



LGBTQ+ Youth's Experiences and Engagement in Physical Activity: A Comprehensive Content Analysis

Scott B. Greenspan¹ · Catherine Griffith¹ · Ryan J. Watson²

Received: 1 December 2018 / Accepted: 29 January 2019
© Springer Nature Switzerland AG 2019

Abstract

Research suggests that sexual and gender minority (e.g., lesbian, gay, bisexual, transgender, queer and questioning; LGBTQ+) youth report avoiding physical activity settings (e.g., physical education class, locker rooms, and sport fields) due to feeling both unsafe and uncomfortable. These feelings and experiences might deter LGBTQ+ youth from achieving well-documented physical, cognitive, and social-emotional benefits that are often associated with physical activity and sport involvement. A 20-year (1998–2018) content analysis methodology was employed to obtain a more detailed understanding of LGBTQ+ youth's participation and engagement in physical activity and sport. Minimal literature was obtained ($n=13$ studies), along with an overall pattern that sexual minority youth engage in less physical activity than other populations of students. This disparity was more conclusive for sexual minority males than sexual minority females. One study was inclusive of transgender youth and suggested that transgender youth participated in sport to a similar degree as their cisgender peers; though overall, transgender youth felt less safe in typically gender-segregated spaces such as bathrooms and locker rooms. This review shines light on discrepancies of engagement and feelings of safety in the physical activity and sport context among LGBTQ+ youth. This review further delineates methodological characteristics of the yielded studies as a means to comprehensively review this body of literature.

Keywords LGBTQ · Youth · Physical activity · Content analysis

Introduction

While physical activity is associated with a host of positive outcomes for young people (e.g., Ahn and Fedewa 2011; The United States Department of Health and Human Services [USDHHS], 2018) and public health guidelines posit that youth ages 6–17 engage in 60 min of physical activity per day (USDHHS 2018), sexual and gender minority (e.g., lesbian, gay, bisexual, transgender, queer and questioning; LGBTQ+) youth specifically avoid athletic spaces (e.g., physical education class, locker rooms, and sport fields) due to feeling unsafe or uncomfortable (e.g., Kosciw et al. 2018).

Such feelings and experiences might be attributed to the emphasis of traditional gender roles (Clarke 2012) as well as the embeddedness of hegemonic masculinity (Anderson 2002) within such contexts.

With the goal of advancing this field, Greenspan et al. (2017) employed a nine-journal content analysis of LGBTQ youth's experiences in school-based athletics. The authors focused their review on journals serving specific disciplines including school psychology, school counseling, and physical education. However, no relevant literature was uncovered. The authors suggested that a more comprehensive content analysis would likely be a more generative approach to further exploring physical activity among LGBTQ+ populations. Thus, the impetus for this current study was to engage in a broader content analysis of LGBTQ youth's experiences in physical activity and sport.

✉ Scott B. Greenspan
sgreenspan@umass.edu

¹ Department of Student Development, College of Education, University of Massachusetts Amherst, 813 North Pleasant Street, 01002 Amherst, MA, USA

² Department of Human Development and Family Studies, University of Connecticut, 348 Mansfield Road, U-1058, 06269 Storrs, CT, USA

Physical Activity

Physical activity is associated with various physical health (e.g., sustainment of healthy weight; and increased heart health, muscle strength, and bone strength) and cognitive (e.g., executive functioning, attention, and memory) benefits (USDHHS 2018). Scholarship further suggests that physical activity can reduce symptoms of anxiety, depression, and emotional distress (Ahn and Fedewa 2011). Specifically, Biddle and colleagues (2018) posit that there remains promising experimental data supporting exercise and particular mental health outcomes (depression, cognition, and self-esteem), with a causal association well-developed for cognitive outcomes.

Contemporary research has pointed to engagement in sport and physical activity as a vehicle to support positive youth development (Cronin and Allen 2018; Holt 2016). Positive Youth Development theory suggests that youth possess inner strengths that interact with assets in their environments to promote their healthy development even in the face of stressors (Larsen 2000). Through this application of Positive Youth Development to sport and exercise involvement, Holt (2016) presented research that indicated that participation in exercise and sport among youth has been linked to increased connections to school, better academic performance, more frequent educational support, and more successful outcomes in adulthood, such as employment and educational attainment. Adolescence is an important context to ground a review of participation in physical activity and sport because adolescents experience rapid changes in their parent relationships, cognitive abilities, and navigate multiple emerging identities (Steinberg and Morris 2001). Typically, in adolescence, youth begin to disclose their identities to others (Lerner and Galambos 1998), and in light of the prejudicial and discriminatory athletic context, disclosures of LGBTQ+ status may thwart physical activity and sport participation.

LGBTQ+ Youth in the Physical Activity and Sport Context

LGBTQ+ youth and adolescents' participation in sport and physical activity has been linked to the disproportionate share of burden in bullying reported by these vulnerable young people (Gill et al. 2010; Kosciw et al. 2018). Scholars have also found that physical education student–teachers uphold a greater amount of prejudice toward sexual minority individuals as compared to their non-physical education student–teacher peers (O'Brien et al. 2013). It is further evident that sexual minority youth report disparities in physical activity and sport involvement compared

to their heterosexual counterparts (Calzo et al. 2014; Doull et al. 2018; Kann et al. 2016), sometimes to avoid conventional norms of masculinity manifested through sports (Kivel and Kleiber 2000), and are harassed and excluded from participation due to their sexual orientation (Gill et al. 2010). The landscape of athleticism upholds hyper-masculine ideals that are embedded into the sport culture (Anderson 2002).

Research further suggests that transgender youth experience discomfort and do not feel safe in physical education class as compared to their cisgender counterparts (Kosciw et al. 2018). This finding is contextualized by Griffin and Carroll (2010):

When a school or athletic organization denies transgender students the ability to participate in sports because of their gender identity or expression, that condones, reinforces and affirms their social status as outsiders or misfits who deserve the hostility they experience from peers (p. 19).

Also, of note, transgender and gender nonconforming youth experience challenges pertaining to wearing gender-prescribed sport gear, navigating the aggression that occurs within athletic locations, and witnessing prejudicial behaviors that occur within locker rooms and bathrooms (Travers 2016). Gender inclusive sports and spaces are generally viewed more favorably than gender segregated sports (Travers 2016).

In light of the share of burden experienced by LGBTQ+ young people, this brings forth a critical public health concern. It is important to glean a comprehensive understanding of LGBTQ+ youth's engagement in physical activity (e.g., amount of physical activity participation, disparities in participation among subpopulations within the LGBTQ+ community, notable experiences in this setting) and factors that deter or facilitate their participation. On one hand, there is clear evidence that participation in physical activity is beneficial for the development of most young people; on the other hand, it is vexing that these same activities oftentimes put LGBTQ+ youth at more risk for compromised health and academic experiences (Gill et al. 2010; Kosciw et al. 2018).

Greenspan et al. (2017) employed a content analysis to investigate the school-based athletic experiences of LGBTQ+ youth as documented within select peer-reviewed journals in fields related to counseling, psychology, and physical education. No relevant literature was obtained from their study. This current study enhances and further expands on Greenspan et al. (2017) work by engaging in an open journal content analysis focused on LGBTQ+ youth's experiences and participation in physical activity and sport, broadly (not just school focused).

Current Study

This study employs an open journal content analysis of six research databases to explore contemporary investigations into LGBTQ+ youth's involvement in physical activity. Research questions for this current investigation included: (a) What are the general demographics included in the study? (i.e., gender identity, sexual orientation, ethnoracial identity, age/grade, socio-economic status, and location); (b) How is the construct of *engagement in physical activity or sport* measured?; (c) What specific sources of data are utilized?; (d) Are measures standardized for LGBTQ+ populations? (e) What research designs and analytic procedures are employed?; and (f) What are the general aggregated findings?

Methods

A content analysis methodology was conducted to develop a comprehensive understanding of the breadth, content, and rigor of empirical studies pertaining to LGBTQ+ youth's engagement in physical activity and sport. A content analysis is a methodology to reduce large data into smaller units that reveal patterns, trends, and frequencies through consistent coding processes (Stemler 2001).

A systematic retrieval and coding process (see Fig. 1) was utilized. Article inclusion criteria included: (1) empirical

research studies; (2) studies published between the date ranges of years of October 1998 and October 2018; (3) school-aged LGBTQ+ youth in the population samples; and (4) studies that upheld an explicit a focus on engagement in physical activity and/or sport. Excluded works were book chapters, systematic reviews, retrospective studies, best practice suggestions, conceptual papers, and work published outside of the 1998–2018 date range. These works were excluded as a means to explore current empirical studies that include data with the potential to inform community and school-based interventions.

The three authors of this study collaborated on the article search and retrieval process. Author 1 conducted an abstract search within academic journals indexed within the PsycINFO, PubMed, Academic Search Premier, ERIC, SportDISCUSS, and LGBTLIFE databases using the following search protocol:

“lesbian” or “gay” or “bisexual” or “transgender” or “queer” or “sexual orientation” or
 “sexual minority” or “gender expression” or “lgb*” or “glb*” AND “physical education”
 or “physical activity” or “sport*” or “athletic*” or “exercise” AND “youth*” or “child*”
 or “adolescen*”

Utilizing these broad search terms brings forth risks of type-I errors. However, in light of a previous content analysis on this topic (i.e., Greenspan et al. 2017), which gleaned no relevant studies, the research team strove to ensure that

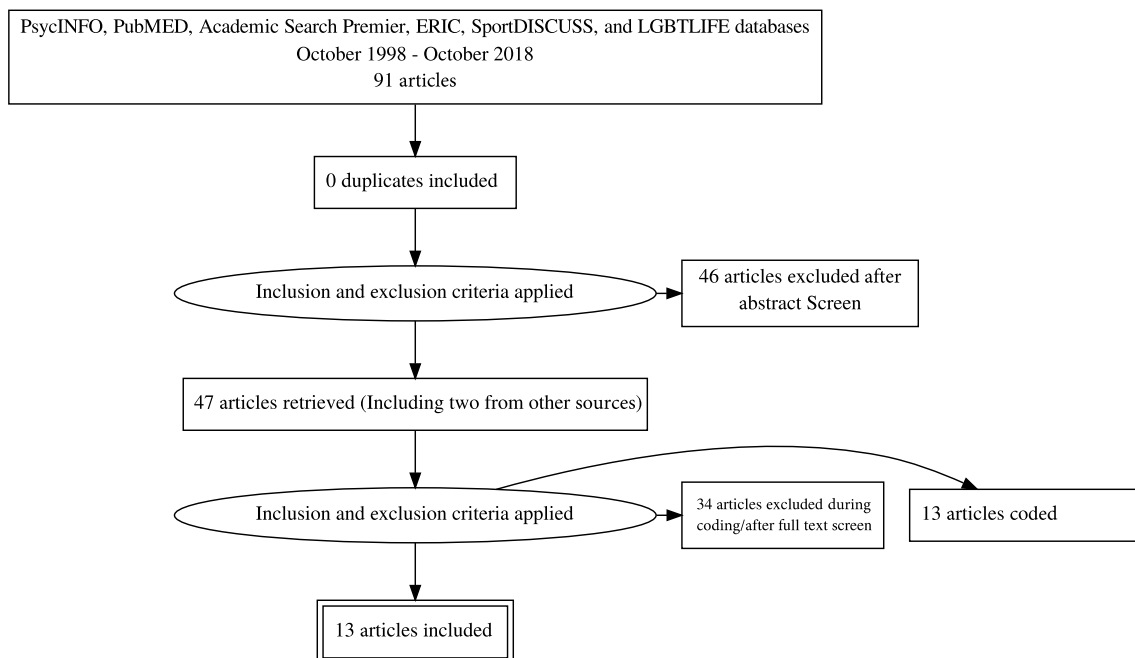


Fig. 1 Systematic article retrieval and coding process

they assessed the breadth of this scholarship to obtain appropriate results.

At the first stage of the search, 91 unique articles were obtained. Duplicate articles were removed either automatically (via database technology) or manually. No additional studies were included from this method.

Author 1 read through abstracts of all obtained articles ($N=91$). The research team excluded articles that did not relate to the topic area of the study ($n=46$; 50%). Of note, one related article was gleaned from researchgate.com (i.e., Kulick et al. 2018) and another within the database search that was published ahead of print (i.e., Jiang et al. 2018); this resulted in a total of 47 articles for initial coding. Based on scholarship from Neuendorf (2016), a codebook was created to guide and inform analyses. The codebook included: (a) date of publication and journal; (b) sample demographics; (c) measures of sexual orientation; (d) measures of gender identity; (e) type of physical activity; (f) modalities of data analysis; (g) types of variables; (h) type of data (i.e. primary or secondary data-set); (i) mode of data collection; and (j) reported findings (Figs. 2, 3).

As a measure of reliability, the research team engaged in four rounds of consensus coding. To engage in this process, the first author assigned approximately five articles for all research team members to individually code. After coding, similarities and differences between coding were discussed and the codebook was adjusted accordingly in order to improve accuracy. A Fleiss' Kappa score was calculated, an adaptation of Cohen's Kappa to use when

analyzing inter-rater reliability from three or more raters (McHugh 2012). A score of 0.60–0.79 indicates a moderate level of agreement with 35%–63% of reliable data, a score of 0.80–0.90 indicates a strong level of agreement with 64%–81% of reliable data. A score that is >0.90 indicates almost perfect agreement with 82%–100% of reliable data (McHugh 2012).

For the third round, a Fleiss' Kappa of 0.628 was obtained. Discrepancies were then discussed, and the codebook was adjusted accordingly. For the fourth round, a Fleiss' kappa score of 0.826 was obtained, demonstrating effective agreement. Following, each author was assigned approximately 15 articles to independently code. The included articles and subsequent codes were consolidated into a database.

Results

Of the 91 articles identified within the initial search, 13 ultimately met inclusion criteria. The false positives brought forth from this search were due to the broad search criteria which was purposefully implemented to ensure an inclusive sample. The coded data from the 13 studies (see Table 1; i.e., Beach et al. 2018; Calzo et al. 2014; Doull et al. 2018; Jiang et al. 2018; Kann et al. 2011, 2016; Kulick et al. 2018; Mereish and Poteat 2015; Rosario et al. 2014; Toomey and Russell 2013; Veliz et al. 2016; Yoon and So 2013; Zipp

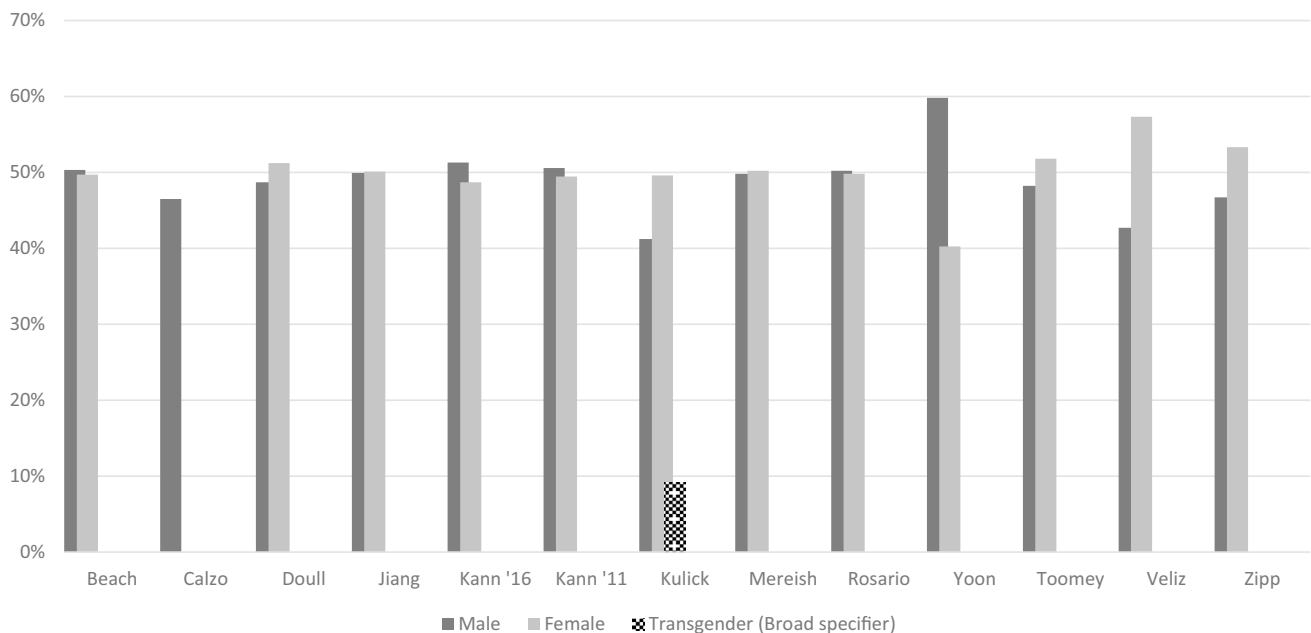


Fig. 2 Gender Identity Demographics per study. Percentages were calculated for the Kann et al. (2011) study based on reported state percentages. The Kulick et al. (2018) study asked about cisgender male and cisgender female identity, specifically

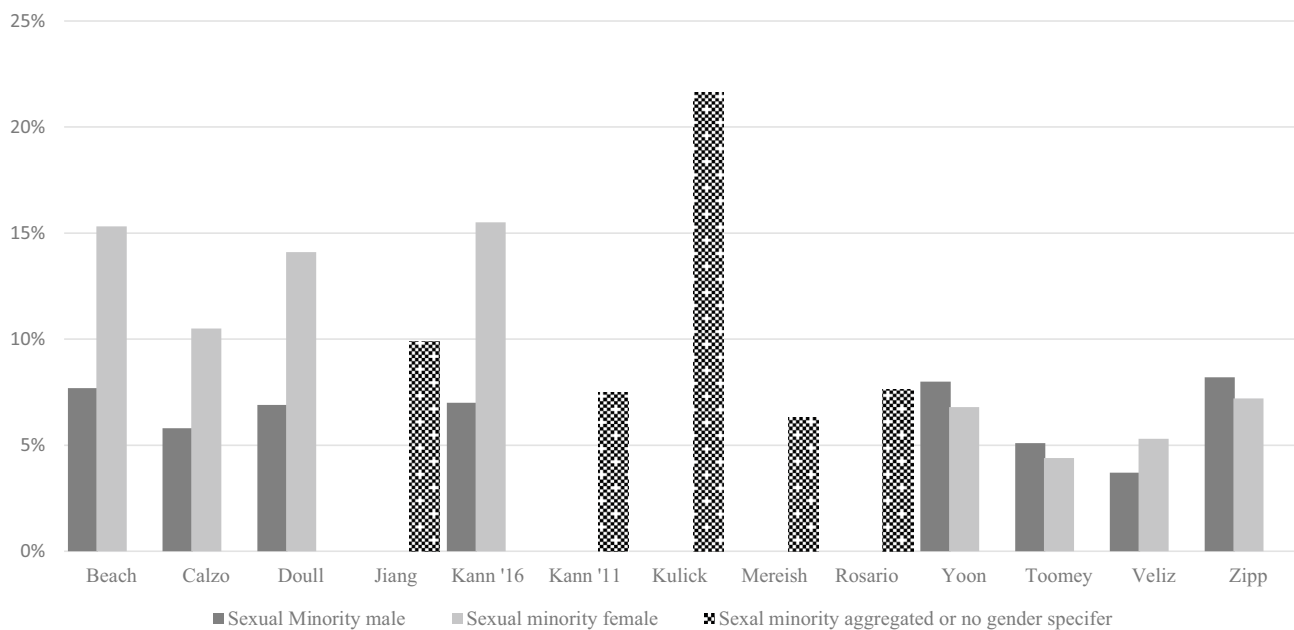


Fig. 3 Sexual Minority Status Demographics per study. The Calzo et al. (2014) data are depicted for 16–17 year old sub-sample. The Doull et al. (2018) data are from the year 2013 data collection. The Mereish and Poteat (2015) study notes differences between males and females. However, descriptive data between groups are not pub-

lished in the paper). The Rosario et al. (2014) study notes differences between males and females. However, descriptive data between groups are not published in the paper. The Kann et al. (2011) study obtained percentage by analyzing the median of multi-year data

2011) were analyzed to determine frequencies and patterns pertaining to variables of interest.

Demographics

LGBTQ+ identity. All studies included lesbian, gay, and bisexual youth. More than half ($n=8$) of the studies included students that were unsure of or questioning their sexuality. One of the studies (i.e., Kulick et al. 2018) focused on gender identities other than male or female, and specifically collected demographic data on a variety of gender identities. However, for analyses, gender minority identities were all categorized as *transgender*.

Age. There was a vast range in sample size from approximately 11,000 to over 290,000 participants. The sexual minority population within these samples ranged from 202 to over 68,000 participants. The only transgender sub-sample that was assessed was made up of 86 students (i.e., Kulick et al. 2018).

Ethnoracial identity. Eight of the studies reported results that somewhat represented the racial distributions of the United States (Beach et al. 2018; Jiang et al. 2018; Kann et al. 2016, 2011; Kulick et al. 2018; Rosario et al. 2014; Toomey and Russell 2013; Veliz et al. 2016; Zipp 2011). Two of these studies were skewed toward a predominantly white sample (Calzo et al. 2014; Mereish and Poteat 2015).

Two of these studies did not note this information (Doull et al. 2018; Yoon and So 2013).

Age. The age ranges in the study were generally homogeneous, with zero studies focused on elementary aged youth and six studies focusing on predominantly middle school aged youth through high school aged youth (e.g., Rosario et al. 2014; Toomey and Russell 2013; Yoon and So 2013; Zipp 2011; Calzo et al. 2014; Doull et al. 2018). Of note, Rosario et al. (2014), Toomey and Russell (2013), and Calzo et al. (2014) included youth older than 18. The seven remaining studies focused on predominantly high school aged youth (Beach et al. 2018; Jiang et al. 2018; Kann et al. 2016, 2011; Kulick et al. 2018; Mereish and Poteat 2015; Veliz et al. 2016). Mereish and Poteat (2015) included youth whose ages were less than or equal to 13 (0.2%; $n=28$) and older than 18 (11%; $n=1517$).

Socio-economic status. Eleven of the studies did not include socio-economic status measures. Of the two studies that did include such measures, one reported a generally middle-high socioeconomic status (82.7% of the sample did not receive free or reduced lunch; Mereish and Poteat 2015) and the other study reported parental education status (for which parents reported an average of 13.9 years of education; Toomey and Russell 2013).

Location. The majority ($n=11$; 84.6%) of the study samples were based in the United States. Two of the studies analyzed data that were collected outside of the United

Table 1 Characteristics and outcomes of included studies

First author	Year	Abridged article title	Physical activity construct(s)	Sample size	Age/grade range	Data collection location	Source of data	Key findings
Beach	2018	Risk factors for diabetes are higher among non-heterosexual US high-school students	Physical activity frequency; Physical education frequency	N = 350, 673	Ages 14–18+ / Grades 9–12	United States	Youth risk behavior survey 2009–2015	<ul style="list-style-type: none"> – Sexual minority males engage in less physical activity than their heterosexual male peers – Sexual minority females identifying as bisexual and “not sure” report less days of physical activity as compared to their heterosexual female peers – Lesbians report similar physical activity levels as heterosexual females – Sexual minority males and females engage in less physical activity and team sports than their heterosexual peers – Males that engaged in gender nonconforming behaviors as children were less likely to engage in physical activity – Females that engaged in gender nonconforming behaviors as children were more likely to engage in physical activity
Calzo	2014	Physical activity disparities in heterosexual and sexual minority youth..	Hours per week of moderate to vigorous physical activity, team sport participation, athletic self-esteem	N = 16,882	Ages 12–22	United States	Growing up today study- 1998–2005 waves	

Table 1 (continued)

First author	Year	Abridged article title	Physical activity construct(s)	Sample size	Age/grade range	Data collection location	Source of data	Key findings
Doull	2018	Are we leveling the playing field? Trends and disparities in sports participation..	Sports and physical activity participation	N= 99, 373	Grades 7–12	British Columbia, Canada	McCreary Centre Society's British Columbia Adolescent Health Surveys- 1998, 2003, 2008, 2013	<ul style="list-style-type: none"> – Sexual orientation groups other than lesbian youth engage in less formal sports participation over time – Gay males engage in more informal sport participation (e.g. exercise classes) over time – Bisexual females engage in less informal sport participation (e.g. exercise classes) over time – Lesbians experienced a sharper decline in informal sports participation than other groups over time – Rates of participation in physical activity and sports are declining for all teens
Jiang	2018	Disparities in health risk behaviors...sexual minority and unsure high school students	Physical activity frequency	N= 14,264	Grades 9–12	United States	Youth Risk Behavior Survey- 2007–2015	<ul style="list-style-type: none"> – Sexual minority youth engage in less physical activity over the course of a week as compared to their heterosexual peers

Table 1 (continued)

First author	Year	Abridged article title	Physical activity construct(s)	Sample size	Age/grade range	Data collection location	Source of data	Key findings
Kann	2016	Sexual identity, sex of sexual contacts, and health-related behaviors....2015	Physical activity frequency, muscle strengthening, PE attendance, sports involvement	N = 15,624	Grades 9–12	United States	Youth Risk Behavior Survey- 2015	<i>Data from national sample reported</i> – Sexual minority youth are approximately half as likely to engage in daily physical activity as compared to their heterosexual peers – Gay or bisexual and “not sure” males, were less likely to participate on a team sport than their heterosexual peers – Lesbian or bisexual and “not sure” females were less likely to participate on a team sport than their heterosexual peers
Kann	2011	Sexual identity, sex of sexual contacts, and Health-risk behaviors....2001–2009	Physical activity frequency, physical education attendance, sports involvement	N = 156,145	Grades 9–12	United States	Youth Risk Behavior Survey- 2001–2009	*9 <i>site analysis</i> – Sexual minority youth are less likely to engage in daily physical activity than their heterosexual peers *6 <i>site analysis</i> – Sexual minority youth are less likely to play on a team sport than their heterosexual peers

Table 1 (continued)

First author	Year	Abridged article title	Physical activity construct(s)	Sample size	Age/grade range	Data collection location	Source of data	Key findings
Kutick	2018	Three strikes...Culture facilities, and participation among LGBTQ youth in sports	Participation in athletic programs, safety in sport, relationships between sex-segregated sport spaces and sport participation	N=969	Grades 9–12	Michigan, United States	Data set from survey utilizing an action research methodology and adapted sub-scales	<ul style="list-style-type: none"> – LGBTQ students are less likely to engage in sports as compared to their heterosexual peers – Transgender students are more likely to play sports than cisgender females, but not cisgender males – LGBTQ students' perceptions of bathroom and locker room safety were associated with feeling safe in and engaging in sports – LGBTQ students reported low levels of safety in facilities traditionally segregated by gender (e.g. bathrooms, locker rooms) – Transgender students felt less safe than their cisgender peers in playing sports though there were no differences in engagement in sports among the groups – Sexual minority females are less likely to participate in team sports than heterosexual females – Sexual minority males are less likely to engage in physical activity and team sports than heterosexual males – Sexual minority males are less likely to engage in physical activity than their heterosexual peers
Mereish	2015	Let's get physical: Sexual orientation disparities in physical activity..	Physical activity frequency, team sport involvement	N=13,933	Grades 9–12	Wisconsin, United States	2012 Dane County Youth Assessment	<ul style="list-style-type: none"> – Sexual minority students felt less safe than their cisgender peers in playing sports though there were no differences in engagement in sports among the groups – Sexual minority females are less likely to participate in team sports than heterosexual females – Sexual minority males are less likely to engage in physical activity and team sports than heterosexual males
Rosario	2014	Sexual orientation disparities in cancer-related risk behaviors..	Physical activity frequency	N=65,871	Grades 9–12	United States	Youth Risk Behavior Survey – 2005–2007	<ul style="list-style-type: none"> – Sexual minority males are less likely to engage in physical activity than their heterosexual peers

Table 1 (continued)

First author	Year	Abridged article title	Physical activity construct(s)	Sample size	Age/grade range	Data collection location	Source of data	Key findings
Yoon	2013	Differences in lifestyles including physical activity according to sexual orientation among Korean adolescents	Frequency of vigorous physical activity and muscular strength exercises per week	N = 74,186	Ages 12–18/ Grades 7–12	South Korea	8th Annual Korean Youth Risk Behavior Survey – 2012	<ul style="list-style-type: none"> – Gay males engage in muscle strength exercises and walking activity less frequently than their heterosexual peers – Lesbian females engage in more physical activity than their heterosexual peers – Bisexual females engage in more physical activity and muscle exercises than their heterosexual peers – Heterosexual males have a higher likelihood of engaging in sports as compared to both their heterosexual female peers and sexual minority peers – Sexual minority female students have a lesser likelihood of engaging in sports as compared to both their heterosexual female peers and sexual minority male peers – Involvement in sports is associated with more favorable perceptions of school belongingness/school connectedness
Toomey	2013	An initial investigation of sexual minority youth involvement in school-based extracurricular activities	frequency in school-based extracurricular activities and how it relates to later academic outcomes	N = 12,641	Ages 12–19/ Grades 7–12	United States	The National Longitudinal Study of Adolescent Health- 1994 and 1996	<ul style="list-style-type: none"> – Heterosexual males have a higher likelihood of engaging in sports as compared to both their heterosexual female peers and sexual minority peers – Sexual minority female students have a lesser likelihood of engaging in sports as compared to both their heterosexual female peers and sexual minority male peers – Involvement in sports is associated with more favorable perceptions of school belongingness/school connectedness

Table 1 (continued)

First author	Year	Abridged article title	Physical activity construct(s)	Sample size	Age/grade range	Data collection location	Source of data	Key findings
Veliz	2016	Substance use among adolescent sexual minority athletes...	Participation on sports teams	$N = 26,940$	Grades 9–12	United States	Youth Risk Behavior Survey – 2009–2013	<ul style="list-style-type: none"> – Sexual minority athletes engage in more substance use of a 30-day span when compared to heterosexual athletes and also students that are not athletes – Sexual minority athletes engage in a similar amount of substance use over a 30-day span when compared to their non-athlete sexual minority peers – Sexual minority males and females generally engage in athletic activities to a similar extent – Sexual minority males showed increased engagement in wrestling and volleyball – Sexual minority males are less likely to play soccer and wrestle as they enter into older grades – Sexual minority females are more likely to play football, swimming, and volleyball as they enter into older grades
Zipp	2011	Sport and sexuality: Athletic participation by sexual minority...	Type of sport participation	$N = 10,984$	Grades 7–12	United States	National Longitudinal Study of Adolescent Health – 1994–1995	<ul style="list-style-type: none"> – Sexual minority males and females generally engage in athletic activities to a similar extent – Sexual minority males showed increased engagement in wrestling and volleyball – Sexual minority males are less likely to play soccer and wrestle as they enter into older grades – Sexual minority females are more likely to play football, swimming, and volleyball as they enter into older grades

States, with one in South Korea (i.e., Yoon and So 2013) and the other in Canada (i.e., Doull et al. 2018). Three of the studies focused on a sample within a region of a state/county/district (i.e., Mereish and Poteat 2015; Jiang et al. 2018; Kulick et al. 2018), while the remaining ten studies used a multi-regional or a national sample.

Date range. Data from the 13 identified studies were analyzed between 1994 and 2015. Data collected in the 1990s (Calzo et al. 2014; Doull et al. 2018; Toomey and Russell 2013; Zipp 2011) brought forth similar findings to data collected in the remaining studies from the 2000s in that there are discrepancies in the type (i.e., Doull et al. 2018; Toomey and Russell 2013; Zipp 2011) and frequency (Beach et al. 2018; Calzo et al. 2014; Doull et al. 2018; Jiang et al. 2018) of sport involvement or physical activity for lesbian, gay, and bisexual (LGB) adolescents, as compared to their non-LGB peers.

Constructs. As depicted within Table 1, studies generally focused on physical activity constructs related the frequency of physical activity (i.e., time spent engaging in moderate to vigorous physical activity), sport team participation (i.e., frequency engaging in a team sport), a combination of these two constructs, and the type of sport that youth engage in. Four studies centered components of their results on the school context, focused on engagement in extra-curricular activities (Toomey and Russell 2013), engagement in physical education (Kann et al. 2016, 2011), or feelings of safety within sport spaces such as locker rooms and facilities (Kulick et al. 2018).

Sources of Data. All of the studies in this sample analyzed secondary datasets including The Youth Risk Behavior Survey ($n=6$; Beach et al. 2018; Jiang et al. 2018; Kann et al. 2016, 2011; Rosario et al. 2014; Veliz et al. 2016), The National Longitudinal Study of Adolescent Health to Young Adulthood (Add Health; $n=2$; Toomey and Russell 2013; Zipp 2011), The Korean Youth Risk Behavior Survey ($n=1$; Yoon and So 2013), US Growing Up Today ($n=1$; Calzo et al. 2014), McCreary Society's British Columbia Adolescent Health Survey ($n=1$; Doull et al. 2018), Dane County Youth Assessment ($n=1$; Mereish and Poteat 2015), and a survey designed using an action research methodology including adapted sub-scales from related surveys ($n=1$; Kulick et al. 2018).

Standardized Measures for LGBTQ+ Populations. Measures utilized in these studies were generally intended to gather demographic information, measure physical activity and/or sport involvement, or measure body mass index (BMI). Kulick et al. (2018) used an action research methodology with LGBTQ+ youth leaders and further adapted LGBTQ survey measures such as the GLSEN *National School Climate Survey*. None of the other studies employed measures that were validated for LGBTQ+ populations.

There were various ways of measuring sexual identity including focusing on identity ($n=4$; Beach et al. 2018; Kulick et al. 2018; Mereish and Poteat 2015; Veliz et al. 2016) and sexual behavior ($n=1$; Yoon and So 2013) attraction ($n=2$; Toomey and Russell 2013; Calzo et al. 2014). The measurement of sexual behavior included, "Select all of the following items that you have experienced... [1] 'none of these,' [2] 'kissing and fondling someone of the opposite sex,' [3] 'sexual intercourse with someone of the opposite sex,' [4] 'kissing and fondling someone of the same sex,' [5] 'sexual intercourse with someone of the same sex,'..." (Yoon and So 2013, p. 1348). The item about sexual attraction asked, "Have you ever had a romantic attraction to a female?" (Toomey and Russell 2013, pg. 308). A question about identity asked, "Which of the following best describes you?..." 'straight/heterosexual,' 'gay or lesbian,' 'bisexual,' and 'questioning my sexual orientation' (Mereish and Poteat 2015, p. 1842). The remaining articles employed a combination of identity/behavior/attraction to demographically analyze the sexual minority sample. Furthermore, Calzo et al. (2014) analyzed participants' gender nonconforming behaviors as children in which participants responded to the statement "When I was a child in pretend play I took the role of... 1 = always boys/men... '5 = always girls/women'" (Calzo et al. 2014, p. 20).

Research Designs and Analytic Procedures. Methodologically, studies were pooled multi-year samples ($n=6$; Beach et al. 2018; Doull et al. 2018; Jiang et al. 2018; Veliz et al. 2016; Rosario et al. 2014; Kann et al. 2011), longitudinal ($n=1$; Toomey and Russell 2013), a combination of pooled/multi-year sampling and longitudinal designs ($n=1$; Calzo et al. 2014), and cross sectional ($n=5$; Kann et al. 2016; Kulick et al. 2018; Mereish and Poteat 2015; Yoon and So 2013; Zipp 2011). Analytically, all of the studies employed quantitative methodologies and reported descriptive statistics. While these studies employed a variety of analytical procedures, it is important to highlight that they typically employed regression ($n=10$; Beach et al. 2018; Calzo et al. 2014; Doull et al. 2018; Jiang et al. 2018; Kulick et al. 2018; Mereish and Poteat 2015; Rosario et al. 2014; Toomey and Russell 2013; Veliz et al. 2016; Zipp 2011). Other analytical procedures included multiple group path analysis ($n=1$; Toomey and Russell 2013) *T*-tests ($n=2$; Kann et al. 2016, 2011), and ANOVA ($n=1$; Yoon and So 2013).

Aggregated Findings. Results demonstrated a general pattern that LGB youth engaged in less physical activity and sport involvement than their non-LGB peers (Beach et al. 2018; Calzo et al. 2014; Doull et al. 2018; Jiang et al. 2018; Kann et al. 2011, 2016; Kulick et al. 2018; Mereish and Poteat 2015; Rosario et al. 2014; Toomey and Russell 2013; Yoon and So 2013; Zipp 2011). Specifically, within these studies, researchers generally found that formal sport

participation decreases for gay and bisexual males, but not for lesbian females (Doull et al. 2018). Relatedly, some work (Yoon & So) suggests that sexual minority females engage in more physical activity than their heterosexual peers.

Doull et al. (2018) suggest that over a 15-year span (1993–2015) there were notable declines in formal sport participation for gay and bisexual males and in informal sport participation in all sexual minority groups other than gay males. In contrast there was an increase in formal sport participation among just lesbian females and a notable increase of participation of gay males in dance and exercise classes. Converging results revealed by Beach et al. (2018) suggest that gay, bisexual, and unsure males engage in less physical activity than their heterosexual male counterparts. These researchers further posit that bisexual and unsure females engage in less physical activity than lesbian and heterosexual females. Calzo et al.'s (2014) study, however, suggests that sexual minority or “mostly heterosexual” females engaged in less physical activity than their heterosexual peers. These authors further posit that while both sexual minority males and females reported more gender non-conforming behaviors as children, females with higher gender non-conforming scores engaged in more physical activity between the ages of 12–22 while an inverse result was found for sexual minority males; those with higher gender non-conforming behaviors as children were less likely to engage in physical activity between the ages of 12–22. Of note, when authors controlled for gender non-conformity, there remained no differences in physical activity engagement between sexual minority and heterosexual males. For females, however, gender non-conformity did not impact differences in physical activity engagement between sexual minority and heterosexuals.

Zipp (2011) reported that while sexual minority and heterosexual males and females participated in athletic activities to a similar degree (only minimal significant differences were found), as they transitioned into high school there were decreases in sport participation for sexual minority males as compared to their heterosexual peers (noted specifically for soccer and wrestling) and increases in sport participation for sexual minority females (noted specifically for swimming, volleyball, and football) as compared to their heterosexual peers.

Kulick et al.'s (2018) study was the only to systematically examine the experiences of both sexual minority youth and transgender youth within the athletic context. They found that sexual minority youth were less likely to engage in sport and felt less comfortable in gender-segregated spaces than their heterosexual peers. There were no significant differences between participation rates of transgender and cisgender students in sports. However, transgender students felt less safe in gender-segregated spaces than their cisgender peers. Predictors of feeling unsafe within gender segregated spaces included hearing LGBTQ prejudiced language. The

school context was positively associated with feelings of safety for athletic programming (i.e., a positive school context employment of policies and practices specifically geared to support and affirm LGBTQ+ students).

Sexual minority athletes had a higher likelihood of using substances (cigarettes, alcohol/binge drinking, and marijuana) in comparison to their heterosexual athlete and non-athlete peers, although there was no significant difference in substance use between sexual minority athletes and their sexual minority non-athlete peers (Veliz et al. 2016).

Discussion

LGBTQ+ youth avoid sport and physical activity settings due to feelings of discomfort (Kosciw et al. 2018) and researchers posit that hegemonic masculinity (Anderson 2002) and traditional gender roles (Clarke 2012) are upheld in such settings. Indeed, this brings forth a public health issue in light of the noted physical, cognitive, and social-emotional benefits of physical activity and sport (Ahn and Fedewa 2011; Holt 2016; The United States Department of Health and Human Services 2018). This content analysis investigated the experiences and engagement of LGBTQ+ youth within physical activity and sport contexts. The reviewed studies were specifically analyzed in terms of demographics, measurement, physical activity constructs, research design, analytic procedures, and key findings.

The findings of this content analysis suggest that LGBTQ+ youth ages 13–18 engage in less physical activity than their heterosexual peers and both sexual and gender minority students feel less safe in gender segregated athletic-related facilities (locker rooms, bathrooms) than their heterosexual and cisgender peers. Specifically, sexual minority males were less likely to engage in team sports (Beach et al. 2018; Calzo et al. 2014; Doull et al. 2018; Kann et al. 2016; Mereish and Poteat 2015; Toomey and Russell 2013) and physical activity (Mereish and Poteat 2015; Rosario et al. 2014; Yoon and So 2013) compared to heterosexual males. Studies that examined female participants were mixed; some scholarship suggested that females engaged in less physical activity (Beach et al. 2018) and less team sport participation (Kann et al. 2016) compared to their heterosexual peers, while other scholarship suggested that females engaged in more physical activity (Yoon and So 2013) and more formal sport participation (Doull et al. 2018) compared to their heterosexual peers.

These findings are in line with discrepancies in athletic participation found among gay male adults, particularly in regard to sport teams that embody traditional masculinity (Elling and Janssens 2009; Kroshus and Davoren 2016). There is ample data to suggest that the prejudicial nature of these spaces can serve as a deterrent for athletic participation

for gay males in particular, as this population appears to be targeted harshly (Baiocco et al. 2018; Gill et al. 2006; Roper and Halloran 2007). Clarke (2012) expands on the notion of hegemonic masculinity in school-based athletic spaces that likely contributes to a prejudicial environment:

Schools in general, and PE departments in particular, are sites for moral and social regulation wherein gender and gender roles are produced against a dominant heterosexuality and a marginalized, often vilified, homosexuality. These gender roles and relations are constructed along narrow, highly demarcated lines which are exemplified through normative and stereotyped expectations about what it is to become male or female. (p. 90)

Sexual minority female participation in physical activity is less clear. Some research suggests that sexual minority females engage in more physical activity (Yoon and So 2013), about the same amount of physical activity (Rosario et al. 2014), or more formal sport participation (Doull et al. 2018) than their heterosexual peers. Specifically, lesbian youth were also shown to participate in more physical activity than their bisexual and “not sure” peers (Beach et al. 2018). Subsequently, lesbians are often perceived as more masculine than their heterosexual female or gay male peers, and therefore as more competent in athletics (Bush et al. 2012). This may help to explain the somewhat mixed results of the current investigation regarding female’s participation in physical activity.

The physical activity experiences of transgender youth are not well-documented—there remains a dearth of literature on this topic. Just one study focused on transgender students’ (Kulick et al. 2018) experiences, which highlights that these students feel less safe utilizing gender segregated spaces (e.g., locker rooms, bathrooms). These students were more likely to engage in sports than cisgender females, though less likely than cisgender peers.

The racial ethnic make-up of the populations studied in the reviewed studies were skewed toward a White population; two were completed outside of the United States (one in Canada and one in South Korea); most of the studies did not report on the socio-economic status of the sample. Socio-economic status data may demonstrate that access or lack thereof relates to engagement in physical activity.

All 13 studies employed secondary data analysis and only 1 study used measurements that were validated for LGBTQ+ youth, and subsequently focused on LGBTQ+ experiences (Kulick et al. 2018). Tripathy (2013) cautioned that though the use of previously gathered data can be more efficient in terms of use of resources and are often more representative of large populations, it is important to keep in mind that the primary data was collected to meet a different set of objectives. Engaging in data mining can bring forth concerns regarding the appropriateness of applying new research questions and coding of the data.

In fact, in each of the investigations, the primary datasets were not intended to directly explore the experiences of LGBTQ+ youth in sport and physical activity; therefore, secondary analysis could only engage in a more superficial level of inquiry from the data that was available (e.g., participation rates, physical descriptors, and preferred physical activities as compared to non-LGB youth), and not on the unique personal and social factors of LGBTQ+ youth that might lead to these discrepancies. Furthermore, the number of students identifying as LGBTQ+ was rarely clear, the specific number of students had to be manually calculated. Population-specific factors within the athletic arena such as concern of changing in front of others, gender separation in sports, and noteworthy allies were not addressed.

Only one of the studies (Kulick et al. 2018) incorporated instruments that had been previously normed with LGBTQ+ youth populations per best practice recommendations (Griffith et al. 2017), and only one survey (Kulick et al. 2018) included demographic items that would allow researchers to explore transgender youth as a unique population. While this study did allow participants to indicate various gender identities, they were aggregated into a *transgender* category for analysis.

The methods in which youth were coded as LGB were inconsistent, and in some instances, problematic. For example, in some of the identified studies, youth were coded as LGB based on survey questions on behavior, though many adolescents may have not yet had a sexual experience, and a single same-sex encounter would put an individual in the category as LGB. Similarly, in other studies that used attraction as their basis for coding, students who had ever felt any level of same-sex attraction were coded as LGB. Both of these practices call into question the validity of the data, as surely some proportion of the individuals coded as LGB would actually identify as heterosexual. Self-identification as a measure is also problematic as youth may be aware of stigma associated with these labels, especially if there are any concerns as to the anonymity of the survey. Attraction tends to be the most accurate form of measurement in adolescent populations when presented as a spectrum rather than as a binary question (e.g., “People are different in their sexual attraction to other people. Which best describes your feelings? Are you: (a) only attracted to females?; (b) mostly attracted to females? (c) equally attracted to females and males?; (d) mostly attracted to males?; (e) only attracted to males?; or (f) not sure?”), and best practices recommendations include using a combination of attraction and either behavior or identity questions (Badgett and Goldberg 2009).

The results of this study indicate a wealth of future research directions. Investigations are needed to more directly discover and describe factors that promote and impede LGBTQ+ youth physical activity and sport engagement across school and community settings. Engaging in

such an exploration can more directly point to what variables directly impact engagement and participation. This could allow for the development interventions and initiatives to support feelings of safety and participation among LGBTQ+ youth. These empirically supported interventions and initiatives could then be tested for efficacy using experimental or quasi-experimental methods. Both qualitative and quantitative methods may be of use in gleaning student voice while also considering casual relationships among variables.

It is of further critical need for the engagement patterns in sport and physical activity among transgender, non-binary, and gender nonconforming youth are included within the research base. Just one of the 13 identified studies included transgender youth within the sample (Kulick et al. 2018), although the physical activity and sport experiences of specific gender diverse sub-populations (e.g., transgender males, transgender females, transgender females) is unknown.

In general, transgender and gender nonconforming youth experience even greater disparities in schools when compared to LGB youth (Kosciw et al. 2018), which more than likely extends to physical activity settings. Furthermore, while just recently the United States Department of Education and the United States Department of Justice Division confirmed that that Title IV civil rights protections extend to transgender youth (Lhamon and Gupta 2016), this guidance has since been rescinded by the change in leadership (Battle and Wheeler 2017). Thus, researchers are key stakeholders in disseminating best practice information that can impact local policy.

While the literature on sexual minority males in physical activity and sport seems to converge, it is more mixed for lesbian and bisexual sexual minorities. Thus, increased exploration on this population of students is needed so the field can form a more cohesive understanding of their engagement in physical activity and sport.

Researchers are further encouraged to collect data pertaining to LGBTQ+ elementary aged youth within sport and physical activity contexts. This can serve to provide an understanding as to when negative experiences in these settings might begin. Further, collecting longitudinal data could elicit patterns in physical activity and sport engagement and disengagement throughout development. This might show where in development there are notable increases or decrease in engagement which could then allow for researchers to investigate those underlying factors.

Researchers also are called upon to develop and evaluate the feasibility and efficacy of school and community initiatives and interventions to support LGBTQ+ youth in athletics. Furthermore, validated local needs assessments focused on best practices to support LGBTQ+ youth could provide school and community settings with an understanding of ways in which they can foster more affirming and equitable athletic contexts.

With the creation of such work, a body of literature can be substantiated to then develop evidence-based best practice modules for promoting affirming school athletic contexts to support LGBTQ+ youth.

Essentially, the field is in need of research that directly explores why there are discrepancies between LGBTQ+ youth and their heterosexual, cisgender peers in physical activity settings. This is the type of data that can more effectively lead to the development of needed interventions and changes in environments to increase the safety, inclusion, and comfort of LGBTQ+ youth leading to higher participation in athletic activities. Until then, those with an interest in improving these conditions are left to make inferences about what is needed in the absence of this data.

Conclusion

Research has found physical activity and sport participation is related to a variety of positive social-emotional and life skills as well as physical health and mental health benefits. Unfortunately, this investigation revealed that LGBTQ+ youth participated at low levels and in some cases reported discomfort with participation. This gap in LGBTQ+ participation suggests that coaches, counselors, and teachers should intentionally work to make physical activity and sport environments inclusive and open to LGBTQ+ youth's involvement. Because adolescence, in particular, is a developmental period where young people explore academic and extracurricular interests that will shape their adulthood experiences, stakeholders can intentionally focus on contexts for physical education and sport that involve adolescents. Last, this research suggests a need for scholars who study the physical activity and sport involvement of young people to intentionally include LGBTQ+-specific measures, which at the very least should include the diversity of sexual and gender identities of young people.

Authors' Contribution SG and CG contributed to the conceptualization of the study. SG contributed to article retrieval efforts. SG, CG, and RW contributed to article coding processes. SG contributed to data analysis. SG, CG, and RW contributed to writing the manuscript. All authors read and approved the final manuscript.

Compliance with Ethical Standards

Conflict of interest The authors report no conflicts of interest.

References

- Ahn, S., & Fedewa, A. L. (2011). A meta-analysis of the relationship between children's physical activity and mental health. *Journal of Pediatric Psychology*, 36, 385–397. <https://doi.org/10.1093/jpepsy/jsq107>.

- Anderson, E. (2002). Openly gay athletes: Contesting hegemonic masculinity in a homophobic environment. *Gender & Society, 16*(6), 860–877. <https://doi.org/10.1177/089124302237892>.
- Badgett, M. V., & Goldberg, N. L. (Eds.). (2009). *Best practices for asking questions about sexual orientation on surveys. Created by the Sexual Minority Assessment Research Team (SMART)*. Los Angeles: The Williams Institute.
- Baiocco, R., Pistella, J., Salvati, M., Ioverno, S., & Lucidi, F. (2018). Sexual prejudice in sport scale: A new measure. *Journal of Homosexuality, 65*(1), 1–14. <https://doi.org/10.1080/00918369.2018.1547560>.
- Battle, S., & Wheeler, T. E. (2017). *Dear colleague letter on transgender students*. US Department of Justice and US Department of Education. Retrieved from <https://www.justice.gov/opa/press-release/file/941551/download>.
- Beach, L. B., Turner, B., Felt, D., Marro, R., & Phillips, G. L. (2018). Risk factors for diabetes are higher among non-heterosexual US high-school students. *Pediatric Diabetes, 19*, 1137–1146. <https://doi.org/10.1111/peidi.12720>.
- Biddle, S. J., Ciaccioni, S., Thomas, G., & Vergeer, I. (2018). Physical activity and mental health in children and adolescents: An updated review of reviews and an analysis of causality. *Psychology of Sport and Exercise, 37*, 1–11. <https://doi.org/10.1016/j.psychsport.2018.08.011>.
- Bush, A., Anderson, E., & Carr, S. (2012). The declining existence of men's homophobia in British sport. *Journal for the Study of Sports and Athletes in Education, 6*(1), 107–120. <https://doi.org/10.1179/ssa.2012.6.1.107>.
- Calzo, J. P., Roberts, A. L., Corliss, H. L., Blood, E. A., Kroshus, E., & Austin, S. B. (2014). Physical activity disparities in heterosexual and sexual minority youth ages 12–22 years old: Roles of childhood gender nonconformity and athletic self-esteem. *Annals of Behavioral Medicine, 47*, 17–27. <https://doi.org/10.1007/s12160-013-9570-y>.
- Clarke, G. (2012). Challenging heterosexism, homophobia and transphobia in physical education. In G. Stidder & H. Hayes (Eds.), *Equity and inclusion in physical education and sport* (2nd edn., pp. 107–121). New York: Routledge.
- Cronin, L. D., & Allen, J. (2018). Examining the relationships among the coaching climate, life skills development and well-being in sport. *International Journal of Sports Science & Coaching, 13*(6), 815–827. <https://doi.org/10.1177/1747954118787949>.
- Doull, M., Watson, R. J., Smith, A., Homma, Y., & Saewyc, E. (2018). Are we leveling the playing field? Trends in sports participation among sexual minority youth. *Journal of Sports and Health Science, 7*, 218–226. <https://doi.org/10.1016/j.jshs.2016.10.006>.
- Elling, A., & Janssens, J. (2009). Sexuality as a structural principle in sport participation: negotiating sports spaces. *International Review for the Sociology of Sport, 44*(1), 71–86. <https://doi.org/10.1177/1012690209102639>.
- Gill, D. L., Morrow, R. G., Collins, K. E., Lucey, A. B., & Schultz, A. M. (2006). Attitudes and sexual prejudice in sport and physical activity. *Journal of Sport Management, 20*, 554–564. <https://doi.org/10.1123/jsm.20.4.554>.
- Gill, D. L., Morrow, R. G., Collins, K. E., Lucey, A. B., & Schultz, A. M. (2010). Perceived climate in physical activity settings. *Journal of Homosexuality, 57*, 895–913. <https://doi.org/10.1080/00918369.2010.493431>.
- Greenspan, S. B., Griffith, C., & Murtagh, E. F. (2017). LGBTQ youths' school athletic experiences: A 40-year content analysis in nine flagship journals. *Journal of LGBT Issues in Counseling, 11*, 190–200. <https://doi.org/10.1080/15538605.2017.1346492>.
- Griffin, P., & Carroll, H. J. (2010). *On the team: Equal opportunity for transgender student athletes*. NCLR, National Center for Lesbian Rights.
- Griffith, C., Akers, W., Dispenza, F., Luke, M., Farmer, L. B., Watson, J. C., Goodrich, K. M. (2017). Standards of care for research with participants who identify as LGBTQ+. *Journal of LGBT Issues in Counseling, 11*, 212–229. <https://doi.org/10.1080/15538605.2017.1380549>.
- Holt, N. L. (Ed.). (2016). *Positive youth development through sport*. New York: Routledge.
- Jiang, Y., Reilly-Chammat, R., Cooper, T., & Viner-Brown, S. (2018). Disparities in health risk behaviors and health conditions among Rhode Island sexual minority and unsure high school students. *Journal of School Health, 88*(11), 803–812. <https://doi.org/10.1111/josh.12688>.
- Kann, L., O'Malley Olsen, E., McManus, T., Harris, W. A., Shanklin, S. L., Flint, K. H., Thornton, J. (2016). Sexual identity, sex of sexual contacts, and health-related behaviors among students in grades 9–12—United States and selected sites, 2015. *Centers for Disease Control and Prevention Morbidity and Mortality Weekly Report. Surveillance Summaries, 65*(9).
- Kann, L., O'Malley Olsen, E., McManus, T., Kinchen, S., Chyen, D., Harris, W. A., & Wechsler, H. (2011). Sexual identity, sex of sexual contacts, and health-risk behaviors among students in grades 9–12: Youth risk behavior surveillance, selected sites, United States, 2001–2009. *Centers for Disease Control and Prevention Morbidity and Mortality Weekly Report. Surveillance Summaries, 60*(7).
- Kivel, B. D., & Kleiber, D. A. (2000). Leisure in the identity formation of lesbian/gay youth: Personal, but not social. *Leisure Sciences, 22*, 215–232. <https://doi.org/10.1080/01490409950202276>.
- Kosciw, J. G., Greytak, E. A., Zongrone, A. D., Clark, C. M., & Truong, N. L. (2018). *The 2017 National School Climate Survey: The experiences of lesbian, gay, bisexual, transgender, and queer youth in our nation's schools*. New York: GLSEN.
- Kroshus, E., & Davoren, A. K. (2016). Mental health and substance use of sexual minority college athletes. *Journal of American College Health, 64*, 371–379. <https://doi.org/10.1080/07448481.2016.1158179>.
- Kulick, A., Wernick, L. J., Espinoza, M. A. V., Newman, T. J., & Dessel, A. B. (2018). Three strikes and you're out: culture, facilities, and participation among LGBTQ youth in sports. *Sport, Education and Society, 1–15*. <https://doi.org/10.1080/13573322.2018.1532406>.
- Larson, R. W. (2000). Toward a psychology of positive youth development. *American Psychologist, 55*(1), 170–182. <https://doi.org/10.1037/0003-066X.55.1.170>.
- Lerner, R. M., & Galambos, N. L. (1998). Adolescent development: Challenges and opportunities for research, programs, and policies. *Annual Review of Psychology, 49*, 413–446. <https://doi.org/10.1146/annurev.psych.49.1.413>.
- Lhamon, C. E., & Gupta, V. (2016). *Dear colleague letter on transgender students*. US Department of Justice and US Department of Education. Retrieved from <http://www2.ed.gov/about/offices/list/ocr/letters/colleague-201605-title-ix-transgender.pdf>.
- McHugh, M. L. (2012). Interrater reliability: The kappa statistic. *Biochemia Medica: Biochemia Medica, 22*(3), 276–282.
- Mereish, E. H., & Poteat, V. P. (2015, September). Let's get physical: Sexual orientation disparities in physical activity, sports involvement, and obesity among a population-based sample of adolescents. *American Journal of Public Health, 105*, 1842–1848. <https://doi.org/10.2105/AJPH.2015.302682>.
- Neuendorf, K. A. (2016). *The content analysis guidebook*. Sage.
- O'Brien, K. S., Shovelton, H., & Latner, J. D. (2013). Homophobia in physical education and sport: The role of physical/sporting identity and attributes, authoritarian aggression, and social dominance orientation. *International Journal of Psychology, 48*, 891–899. <https://doi.org/10.1080/00207594.2012.713107>.
- Roper, E. A., & Halloran, E. (2007). Attitudes toward gay men and lesbians among heterosexual male and female student-athletes. *Sex Roles, 57*, 919–928. <https://doi.org/10.1007/s11199-007-9323-0>.

- Rosario, M., Corliss, H. L., Everett, B. G., Reisner, S. L., Austin, S. B., Buchting, F. O., & Birkett, M. (2014). Sexual orientation disparities in cancer-related risk behaviors of tobacco, alcohol, sexual behaviors, and diet and physical activity: pooled Youth Risk Behavior Surveys. *American Journal of Public Health, 104*, 245–254. <https://doi.org/10.2105/AJPH.2013.301506>.
- Steinberg, L., & Morris, A. S. (2001). Adolescent development. *Annual Review of Psychology, 52*, 83–110. <https://doi.org/10.1146/annurev.psych.52.1.83a>.
- Stemler, S. (2001). An overview of content analysis. *Practical Assessment, Research & Evaluation, 7*(17), 137–146. Retrieved from <https://pareonline.net/getvn.asp?v=7&n=17>.
- Toomey, R. B., & Russell, S. T. (2013, June). An initial investigation of sexual minority youth involvement in school-based extracurricular activities. *Journal of Research on Adolescence, 23*, 304–318. <https://doi.org/10.1111/j.1532-7795.2012.00830.x>.
- Travers, A. (2016). Transgender and gender-nonconforming kids and the binary requirements of sport participation in North America. In M. Messner & M. Musto (Eds.), *Child's play: Sport in kids' worlds* (pp. 179–201). New Brunswick: Rutgers University Press.
- Tripathy, J. P. (2013). Secondary data analysis: Ethical issues and challenges. *Iranian Journal of Public Health, 42*, 1478–1479.
- United States Department of Health and Human Services. (2018). *Physical Activity Guidelines for Americans (2nd edition)*. Washington, DC: United States Department of Health and Human Services.
- Veliz, P., Boyd, C. J., & McCabe, S. E. (2016). Substance use among adolescent sexual minority athletes: A secondary analysis of the youth risk behavior survey. *Addictive Behaviors Reports, 4*, 18–23. <https://doi.org/10.1016/j.abrep.2016.06.001>.
- Yoon, J. H., & So, W. Y. (2013). Differences in lifestyles including physical activity according to sexual orientation among Korean adolescents. *Iranian Journal of Public Health, 42*, 1347–1353.
- Zipp, J. (2011, January). Sport and sexuality: Athletic participation by sexual minority and sexual majority adolescents in the U.S. *Sex Roles, 64*(1–2), 19–31. <https://doi.org/10.1007/s11199-010-9865-4>.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.