Environ Res Public Health. 2015 Dec; 12(12):15860–74
- Bélanger M, Gallant F, Doré I, *et al.* Physical activity mediates the relationship between outdoor time and mental health. Prev Med Rep. 2019 Dec; 16:101006
- Jacobs ET, Mullany CJ. Vitamin D deficiency and inadequacy in a correctional population. Nutrition. 2015 May; 31(5):659–63
- Dobnig H. A review of the health consequences of the vitamin D deficiency pandemic. J Neurol Sci. 2011 Dec; 311(1-2):15–1841
- Shaffer JA, Edmondson D, Wasson LT, et al. Vitamin D supplementation for depressive symptoms: A systematic review and metaanalysis of randomized controlled trials. Psychosom Med. 2014 Apr; 76(3):190–6
- 42. Lerner PP, Sharony L, Miodownik C. Association between mental disorders, cognitive disturbances and vitamin D serum level: Current state. Clin Nutr ESPEN. 2018 Feb; 23:89–102
- Forrest KYZ, Stuhldreher WL. Prevalence and correlates of vitamin D deficiency in US adults. Nutr Res. 2011 Jan; 31(1): 48–54
- 44. Moran D. Back to nature? Attention restoration theory and the restorative effects of nature contact in prison. Health Place. 2019 May; 57:35–43
- 45. Moran D, Jones PI, Jordaan JA, *et al.* Does nature contact in prison improve well-being? Mapping land cover to identify the effect of greenspace on self-harm and violence in prisons in England and Wales. Ann Am Assoc Geogr. 2021; 111(6):1–1795
- Grassian S. Psychiatric effects of solitary confinement. Wash U JL & Pol'y. 2006; 22(1):325–83
- Metzner JL, Fellner J. Solitary confinement and mental illness in U.S. prisons: A challenge for medical ethics. J Am Acad Psychiatry Law. 2010 Mar; 38(1):104–8
- Kaba F, Lewis A, Glowa-Kollisch S, *et al.* Solitary confinement and risk of self-harm among jail inmates. Am J Public Health. 2014 Mar; 104(3):442–7
- Nadkarni NM, Hasbach PH, Thys T, *et al.* Impacts of nature imagery on people in severely nature-deprived environments. Front Ecol Environ. 2017 Sept; 15(7):395–403
- Nadkarni NM, Thys TM, Ruff JS, *et al.* Providing virtual nature experiences to incarcerated men reduces stress and increases interest in the environment. Ecopsychology. 2021 Jun; 13(2):71–83
- Rice JS, Lremy L. Impact of horticultural therapy on psychosocial functioning among urban jail inmates. J Offender Rehabil. 1998; 26(3-4):169–91
- 52. Toews B, Wagenfeld A, Stevens J. Impact of a nature-based intervention on incarcerated women. Int J Prison Health. 2018 Dec; 14(4):232–43
- Timler K, Brown H, Varcoe C. Growing connection beyond prison walls: How a prison garden fosters rehabilitation and healing for incarcerated men. J Offender Rehabil. 2019; 58(5):444–63

- Lee A-Y, Kim S-Y, Kwon HJ, *et al.* Horticultural therapy program for mental health of prisoners: Case report. Integr Med Res. 2021 June; 10(2):100495
- 55. Farrier A, Baybutt M, Dooris M. Mental health and wellbeing benefits from a prisons horticultural programme. Int J Prison Health. 2019 Mar; 15(1):91–104
- 56. Linden S. Green prison programmes, recidivism and mental health: A primer. Crim Behav & Mental Health. 2015; 25:338
- 57. Miller v. Carson, 563 F.2d 741 (5th Cir. 1977)
- 58. Spain v. Procunier, 600 F.2d 189 (9th Cir. 1979)
- 59. Smith v. Sullivan, 553 F.2d 373, 379 (5th Cir. 1977)
- 60. Norbert v. San Francisco Sheriff's Dep't, 2020 U.S. Dist. LEXIS 251031 (N.D. Cal. 2020)
- 61. Anderson v. Colorado, 887 F. Supp. 2d 1133 (D. Colo. 2012)
- 62. Ajaj v. United States, 293 F. App'x 575 (10th Cir. 2008)
- 63. Wolff v. Deeds, U.S. App. LEXIS 13633 (9th Cir. 1993)
- 64. Norbert v. City & Cnty. of San Francisco, 10 F.4th 918 (9th Cir. 2021)
- 65. Bass v. Perrin, 170 F.3d 1312 (11th Cir. 1999)
- 66. San Diego County Grand Jury. San Diego County Detention Facilities Condition and Management [Internet]; 2018 May 29. Available from: https://www.sandiegocounty.gov/content/dam/ sdc/grandjury/reports/2017-2018/SDCountyDetentionFacilities ConditionandManagementReport.pdf. Accessed July 21, 2022.
- 67. Humboldt County Civil Grand Jury: Jails and Law Enforcement Facilities [Internet]; 2016. Available from: https://humboldtgov. org/DocumentCenter/View/60135/8--Jails-and-Law-Enforcement-Facilities. Accessed July 21, 2022
- San Quentin State Prison. San Quentin Operational Procedure: Condemned Manual [Internet]; 2013. Available from: https:// caitlinkellyhenry.com/wp-content/uploads/2016/02/SQ-Condemned-Manual-Full.pdf. Accessed April 23, 2022
- 69. Prati G, Mancini AD. The psychological impact of COVID-19 pandemic lockdowns: A review and meta-analysis of longitudinal studies and natural experiments. Psychol Med. 2021 Jan; 51(2): 201–11
- 70. Walakafra-Wills DV. Questionnaire assessment of inmate recreational preferences in a county jail. Sacramento, CA: American Family and Adolescent Institute [Internet]; 1984. Available from: https://www. ojp.gov/ncjrs/virtual-library/abstracts/questionnaire-assessmentinmate-recreational-preferences-county. Accessed February 22, 2022
- Camplain R, Baldwin JA, Warren M, et al. Physical activity in people who are incarcerated: A social justice issue. J Phys Act Health. 2019 May; 16(5):306–7
- 72. Stankewitz DR. California's longest serving death-row prisoner on pain, survival, and native identity. The Marshall Project [Internet]; 2022 March 18. Available from: https://www.themarshallproject. org/2022/03/18/california-longest-serving-death-row-prisoner-onpain-survival-and-native-identity. Accessed April 23, 2022