Daily Participation in Sports and Students' Sexual Activity

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CONTEXT: *Previous studies suggest that student athletes may be less likely than nonathletes to engage in sexual behavior. However, few have explored sexual risk behavior among athletes in early adolescence.*

METHODS: *In 2005, a sample of 10,487 students in 26 Los Angeles public middle and high schools completed a self-administered survey that asked about their demographic characteristics, sports participation, sexual behaviors and expectations, and parental relationships. Chi-square analyses compared reported levels of daily participation in sports, experience with intercourse, experience with oral sex and condom use at last intercourse by selected characteristics. Predictors of sexual experience and condom use were assessed in multivariate logistic regression analyses.*

RESULTS: *One-third of students reported daily participation in sports. This group had higher odds of ever having had intercourse and ever having had oral sex than their peers who did not play a sport daily (odds ratios, 1.2 and 1.1, respectively). The increases in risk were greater for middle school sports participants than for their high school counterparts (1.5 and 1.6, respectively). Among sexually experienced students, daily sports participants also had elevated odds of reporting condom use at last intercourse (1.4).*

CONCLUSIONS: *Students as young as middle school age who participate in sports daily may have an elevated risk for STDs and pregnancy. Health professionals should counsel middle school athletes about sexual risk reduction, given that young students may find it particularly difficult to obtain contraceptives, STD testing and prevention counseling.*

Perspectives on Sexual and Reproductive Health, 2010, 42(4):244–250, doi: 10.1363/4224410

The Healthy People 2010 national health objectives include increasing the number of schools that provide physical education, the proportion of adolescents who participate in school physical education daily and the proportion of adolescents who engage in moderate and vigorous physical activity.[1] Nationwide, the School Health Policies and Programs Study reports that 77% of middle schools and 91% of high schools afford their students the opportunity to participate in at least one sport.[2] Fifty-six percent of high school students report having played on at least one sports team organized by a community group or their school; males have a higher sports participation rate (62%) than females (50%), and the level of participation declines between grades nine and 12 (from 59% to 49%).[3] In middle school, by contrast, the level increases sharply from sixth grade (54%) to seventh (62%), and then more modestly by eighth grade (63%).*[4]

Although little research has explored sexual behavior among athletes in early adolescence, previous studies have shown that students, especially females, who participate in extracurricular activities and athletics derive a host of benefits: They have a lower likelihood of dropping out, better grades, higher educational aspirations, less drug and alcohol use, and lower rates of sexual activity and pregnancy than nonparticipants.[5–9] For females, particularly high-performance or extreme athletes, sports participation may offer a protective effect. Female athletes have lower prevalence than others of sexual intercourse, multiple partnerships and pregnancy.[10–12] Male athletes, however, have higher levels of sexual risk behaviors and substance use than male nonathletes.[13–15]

Sexual activity is common among high school and even middle school students.[3,4] Early onset of intercourse is a well-established risk factor for STDs and teenage pregnancy,[16] but sexually active adolescents of middle school age are rarely screened for STDs.[17,18] Additionally, the literature indicates that levels of noncoital sexual behaviors, such as oral sex, may be increasing among young adolescents and that for some adolescents, oral sex may be a precursor to more intimate behavior.[19] Some researchers speculate that adolescents may engage in oral sex in lieu of intercourse to avoid pregnancy;[20,21] from this perspective, oral sex may be particularly appealing among those participating in sports because an unintended pregnancy could end or interrupt a young student's athletic career. Furthermore, many STDs that are prevalent among adolescents are transmissible through oral sex, including chlamydia, gonorrhea, herpes simplex virus and human papillomavirus.[22–25] Because social network patterns tend to predict STD prevalence,[26]

*These medians come from the 2005 Middle School Youth Risk Behavior Survey[4] and are based on five state- and eight local-level surveys.

it is important to explore the level of sexual risk among students participating in sports daily. The evidence concerning whether students participating in sports are more likely than others to use condoms is inconclusive.[11,12]

In addition to social and demographic characteristics (i.e., age, gender, race or ethnicity and socioeconomic status), several ecological and individual factors are associated with the onset of sexual intercourse. On an ecological level, parental relationship satisfaction predicts sexual risk activity.[27,28] Children in high-quality relationships with a parent are more likely than others to internalize parental values.[29] In turn, those values are typically linked to a reduced propensity to engage in sexual risk behaviors. Sports participation may generate greater interest and attention from the parent, as well as a shared interest by parent and child, and hence strengthen the relationship.[27] Intentions and expectations also are important. In general, intentions or expectations to perform a given behavior are the best predictors of that behavior;[30] on an individual level, the expectation to have sex is a strong predictor of sexual initiation.[31]

Relatively little is known about sexual onset and risk behaviors of middle school–age athletes as compared with high school athletes, and to our knowledge, little research has been conducted on the association of parental relationships (particularly mother-child relationships) with the sexual risk behaviors of student athletes. Hence, we investigated whether daily participation in sports is associated with sexual behaviors among middle school and high school students. We anticipated that daily sports participation is more protective for females, middle school students and students who are more satisfied with their relationship with their mothers than for males, high school students and those less satisfied with maternal relationships.

METHODS

Study Design

We present baseline data from Project Connect, an STD and teenage pregnancy prevention study under way in a large, urban public school district in the Los Angeles area. The baseline data were collected in the spring of 2005 from the 14 middle schools and 12 high schools (grades 6–12) participating in the project. Schools invited to participate were in areas with pregnancy and STD rates exceeding Healthy People 2010 goals.[1] The school district and collaborators' institutional review boards formally approved all protocols and study materials.

Study participants were recruited through a classroom-based sampling strategy. Classes were randomly selected using the spring 2005 semester class schedule, and all students enrolled in the selected classes (science and health classes for middle schools, and required classes, such as health or life skills, history or government courses, for high schools) were invited to participate. A total of 15,183 middle school students and 19,078 high school students were eligible for the study. Approximately two weeks prior to data collection, study information and consent forms were distributed in the classrooms. Students aged 18 and older could consent for their own participation, but those younger than 18 required parental consent and student assent. Fifty percent of eligible middle school students returned consent forms, and 67% of these gave consent. Eight percent of middle school students who provided consent were absent on the day the survey was conducted, and 2% chose not to participate. Among those with parental consent, 4,557 (89%) completed the 30-minute questionnaire; this group made up the study's middle school sample. Forty-three percent of eligible high school students returned consent forms, and 85% of this group gave consent. Of those with consent, 10% were absent on the day of the survey, and 4% chose not to participate; 5,930 high school students (85% of those with consent) completed the questionnaire.

The self-administered study questionnaire was pilot-tested with approximately 1,000 middle and high school students, and was available in English and Spanish; certified translators from the school district translated the materials, which bilingual study staff back-translated, to assure consistency.

Measures

- ***Demographic and socioeconomic characteristics.*** Students reported their age, gender, grade, and race or ethnicity. Grades were combined and recoded as middle school (6th–8th) or high school (9th–12th). Race or ethnicity was a closed-ended question (students could mark multiple responses) and was coded as white, black, Latino or other. (For the 6% of respondents who marked more than one category, we selected the one that made up the largest proportion of the sample.) Participants also indicated whether they were in the free or reduced-fee lunch program; this measure was used to assess socioeconomic status.
- ***Sports participation.*** Students were asked how often over the past three months they had participated in sports both in and outside of school (e.g., at a community or recreation center). The four response options were "every day," "once or twice a week," "once or twice a month" and "never." Responses of "every day" were compared with all others. We chose this coding because the Healthy People 2010 standards recommend a minimum of 20–30 minutes of physical activity three days a week,[1] and we were interested in examining a sample of students who exceeded the minimum standards.
- ***Sexual behavior.*** Students were asked if they had ever had sexual intercourse. They also were asked if they had ever given or received oral sex; the four response options were "yes, given only," "yes, received only," "yes, both" and "no," and the variable was dichotomized to reflect whether a participant had engaged in any oral sex. Sexually experienced students were asked whether they had used a condom at last intercourse.*

*The survey also included a question on consistency of condom use in the last three months. When we repeated the analysis using this measure instead of condom use at last sex, results were identical.

TABLE 1. Percentage distribution of participants in Project Connect, by selected characteristics, Los Angeles, 2005

Characteristic	% (N=10,487)
Gender	
Male	44.5
Female	55.5
Race/ethnicity	
White	2.1
Black	13.3
Latino	74.1
Other	10.6
Grade	
Middle school	43.5
High school	56.5
Daily participation in sports	
Yes	33.0
No	67.0
Free/reduced-fee lunch	
Yes	64.4
No	35.6
Maternal relationship satisfaction	
Yes	90.6
No	9.4
High expectation for sex	
Yes	39.8
No	60.2
Ever had intercourse	
Yes	30.4
No	69.6
Ever gave or received oral sex	
Yes	25.4
No	74.6
Used a condom at last intercourse†	
Yes	67.1
No	33.9
Total	100.0

†Based on those who had ever had intercourse. *Note:* Percentages may not add to 100.0 because of rounding.

•***Expectation for intercourse.*** Students specified their expectation that they would have intercourse in the next six months by indicating one of five responses, ranging from "I'm sure it won't happen" to "I'm sure it will happen." Responses were recoded and categorized as low ("less than 50% chance will have sex in next six months") or high ("at least 50% chance will have sex in the next six months").

•***Maternal relationship satisfaction.*** Students indicated the quality of their relationship with their mother or female guardian by rating their strength of agreement with the statement "Overall, I like the relationship I have with her." Response options were "not at all," "some" and "a lot." Responses were recoded to indicate "not at all" or "some or a lot."

Analysis

Using SPSS 17.0, we conducted chi-square analyses to compare the proportion of students participating in sports daily across the hypothesized covariates, and to compare the proportions reporting the outcome variables by daily participation in sports and the other covariates. Once significant covariates were identified, we constructed a series of multivariate logistic regression models to compare the odds of each outcome among daily sports participants and other students, controlling for the effects of the significant covariates. Interaction analyses were conducted to evaluate the proposed interactions between gender, grade, race or ethnicity, and maternal relationship satisfaction and daily participation in sports. The analyses of sexual intercourse and oral sex included all students; the analysis of condom use at last sex included only those who were sexually experienced.

The intraclass correlation for classroom effects on the outcome variables was trivial (less than 0.01). All multivariate analyses yielded comparable conclusions irrespective of whether classrooms were included as a (random effects) covariate to control for clustering. Results reported here do not include this covariate.

RESULTS

More than half the students in the sample were female, and three-quarters were Latino (Table 1). Ninety-five percent of participants reported only one race or ethnicity (not shown). One-third participated in a sport daily. The majority received free or reduced-fee lunch (64%) and reported at least some satisfaction with their relationship with their mother (91%). Overall, 40% of the sample had a high expectation for sex in the next six months; 30% had ever engaged in sexual intercourse, and 25% had either given or received oral sex. Of those with sexual experience, 67% had used a condom at last sex.

Bivariate Results

A significantly greater proportion of males than of females said that they participated in sports daily (43% vs. 25%—Table 2). Sports participation was more common in middle school (37%) than in high school (30%). Black students were more likely than whites to report participating in sports daily (42% vs. 33%); other groups did not differ from whites.

At the bivariate level, most covariates were associated with sexual experience. Larger proportions of males than of females had had intercourse (35% vs. 27%), had oral sex (30% vs. 22%) and used condoms at last sex (72% vs. 62%). High school students were more likely than middle school students to report sexual intercourse (47% vs. 9%) and oral sex (40% vs. 8%), but not condom use.

White students were more likely than Latinos and members of "other" racial or ethnic groups to report experience with oral sex (33%, compared with 25% and 21%, respectively); condom use at last intercourse was not related to race or ethnicity. Students participating in the free or reduced-fee lunch program were less likely than those not participating in this program to report intercourse (30% vs. 32%), oral sex (25% vs. 28%) and condom use at last sex (65% vs. 70%). Students

reporting maternal relationship satisfaction were less likely than those who were unsatisfied with their maternal relationship to report ever having had sex (28% vs. 32%) and more likely to report condom use (68% vs. 61%). Youth with a high expectation of engaging in sexual intercourse were more likely than those without a high expectation to have done so (58% vs. 10%) and to have had oral sex (49% vs. 9%).

Multivariate Results

The main effects multiple logistic regression models revealed that the odds of ever having had intercourse were greater among daily sports participants than among other students (odds ratio, 1.2—Table 3). Similarly, daily sports participants had elevated odds of having engaged in oral sex (1.1) and having used a condom at last sex (1.4). Middle school students had reduced odds of ever having had intercourse and having engaged in oral sex (0.2 and 0.1, respectively), as did students enrolled in the free or reduced-fee lunch program (0.8 and 0.7, respectively). Females were less likely than males to have engaged in oral sex (0.6) or to have used a condom at last sex (0.7). Students expecting to have intercourse in the next six months were more likely to have ever done so than were those without similar expectations (9.2). Maternal relationship satisfaction was not associated with any of the outcomes. Overall, our model assessing characteristics associated with sexual intercourse accounted best for variation among students; the model examining condom use at last sex was the least able to explain variation.

In analyses assessing the interaction between sports and grade, controlling for the remaining covariates, the relationship between daily sports participation and sexual activity was stronger for middle school students than for high school students (not shown). The odds of having engaged in intercourse and in oral sex were higher for middle school athletes than for their high school counterparts (odds ratios, 1.5 and 1.6, respectively).

Few significant differences were found in the interaction analyses examining gender as a moderator. However, the odds of male sports participants' having had oral sex were greater than those of females (odds ratio, 1.2); this relationship was strongest for middle school males (1.7). We examined the effects of interactions between sports participation and race and found a pattern similar to that in the general student population. Maternal relationship quality had no moderating effect on sexual behavior.

DISCUSSION

Overall, this study found that students participating in a sport daily had elevated sexual risk. Biological and social dynamics may explain why athletes are more likely than others to engage in sexual activity. Students participating in athletics may be more physically mature than nonathletes; this physical maturity may lead them to appear older than their biological age, which in turn may increase their access to older and more experienced sex partners. Males who experience puberty at an early age are more likely than those who do not to engage in risky behaviors.[32,33] They also are more likely to gain leadership positions and, as a result, may benefit from an elite social standing in their school and peer networks. In particular, male peer groups have been known to endorse early sex as a rite of passage and as a method of solidifying social standing.[34]

TABLE 2. Percentage of respondents reporting daily participation in sports and sexual risk behaviors, by selected characteristics

Characteristic	Participate in sports daily	Ever had intercourse	Ever gave or received oral sex	Used a condom at last intercourse†
Gender				
Male	42.8**	34.7***	30.3***	72.0***
Female	25.0	27.0	21.7	62.1
Grade				
Middle school	36.8	9.0	7.8	69.3
High school	30.0**	47.0***	39.7***	66.7
Participate in sports daily				
Yes	na	30.2	26.1	74.0**
No	na	30.5	25.2	63.8
Race/ethnicity				
White (ref)	33.3	29.8	33.2	66.1
Black	42.0*	35.4	30.1	76.2
Latino	31.0	30.7	25.2*	66.0
Other	35.3	23.4	21.4**	60.6
Free/reduced-fee lunch				
Yes	32.4*	30.1*	24.8**	65.2**
No	34.3	32.2	28.2	69.5
Maternal relationship satisfaction				
Yes	32.9	28.0*	24.2	68.4*
No	30.1	32.4	26.0	61.2
High expectation for sex				
Yes	33.5	58.4**	49.4**	66.9
No	32.6	10.1	9.1	66.3

*p<.05. **p<.01. ***p<.001. †Based on those who had ever had intercourse. *Notes:* ref=reference group. na=not applicable.

TABLE 3. Odds ratios (and 95% confidence intervals) from multiple logistic regression analyses assessing predictors of sexual risk behaviors, by selected characteristics

Characteristic	Ever had intercourse	Ever gave or received oral sex	Used a condom at last intercourse†
Female	0.90 (0.79–1.00)	0.60 (0.56–0.70)**	0.70 (0.59–0.86)**
Participate in sports daily	1.20 (1.01–1.32)*	1.10 (1.01–1.29)*	1.40 (1.17–1.77)**
Middle school	0.17 (0.15–0.20)**	0.13 (0.10–0.14)**	0.90 (0.68–1.18)
Free/reduced-fee lunch	0.81 (0.71–0.92)**	0.73 (0.64–0.82)**	0.86 (0.70–1.06)
Race/ethnicity			
White (ref)	1.00	1.00	1.00
Black	2.20 (1.43–3.49)**	1.30 (0.88–1.90)	1.40 (0.69–2.87)
Latino	1.40 (0.95–2.20)	0.86 (0.60–1.23)	0.92 (0.47–1.80)
Other	1.30 (0.83–2.10)	0.67 (0.45–1.00)*	0.67 (0.32–1.40)
Satisfied with relationship with mother	0.84 (0.68–1.03)	0.84 (0.70–1.00)	1.20 (0.92–1.63)
High expectation for sex	9.20 (8.10–10.50)**	na	na
Nagelkerke's R^2	*0.44*	*0.22*	*0.04*

*p<.05. **p<.01. †Based on those who had ever had intercourse. *Notes:* ref=reference group. na=not applicable. All characteristics except race/ethnicity are dichotomous.

Likewise, females who mature early may attract male attention and have access to older, sexually experienced male partners. Female adolescents who reach menarche at early ages are more likely than those who mature later to become sexually active early and experience an unintended pregnancy.[34] Some female athletes, however, have low body fat and periodically stop menstruating;[35] irregular menstrual cycles and amenorrhea may lead them to think that it is safe to engage in sexual intercourse.

Additionally, we speculate that depending on the type of sport that athletes play, they may have greater access than nonathletes to members of the opposite sex. Many sports, although played by gender-specific teams, involve coed practice and travel. Team travel is supervised by adults, but the ratio of adults to student athletes is most likely low. Parents may think their children are safe and supervised at athletic practices, but students could be skipping out on practice to spend unsupervised time with a romantic or sexual partner. The findings here also suggest that a maternal-child relationship, possibly strengthened by a shared interest in the adolescent's sports participation, may not reduce the odds of risky sexual behavior;[27,28] maternal relationship satisfaction was not associated with adolescents' sexual experience in the multivariate model.

As expected, and supporting previous research on athletes,[10–15,36] sports participation was more protective for females (but only with regard to oral sex) than for males. Adding to the body of knowledge on sexual risk and sports participation, and contrary to what we expected to find, our interaction analyses suggest that younger students (i.e., middle school students) who participate in sports daily may begin sexual activity before those playing sports in high school, particularly males. The literature on student athletes focuses mainly on those in high school and college. Studies that have explored sports participation during early adolescence have examined adolescents only as young as eighth grade or age 13—rarely seventh graders—which may explain why some of our findings differ.[13,27]

Nevertheless, early sexual behaviors lead to an increased risk for multiple sex partners, which in turn lead to greater risk of acquiring STDs, including HIV, and involvement in unplanned pregnancy.[16,37,38] Young adolescents of middle school age are engaging in oral sex,[19] and some may be confused about the health risks. In one study, 13% of adolescents surveyed correctly assessed that HIV and chlamydia could be transmitted through oral sex, but 14% perceived no chance of such transmission.[20] Middle school students may be less likely than high school students to receive comprehensive sex education, and they have less access to birth control or health care services.[18] Moreover, 14% of youth aged 6–17 make no health care visit to a clinic or doctor in the course of a year, and those with no insurance are particularly likely not to make such a visit.[39] These are all missed opportunities for delivery of important sexual health messages, and our findings elucidate the need for further exploration into the sexual behaviors of this unique student population.

Notably, although daily sports participants reported elevated levels of sexual intercourse and oral sex, they were more likely than other students to report using condoms at last intercourse. Athletes, in particular, may be prudent regarding pregnancy because of its potential ramifications for their athletic aspirations.[36]

Overall, our model assessing predictors of sexual intercourse accounted for more variation among subgroups of students than did the other two models, probably because it controlled for the expectation to have sex, a key predictor of the outcome. Our survey did not account for comparable unique predictors of the other outcomes (for example, availability of condoms and negotiation skills that may facilitate their use).

Limitations

This research has several limitations. First, it was based on an urban cross-sectional sample of predominantly Latino ethnicity; thus, these findings may not be generalizable to all middle school and high school populations. Also, like other studies of sexual behavior, ours was based on self-report, and students could have been giving socially desirable responses. Several factors not explored in this survey could have created a more complete picture. For one, students were not asked about their grade point average, a characteristic that is protective against risk-taking behaviors.[40] Questions regarding self-esteem could offer insight into risk behaviors and sexual expectations. Additionally, we do not have information about socioeconomic status except indirectly, from students' reports of participation in the free or reduced-fee lunch program. Students were not asked what kind of sports they played, so we do not know how much additional access they had to members of the opposite sex through athletic activity. Finally, we do not know if students considered their physical education course to be a sport; if they did, then our results overestimate sports participation. Despite these limitations, future research should examine specific sports more closely and should compare daily sports participants with students involved in other types of extracurricular activities.

Conclusion

Health educators should consider targeting athletes at the middle school level and work directly with athletic teams and coaches to promote sexual risk reduction and healthy norms. Condom use appears high among students who participate in sports, perhaps in part because condoms were available at all of the participating high schools. It may be beneficial to implement condom availability programs in middle schools as well. Parents should be aware of the risks for teenage athletes, particularly younger adolescents, and take steps to ensure their safety—such as talking to a team coach about supervision, talking with their adolescent about sexual risk behavior and decision

making, and ensuring that their youngster has an annual physical with an adolescent-friendly provider. Students should continue to be encouraged to be physically active every day and to play team sports; however, they should also be given the information and skills they need to avoid potential negative consequences of risky sexual behavior.

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Acknowledgments

The authors thank Robin Jeffries for her data expertise, thoughtful review and helpful suggestions. The research on which this article is based was supported by Centers for Disease Control and Prevention (CDC) grant U30/CCU922283-01. The findings and conclusions are those of the authors and do not necessarily represent the views of the CDC.

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