

VIEWPOINT

The Medical Implications of Banning Transgender Youth From Sport Participation

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Regular physical activity is essential for the health and well-being of children, adolescents, and adults. Participation in physical activity during childhood and adolescence has a positive impact on physical health throughout the life span. Moderate to vigorous aerobic exercise has been demonstrated to improve metabolic health in adolescents and to contribute to improved bone mineral density (BMD) during a period of critical growth. Exercise impacts mental health, leading to a decrease in depressive symptoms, with team sports participation specifically associated with lower rates of loneliness and social anxiety, effects that are more pronounced for those at greater psychological risk.¹ Adolescence is a period of rapid social development and athletic participation can offer an important opportunity for developing social connections. The emotional, social, and physical benefits of exercise and sports participation are indisputable: physical activity during childhood and adolescence has lifelong positive impacts on both physical and mental health.

Transgender and gender-diverse youth (TGD) are particularly vulnerable to mental and physical comorbidities that are mitigated by physical activity. Thus, the benefits of exercise may be particularly significant for TGD youth. The past year has seen widespread legislative efforts to exclude TGD youth from organized sports, even though organized sports represent one of the most important opportunities for youth to engage in regular physical activity. Nine states have passed legislation banning TGD youth from participating in athletic teams concordant with their gender, and more bills are currently under consideration.² Notably, collegiate and professional athletic associations have not supported banning transgender athletes from participation in sports. In fact, the recent Olympic games featured several transgender athletes. Restricting sports participation threatens to worsen physical activity engagement among TGD youth, who already have lower rates of exercise than their cisgender peers.³

Fear of discrimination and violence are major barriers to physical activity participation for TGD individuals. Gender-segregated spaces, such as bathrooms, locker rooms, and sports teams are frequently cited by TGD individuals as feeling unsafe, with more than half reporting avoiding these spaces.⁴ Forcing TGD youth to use spaces discordant with their gender exacerbates perceptions of difference and will lead to further avoidance of physical activity for these children and adolescents. The health impact of such bans is likely to be significant. Specifically, these bans could have substantial impacts on the cardiovascular health, bone health, mental health, and cognitive development of TGD youth.

Restricting sports participation threatens to worsen existing risk factors for poor cardiovascular outcomes in TGD youth. TGD adults have higher rates of cardiovascular events, which may represent a confluence of risk factors including the effects of gender-affirming hormones (GAH); minority stress; and lifestyle factors. Even prior to initiation of GAH, TGD youth have worse cardiovascular risk profiles than their peers.⁵ Increased access to physical activity for TGD youth is important for improving cardiovascular risk and mediating the expected changes that occur with GAH.

Restricting sports participation threatens to worsen existing risk factors for poor bone mineral density in TGD youth. TGD youth may be at increased risk of low BMD. For some TGD children and adolescents, use of gonadotrophin-releasing hormone analogs/agonists (GnRHa), which limit sex steroid exposure during a period of peak bone accrual, may contribute to impaired bone mineralization. However, low BMD has been found to precede GnRHa treatment and is also found in TGD adults who never used GnRHa therapy.³ These findings suggest that there may be other risk factors for low bone density in TGD youth, such as limited engagement in weight-bearing exercise and reduced calcium intake. Legislation that limits access to sports for TGD youth has the potential to worsen exercise-dependent bone strength accrual by discouraging TGD youth from athletic participation at a critical moment in bone development.

Restricting sports participation has the potential to negatively impact neurocognitive development in TGD youth. Aerobic exercise leads to improved neural connectivity in adolescent brains, which may positively influence their executive functioning and cognitive abilities. Furthermore, adolescent participation in organized sports has been positively associated with academic performance, attention, planning, problem-solving, working memory, and inhibitory control.⁶ Adolescence is a time of important neurodevelopment, and restricting transgender youth from participating in youth sports during this critical time deprives them of the potential benefits of physical activity on neurodevelopment.

Restricting sports participation for TGD youth has the potential to impact the experiences of cisgender youth involved in school athletics. Several bills aimed at limiting the involvement of TGD youth in sports allow for genital inspections in cases where a child's gender is called into question by another coach or parent.⁷ The possibility of invasive examinations may decrease overall participation in athletics for both TGD and cisgender youth. Even in states without this clause, uneasiness with exclusionary sporting policies may decrease overall participation, whereas inclusionary policies have been associated with an increase in sports participation for all youth.

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Beyond the TGD discrimination that bans of TGD youth participation in sport endorse, policies aimed at limiting or preventing physical activity will negatively impact the health of TGD children and ado-

lescents. The wave of legislation seeking to roll back sports participation for TGD youth is cause for concern for anyone invested in the health and well-being of all children, regardless of gender identity.

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REFERENCES

1. Brière FN, Yale-Soulière G, Gonzalez-Sicilia D, et al. Prospective associations between sport participation and psychological adjustment in adolescents. *J Epidemiol Community Health*. 2018; 72(7):575-581. doi:[10.1136/jech-2017-209656](https://doi.org/10.1136/jech-2017-209656)
2. Freedom for All Americans. Legislative Tracker: Anti-Transgender Legislation. <https://freedomforallamericans.org/legislative-tracker/>
3. Lee JY, Finlayson C, Olson-Kennedy J, et al. Low bone mineral density in early pubertal transgender/gender diverse youth: findings from the Trans Youth Care Study. *J Endocr Soc*. 2020;4(9):a065. doi:[10.1210/jendso/bvaa065](https://doi.org/10.1210/jendso/bvaa065)
4. Kosciw JG, Greytak EA, Zongrone AD, Clark CM, Truong NL. The 2017 National School Climate Survey: The Experiences of Lesbian, Gay, Bisexual, Transgender, and Queer Youth in Our Nation's Schools. 2018. Accessed April 6, 2020. <https://www.glsen.org/research>.
5. Millington K, Finlayson C, Olson-Kennedy J, Garofalo R, Rosenthal SM, Chan Y-M. Association of high-density lipoprotein cholesterol with sex steroid treatment in transgender and gender-diverse youth. *JAMA Pediatr*. 2021;175(5):520-521. doi:[10.1001/jamapediatrics.2020.5620](https://doi.org/10.1001/jamapediatrics.2020.5620)
6. Brooks SJ, Parks SM, Stamoulis C. Widespread positive direct and indirect effects of regular physical activity on the developing functional connectome in early adolescence. *Cereb Cortex*. 2021;31(10):4840-4852. doi:[10.1093/cercor/bhab126](https://doi.org/10.1093/cercor/bhab126)
7. AP News. Florida House moves to limit transgender students in sports. <https://apnews.com/article/school-athletics-genetic-testing-bills-florida-bd489fbff68700e9cfc1674774b3d6b8>. Accessed July 26, 2021.