

Adolescent Women's Sports Involvement and Sexual Behavior/Health: A Process-Level Investigation

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This multimethod study explored the promising link between organized sports involvement during the high school years and sexual behavior/health among 176 adolescent women. Using more sensitive and appropriate measures than those in existing studies and directed, in part, by cultural resource theory, this study helped to fill a gap in the literature by exploring potential mediators (i.e., functional body orientation and self-empowerment/efficacy) of that link. Results from the quantitative data indicated that adolescent women's involvement in organized team sports was favorably associated with each of the following: (a) sexual-risk-taking behavior, (b) sexual/reproductive health-seeking behavior, and (c) sexual/reproductive health. In addition, both functional body orientation and self-empowerment/efficacy emerged as mediators in the associations between sports involvement and sexual behavior/health among adolescent women. Content analysis of participant responses to open-ended items provided further confirmation of those mediating effects. Implications for the development of sports and community programs focused on the prevention of teenage pregnancy and STDs are discussed.

KEY WORDS: sports involvement; sexual behavior/health; adolescent women.

INTRODUCTION

In the United States, 1 in 8 teenagers contract a sexually transmitted disease (STD) each year (3 million per year) and approximately one-fifth of all people with AIDS are in their 20s—most of whom were infected as teenagers (Center for Disease Control (CDC), 2000). Although teenage pregnancy rates in the United States may be

declining, the U.S. rates remain the highest among industrialized nations; each year, about 1 million teenage women become pregnant (85% unintended; The Alan Guttmacher Institute, 1999). The social, economic, and health consequences of teenage pregnancy and STDs are of great concern in the United States and research efforts that focus on the identification of potential factors that may prevent pregnancy and STDs among adolescents are certainly warranted.

One promising avenue would be to identify contexts that may reduce sexual-risk-taking behavior and enhance sexual/reproductive health. Sports, suggested to “provide many girls with a reasonably safe and secure environment in which to grow and test their abilities and limits,” may be one such context (Melnick *et al.*, 1999, p. 27). Indeed, a number of research efforts indicate that, compared to adolescent women who do not engage in sports, adolescent women who are involved in one or more sports engage in sexual intercourse less frequently, have fewer sexual intercourse partners, experience first sexual intercourse later, report lower rates of pregnancy, and report higher rates of condom use (e.g., Miller *et al.*, 1998, 1999; Rome

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et al., 1998; Sabo *et al.*, 1999; Savage and Holcomb, 1999; Zill *et al.*, 1995). These findings link adolescent women's sports involvement with reduced sexual-risk-taking behavior and enhanced sexual/reproductive health and suggest sports promotion as a means of decreasing pregnancy and STDs. This is especially promising given the increasing acceptance in American culture of female participation in sports (e.g., passage of Title IX; National Federation of State High Schools Association (NFSHSA), 1997).

Although adolescent women's sports involvement has been associated with sexual behavior/health, research efforts have been compromised by a number of shortcomings. First, most studies have been atheoretical and, thus, have not explored the mechanisms (i.e., mediators) that help to explain the association. As suggested by Melnick *et al.* (1999), the connection is likely quite complex, consisting of an array of psychosocial and sociocultural processes. To fill a critical gap in the literature, the current study explored 2 explanatory mechanisms that may help to clarify the sports involvement—sexual behavior/health link among adolescent women. Those mechanisms, derived in part from *cultural resource theory* (CRT), include (a) self-empowerment/efficacy and (b) functional body orientation.

According to CRT (Miller *et al.*, 1998), adolescent sports involvement is linked to adolescent sexuality via cultural and exchange processes. For adolescent girls, sports involvement promotes *disconfirmation or de-emphasis* of the traditional female cultural script—a script that promotes passivity over control and self-reliance (in the sexual arena and otherwise) and dependence on bodily appeal and attention from boys for self-worth. By dismissing or de-emphasizing the culturally prescribed feminine cultural script, girls involved in sports are predicted to be in greater control of their sexual lives and bodies, and therefore engage in behaviors that decrease sexual health risks and enhance sexual health.

More specifically, as suggested by CRT and other scholars (e.g., Blinde *et al.*, 1993; Butcher, 1989; Cahn, 1994; Jaffee and Ricker, 1993; Sabo *et al.*, 1999), adolescent women who play sports may gain a sense of empowerment/efficacy from their sports experiences—experiences which encourage them to see themselves as competent and in control of their lives and provide them with the opportunity to practice setting and achieving goals, and feeling comfortable being assertive and proactive. This empowerment may extend to other areas of adolescent women's lives, including their sexual lives (Fine, 1988; Haffner, 1998; Tolman, 1999). A sense of empowerment in the sexual arena among adolescent women may translate into assertive sexuality-related behaviors that decrease sexual health risks and/or enhance sexual health (e.g., negotiating

the use of contraception, engaging in sexual/reproductive health-seeking behaviors; Brady, 1998).

In addition, by coming to de-emphasize the traditional feminine cultural script, adolescent women who are involved in sports are likely to decrease their dependence on bodily appeal and attention from boys for self-worth. In turn, adolescent women who are involved in sports may be less focused on what their bodies look like (less focused on achieving culturally prescribed heterosexual appeal) and more focused on what their bodies can do in a strength or athletic sense (Basow and Rubin, 1999; Pipher, 1994; Zimmerman and Reavill, 1998). That is, they may be more focused on body functionality. With this greater focus on body functionality (for the sake of sports performance), adolescent women who are involved in sports may be more likely to take care of their bodies (sexually and reproductively).

The existing literature is limited not only by a lack of attention to mediational processes, but also by weak measurement of 2 key constructs—sports involvement and sexual-risk-taking behavior. Measures of sports involvement typically are quite simplistic and unidimensional. A broader, multidimensional measure of sports involvement would be more complete and accurate. For example, it may be critical to assess not only the number of sports in which an adolescent participates or whether an adolescent is involved in sports (objective indicators), but also the degree to which an adolescent is psychologically invested in sports (a subjective measure). In this study, the following dimensions of sports involvement were assessed: (a) number of sports participated in during the high-school years; (b) number of years (seasons) involved in sports during the high-school years; (c) number of hours per week devoted to sports during the high-school years; and (d) degree of psychological investment in sports during the high-school years (i.e., how much psychological energy put into sports and importance/salience of sports).

The current study also attempted to improve upon existing studies by expanding existing measures of sexual-risk-taking behavior. In previous studies, measurement of sexual behavior often is limited; although questions often tap whether an individual engages in sexual intercourse, number of intercourse partners, and age at first intercourse experience, questions regarding use of safety precautions during intercourse (e.g., contraceptive use) and engagement in sexual-health-seeking behaviors (e.g., discussing sexual health precautions/issues with a doctor or health professional, discussing the use of condoms or other contraception with one's sexual partner) typically have not been included (see Miller *et al.*, 1999; Savage and Holcomb, 1999 for exceptions). In the current study, in addition to questions about intercourse typically used in

studies of sports involvement and sexual behavior, questions about behaviors that decrease sexual health risks and enhance sexual/reproductive health (i.e., contraceptive use and engagement in sexual-health-seeking behaviors) were incorporated.

In light of existing scholarship and the overall purpose of this research project, we propose the following hypotheses: H1: There will be a negative association between adolescent women's sports involvement during high school and *sexual-risk-taking behavior*; H2: There will be a positive association between adolescent women's sports involvement and *sexual/reproductive health-seeking behavior*; H3: There will be a positive association between adolescent women's sports involvement and *sexual/reproductive health*; H4: Each of the aforementioned associations between adolescent women's sports involvement during the high-school years and sexual-risk-taking behavior, sexual-health-seeking behaviors, and sexual/reproductive health will be mediated by *self-empowerment/efficacy*; H5: Each of the aforementioned associations between adolescent women's sports involvement during the high-school years and sexual-risk-taking behavior, sexual-health-seeking behaviors, and sexual/reproductive health will be mediated by *functional body orientation*.

Open-ended (qualitative) data were collected to describe adolescent women's feelings about how their sport-related experiences influenced their lives and body image. These data were collected to clarify the results from the quantitative data (i.e., the findings that pertain directly to the proposed mediators; Miles and Huberman, 1994; Seidman, 1991). The qualitative data in the present report will be referred to via illustrative quotations in the discussion.

METHOD

Procedure

Questionnaire packets were distributed in 5 lower division classes (i.e., Introductory Communications, Family Relationships Across the Life-span, Human Development and Relations, Introduction to Linguistics, and Philosophical Perspectives on the Individual) at a large southwestern university during Fall 2000. In front of those classes, the nature of the research project, participant qualifications, and privacy/consent issues were explained. Students were informed that stamped, preaddressed envelopes were included in the questionnaire packets for participants to return their completed questionnaires. For those 18- and 19-year-old female students who were interested in participating, the principal investigator distributed question-

naire packets (either by passing out questionnaire packets during class or by leaving questionnaire packets with the professor for students to pick up after class). A total of 395 questionnaire packets were distributed. To ensure proper mailing of compensation (\$5 for all participants and an additional \$50 gift certificate to the University Bookstore for the winner of a drawing), a 1-page information form was enclosed in the questionnaire packet. This form asked the participant to provide her name and current address. A consent form also was included in the questionnaire packet. A separate postage-paid, preaddressed envelope was included in the questionnaire packet for return of both the information form and the consent form. Note that all methods and procedures were approved by the University IRB.

Two hundred and one completed questionnaires were returned, yielding a response rate of 50.9%. Twenty-five of those surveys were excluded from the current study either because the adolescent woman (a) was not in the specified age range ($n = 20$) or (b) identified as being lesbian or bisexual ($n = 5$; the questionnaires in which the adolescent women self-identified as being lesbian or bisexual were excluded from this study to control for adolescent women's sexual orientation³). Thus, the final sample consisted of 176 adolescent women.

Participants

The participants ranged in age from 18 through 19 years old ($M = 18.52$, $SD = .50$). With regard to ethnicity, 81.3% ($n = 143$) were Caucasian/European American, 10.2% ($n = 18$) were Hispanic, 5.1% ($n = 9$) were Asian American, 1.7% ($n = 3$) were Native American, 1.1% ($n = 2$) were African American, and 0.6% ($n = 1$) reported "other." These percentages are comparable to those of the undergraduate population at the university (Decision and Planning Support, 2000). At the time of data collection, 29.0% ($n = 51$) of the adolescent women reported that they were "single and not dating," 27.8% ($n = 49$) reported that they were "single and dating casually," 39.8% ($n = 70$) reported that they were "single and dating seriously (dating the same person for more

³Some authors have argued that girls and women with lesbian identities have historically gravitated to sports in high numbers (e.g., Cahn, 1994; Nelson, 1991); however, no available evidence exists. If the proportion of lesbian/bisexual women in organized teen sports is higher than the proportion of lesbian/bisexual women among teen sport non-participants, this might account for some of the lower rates of sexual intercourse and pregnancy among adolescent female sports participants. Thus, sexual orientation was controlled, eliminating sexual orientation as a possible explanation for any association between sports involvement and sexual behavior/health.

than 3 months),” 2.8% ($n = 5$) reported that they were “cohabiting,” and 0.6% ($n = 1$) reported being “married.”

With respect to maternal education, participants reported that about one-fifth ($n = 33$, 18.7%) of their mothers earned a high-school degree or less; about one-third ($n = 51$, 29.0%) of their mothers completed some college; about one-fourth ($n = 42$, 23.9%) of their mothers earned a 4-year college degree; and about one-fourth ($n = 50$, 28.4%) of their mothers had completed some education beyond college or had earned a graduate or professional degree. With respect to paternal education, the corresponding percentages were 11.3, 24.5, 30.1, and 34.6. A variable that combined (i.e., averaged) paternal and maternal education served as a proxy for socioeconomic status (SES).

Forced-Choice Self-Report Measures

The *sports involvement* measure was composed of 4 dimensions or indicators. Participants were asked to list each of the different organized sports teams on which they participated during their high-school years (to tap the *number of sports* in which they participated) and to rate their degree of *psychological investment* (on a 4-point Likert scale from *a little* to *extremely*) in each of the listed sports (based on Ryckman and Hamel, 1992). Participants also were asked to indicate the *number of hours per week* and *number of years (seasons)* in which they participated in each sport. The magnitudes of the intercorrelations among the 4 dimensions of sports involvement (which ranged from $r = 0.57$ to $r = 0.77$, $p < 0.001$), suggested that the specific indicators could be combined to form a reliable composite measure of sports involvement. The composite measure was created by first converting manifest scores for each of the 4 dimensions of sports involvement to standardized Z scores. The 4 Z scores were then averaged to yield a composite score for each adolescent woman. The composite sports involvement measure was significantly related to each of the 4 sports involvement dimensions (correlations ranged from $r = 0.75$ to $r = 0.82$, $p < 0.001$).

To assess *self-empowerment/efficacy*, participants were asked to complete 4 scales: (a) the masculinity dimension of the Bem Sex Role Inventory (BSRI; Bem, 1974)—which asks participants to rate the degree to which each of 20 masculine personality characteristics (e.g., “dominant,” “assertive”) describes them; (b) the femininity dimension of the BSRI (Bem, 1974)—which asks participants to rate the degree to which each of 20 feminine personality characteristics (e.g., “yielding,” “soft spoken”;

reverse coded) describes them; (c) the Self-Efficacy Scale (Sherer *et al.*, 1982)—which asks participants to rate the degree to which they agree with 23 statements about one’s belief in the ability to perform behaviors (e.g., “I feel insecure about my ability to do things”—reverse coded); and (d) the Self-Reliance Scale (Greenberger *et al.*, 1974)—which asks participants to rate the degree to which they agree with 10 statements about the absence of dependence on others and a sense of control in one’s life (e.g., “Luck decides most things for me”—reverse coded). Internal reliabilities for the self-empowerment/efficacy scales were good (Cronbach alphas were 0.81, 0.73, 0.87, and 0.62, respectively).

The magnitudes of the intercorrelations among the 4 self-empowerment/efficacy scales (correlation coefficients ranged from $r = 0.50$ to $r = 0.87$, $p < 0.001$) suggested that the 4 scales could be combined to form a reliable composite measure of self-empowerment/efficacy. The composite measure was created first by converting manifest scores for each of the 4 dimensions of self-empowerment/efficacy to standardized Z scores. The 4 Z scores were then averaged to yield a composite self-empowerment/efficacy score for each adolescent woman. The composite measure was significantly related to each of the 4 self-empowerment/efficacy dimensions (correlation coefficients ranged from $r = 0.67$ to $r = 0.91$, $p < 0.001$). Items were combined to form the self-empowerment/efficacy composite measure so that individuals who scored relatively high on the self-empowerment/efficacy scale had relatively higher masculine sex role orientations, had relatively lower feminine sex role orientations, were relatively more self-efficacious, and were relatively more self-reliant.

Functional body orientation was measured via a scale developed for the current study. Some items were based on the Body-Self Relations Questionnaire (Brown *et al.*, 1990); the Body-Image Questionnaire (Jaffee and Lutter, 1995); and the Self-Image Questionnaire for Young Adolescents (Petersen, 1984). Participants indicated, on a 6-point scale, how well each of 5 statements described them. Example items included, “It is important to me to feel capable/competent about my body” and “How good I feel about my body depends a lot on how well I do in physical activities (e.g., sports).” For all analyses, responses to the functional body orientation questions were added and averaged. Items were combined so that adolescent women who scored relatively high were those who were relatively more likely to view their bodies as having a functional purpose (e.g., to do well in physical activities such as sports). Internal reliability for the scale was good (Cronbach’s alpha was 0.80).

The 8-item measure of *sexual-risk-taking behavior* was based on the Youth Risk Behavior Surveillance (Brener *et al.*, 1995) and the Sexual Behavior/Risk Scale (Rosenthal *et al.*, 1991). Only those adolescent women who had ever engaged in intercourse with a male were instructed to respond to the items concerning sexual risk behavior. Example items included, “How many people have you had intercourse with?” and “Did you drink alcohol or use drugs before you had sexual intercourse the last time?” Items were combined so that adolescent women who (a) were younger at age of first intercourse, (b) had a higher number of intercourse partners, (c) had not consistently used contraception during intercourse, and (d) had been under the influence of drugs or alcohol during intercourse, scored higher on the sexual behavior/risk scale. Responses were standardized and averaged for all analyses. The intercorrelations among the 8 items used in the current study ranged from 0.47 to 0.79, $p < 0.01$.

The 5-item measure of *sexual/reproductive health-seeking behavior* was based on The YRBS (Brener *et al.*, 1995) and the Sexual Behavior/Risk Scale (Rosenthal *et al.*, 1991). Only those adolescent women who had ever engaged in sexual intercourse with a male were instructed to respond to all 5 of the sexual/reproductive health-seeking behavior questions. Example items included, “Have you ever discussed reproductive or sexual health-related precautions/issues with a doctor or health professional?” and “Have you discussed the sexual history of your most recent sexual partner with him/her?” Items were combined so that individuals who scored relatively high had engaged in relatively more sexual/reproductive health-seeking behaviors (i.e., had discussed using contraceptives, sexual history, and HIV status with sexual partner(s); had discussed reproductive or sexual health-related precautions/issues with a doctor or health professional; and had been to a doctor for a gynecological exam). Responses to the sexual-health-seeking behavior items were standardized and averaged for all analyses. The intercorrelations among the 5 items used in this scale ranged from 0.41 to 0.72, $p < 0.01$.

The 2-item measure of *sexual/reproductive health* was based on The YRBS (Brener *et al.*, 1995) and the Sexual Behavior/Risk Scale (Rosenthal *et al.*, 1991). All of the study’s participants were instructed to respond to these questions. Items included “How many times, if ever, have you been pregnant?” and “Have you ever been treated by a doctor for an STD?” Items were combined so that individuals who had never been pregnant or who had never contracted an STD scored relatively higher on the sexual/reproductive health scale and were considered relatively healthy in terms of sexual/reproductive health. Re-

sponses to the sexual/reproductive health items were standardized and averaged for all analyses. The correlation coefficient for the 2 items used in this scale was 0.51.

Qualitative (Open-Ended) Measures

To generate a rich, contextualized portrayal of adolescent women’s experience of sports involvement during their high-school years and specifically, to explore the ways in which the adolescent women felt that their sports involvement influenced their lives and feelings about their bodies, participants were afforded the opportunity to respond to open-ended items in the questionnaire. Those items included (a) “Please describe three ways your sports involvement has influenced your life”; (b) “Please discuss what you personally gained or lost from your sports involvement”; and (c) “Please describe the way you view/feel about your body.”

To address the qualitative-based goals, the open-ended data were analyzed via a form of inductive content analysis (Miles and Huberman, 1994). This coding–categorizing data-analytic strategy is a form of content analysis in which the researcher considers the participants’ responses, and looks for recurring themes or conceptual ideas that subsequently can be sorted into meaningful categories. Codes, the driving tool of this technique, are labels attached to data chunks of varying sizes (e.g., words, phrases, paragraphs). Codes (predetermined or emergent from the data) are attached to the categories and are used to assign meaning to the data. When coding is complete, the analyst has generated a rich, structured set of descriptions and themes.

RESULTS

Descriptive Statistics

Table I illustrates the means and standard deviations for the composite predictor variable—sports involvement during the high-school years and the 4 specific dimensions of sports involvement. In Table I, the numbers presented inside parentheses are results from descriptive analyses based on responses only from those adolescent women who participated in sports during their high-school years. Table II presents the means and standard deviations for (a) the 2 presumed mediators variables—self-empowerment/efficacy and functional body orientation; and (b) the 3 outcome variables—sexual-risk-taking behavior, sexual/reproductive health-seeking behavior, and sexual/reproductive health.

Table I. Means and Standard Deviations of the Composite Sports Involvement Measure (the Predictor Variable) and the 4 Dimensions of Sports Involvement

Variable	<i>M</i>	<i>SD</i>	Possible range	<i>n</i>
Sports Involvement ^a	0.00 (0.25)	0.89 (0.87)	-1.26 to 1.34 (-0.42 to 1.34)	176 (123)
Number of Sports	1.47 (2.11)	1.30 (1.03)	0 to 6 (1 to 6)	176 (123)
Number of Years	1.97 (2.85)	1.54 (0.97)	0 to 4 (1 to 4)	173 (120)
Number of Hours/Week	9.15 (13.12)	6.44 (5.21)	0 to 29 (2.5 to 29)	176 (123)
Degree of Investment	2.19 (3.14)	1.58 (0.76)	0 to 4 (1 to 4)	176 (123)

Note. Numbers in parentheses represent results of analyses based on responses only from sports participants.

^aComposite measure based on averaged *Z* scores across all 4 sports involvement dimensions.

Only adolescent women who had ever engaged in sexual intercourse with a male responded to the questions concerning sexual-risk-taking behavior ($n = 109$). Of those adolescent women, the average age of first sexual intercourse experience was approximately 16 1/2 years old (range: 13–19 years old); the average number of male sexual intercourse partners was between 2 and 3 (range: 1–10 partners); and the average number of male sexual intercourse partners during the three months prior to questionnaire completion was 1 (range: 0–3 partners).

Additionally, of those adolescent women who had engaged in sexual intercourse, 75% ($n = 82$) reported having used some type of birth control the first time they engaged in intercourse, and over 90% ($n = 104$) reported having used some type of birth control the last time they engaged in intercourse. Twenty-five percent ($n = 27$) of the participants who had experienced intercourse reported having used alcohol and/or drugs just prior to the first time they experienced intercourse with a male and similarly,

24% ($n = 26$) of sexual-intercourse-experienced participants reported having used alcohol and/or drugs just prior to their most recent intercourse experience. With respect to frequency of condom use, about one-half ($n = 52$) of those adolescent women who had experienced intercourse reported that their partner(s) had used condoms “every time” when they engaged in intercourse with him/them, about 30% ($n = 33$) reported that their partner(s) had used condoms “most of the time,” 15% ($n = 16$) reported that their partner(s) had used condoms “some of the time” or “half of the time,” and 6% ($n = 9$) reported that their partner(s) had “never” used condoms.

Only those participants who had ever engaged in sexual intercourse with a male responded to the questions that comprised the sexual/reproductive health-seeking behavior scale. Of those participants, about 75% ($n = 85$) reported having had discussed using condoms or other contraception with their most recent sexual partner, about 70% ($n = 77$) reported having had discussed the sexual history of their most recent sexual partner with him, and about 40% ($n = 45$) reported having had discussed the HIV status of their most recent sexual partner with him. More than 85% ($n = 95$) of the sexual-intercourse-experienced participants reported having discussed sexual health precautions/issues with a health professional and almost 90% ($n = 97$) of these participants reported having had a gynecological exam.

All of the study’s participants responded to the questions concerning sexual/reproductive health. About 10% ($n = 21$) reported having been treated by a doctor for an STD, and approximately 3% ($n = 6$) reported having been pregnant at least 1 time.

For descriptive purposes, the participants were asked to respond to questions about their nonintercourse sexual behavior. Analyses revealed that the overwhelming majority had engaged in sexual behaviors other than intercourse. Specifically, of the 176 participants, 172 (97.7%) reported that they had ever kissed someone on the mouth; 167 (94.9%) reported that they had ever open-mouth kissed

Table II. Means and Standard Deviations of the Mediator and Outcome Variables

Variable	<i>M</i>	<i>SD</i>	Possible range	<i>N</i>
Mediator Variables				
Functional Body Orientation	4.12	0.96	1 to 6	176
Self-Empowerment/Efficacy ^a	0.00	0.61	-1.75 to 1.57	176
Masculinity	2.48	0.60	0 to 4	176
Femininity	2.66	0.52	0 to 4	176
Self-Reliance	3.43	0.54	1 to 4	176
Self-Efficacy	3.19	0.52	1 to 4	176
Outcome Variables				
Sexual Risk-Taking Behavior ^b	0.00	0.87	-0.58 to 1.19	109
Sexual/Reproductive Health-Seeking Behavior ^b	0.00	0.73	-0.28 to 1.29	108
Sexual/Reproductive Health	0.00	0.61	-1.74 to 1.57	176

^aComposite measure based on averaged *Z*-scores across all four self-empowerment/efficacy dimensions.

^bMeasures based on reports only from sexual-intercourse-experienced adolescent women.

someone; 158 (89.8%) reported that they had ever fooled around (sexually) above the waist with someone; and 153 (86.9%) reported that they had ever fooled around below the waist with someone.

Bivariate Associations

To test hypothesis 1, which predicted a negative association between adolescent women's sports involvement and sexual-risk-taking behavior, a regression analysis was conducted. This analysis was conducted only for those participants who reported that they had ever engaged in sexual intercourse with a male at the time of questionnaire completion. Because any significant association between adolescent women's sports involvement and sexual-risk-taking behavior could be accounted for (at least partially) by one of two third-variables—SES and ethnicity, those variables were controlled for statistically in the regression analysis. Results revealed that sports involvement was a significant predictor of sexual-risk-taking behavior ($r = -0.34$, $R^2 = 0.12$, $F(3, 105) = 9.70$, $p < 0.001$), such that adolescent women who were relatively more involved in sports during their high-school years were relatively less likely to have engaged in sexual-risk-taking behaviors.

To assess hypothesis 2, which predicted a positive association between adolescent women's sports involvement and sexual/reproductive health-seeking behavior, a regression analysis was conducted (controlling for SES and ethnicity). That analysis was conducted only for those women who reported that they had ever engaged in sexual intercourse with a male. Results revealed that sports involvement was a significant predictor of sexual-health-seeking behavior ($r = 0.24$, $R^2 = 0.06$, $F(3, 104) = 6.60$, $p < 0.01$), such that adolescent women who were relatively more involved in sports during their high-school years were more likely to have engaged in sexual/reproductive health-seeking behaviors.

To address hypothesis 3, which predicted a significant positive association between adolescent women's sports involvement and sexual/reproductive health, a regression analysis was conducted (controlling for SES and ethnicity). Because all of the study's participants responded to the sexual/reproductive health questions, the analysis described below was conducted using data from the entire sample. Results revealed that sports involvement significantly predicted sexual/reproductive health ($r = 0.21$, $R^2 = 0.04$, $F(3, 173) = 5.22$, $p < 0.01$), such that the participants who were relatively more involved in sports during their high-school years were more likely to have exhibited sexual/reproductive health.

Mediator Effects—The Mediating Role of Self-Empowerment/Efficacy

A goal of this study was to assess the potential mediator role of adolescent women's self-empowerment/efficacy in each of the above bivariate associations (see H4; see Baron and Kenny, 1986, for an outline of analyses). Results indicated that self-empowerment/efficacy did mediate the association between sports involvement and sexual-risk-taking behavior. Regression analyses revealed that (1) sports involvement was significantly related to sexual-risk-taking behavior ($r = -0.34$, $R^2 = 0.12$, $F(3, 105) = 9.70$, $p < 0.001$); (2) sports involvement was significantly related to self-empowerment/efficacy ($r = 0.59$, $R^2 = 0.36$, $F(3, 106) = 20.14$, $p < 0.001$); (3) self-empowerment/efficacy was significantly related to sexual-risk-taking behavior ($r = -0.34$, $R^2 = 0.12$, $F(3, 105) = 14.71$, $p < 0.001$); and (4) the previously significant association between sports involvement and sexual-risk-taking behavior ($r = -0.34$, $p < 0.001$) was reduced to a level of nonsignificance ($r = -0.20$, ns) when self-empowerment/efficacy was entered into the equation.

Although the results for these analyses supported a mediational model, it has been argued that such analyses require post hoc probing (Holmbeck, 2000). As described by Holmbeck (2000), basing the conclusion of mediation merely on whether the predictor-outcome effect drops from significance to nonsignificance (as is outlined in Baron and Kenny's test of mediation) is flawed because a drop from significance to nonsignificance may occur for example when a regression coefficient drops from 0.22 to 0.19, but may not occur when a regression coefficient drops much more dramatically, for example, from 0.65 to 0.35. A test of the significance of the drop is clearly needed. Post-hoc probing of a mediated effect (i.e., a test of the indirect effect) provides this test.

To determine whether the indirect effect from sports involvement to sexual-risk-taking behavior, via self-empowerment/efficacy was significant, the appropriate formula developed by Sobel (as cited in Baron and Kenny, 1986) was applied. That formula provides an approximate significance test for the indirect effect of the independent variable on the dependent variable, via the mediator. In other words, Sobel's formula provides a method for calculating the standard error of the indirect effect (the path from sports involvement to sexual-risk-taking behavior, via self-empowerment/efficacy).

Applying Sobel's formula to the present data yielded a statistically significant t ratio of 5.57. This indicates that the drop in the magnitude of the path coefficient for the association between sports involvement and sexual-risk-taking behavior, after self-empowerment/

efficacy was introduced into the model, was statistically significant (providing confirmation for the mediational model).

A separate series of regression analyses revealed that self-empowerment/efficacy also acted as a mediator in the association between sports involvement and sexual/reproductive health-seeking behavior. Specifically, (1) sports involvement was significantly related to sexual/reproductive health-seeking behavior ($r = 0.24$, $R^2 = 0.06$, $F(3, 104) = 6.60$, $p < 0.01$); (2) sports involvement was significantly related to self-empowerment/efficacy ($r = 0.59$, $R^2 = 0.36$, $F(3, 106) = 20.14$, $p < 0.001$); (3) self-empowerment/efficacy was significantly related to sexual/reproductive health-seeking behavior ($r = 0.20$, $R^2 = 0.04$, $F(3, 104) = 3.59$, $p < 0.05$); and (4) the previously significant association between sports involvement and sexual/reproductive health-seeking behavior ($r = 0.24$, $p < 0.01$) was reduced to a level of nonsignificance ($r = 0.12$, ns) when self-empowerment/efficacy was entered into the equation. Post-hoc analyses (i.e., indirect effect analyses) revealed a statistically significant indirect effect from adolescent women's sports involvement to sexual/reproductive health-seeking behavior, via self-empowerment/efficacy ($t = 2.40$), and thereby, confirmed the mediator model.

Results from a third series of regression analyses revealed that self-empowerment/efficacy also mediated the association between sports involvement and sexual/reproductive health. Specifically, (1) sports involvement was significantly related to sexual/reproductive health ($r = 0.21$, $R^2 = 0.04$, $F(3, 173) = 5.22$, $p < 0.01$); (2) sports involvement was significantly related to self-empowerment/efficacy ($r = 0.56$, $R^2 = 0.32$, $F(3, 176) = 20.14$, $p < 0.001$); (3) self-empowerment/efficacy was significantly related to sexual/reproductive health ($r = 0.17$, $R^2 = 0.03$, $F(3, 173) = 3.11$, $p < 0.05$); and (4) the previously significant association between sports involvement and sexual/reproductive health ($r = 0.21$, $p < 0.01$) was reduced to a level of nonsignificance ($r = 0.12$, ns) when self-empowerment/efficacy was entered into the equation. The above mediational model was confirmed by applying Sobel's formula to the present data; that is, the indirect effect itself from sports involvement to sexual/reproductive health, via self-empowerment/efficacy was statistically significant ($t = 2.02$).

Mediator Effects—The Mediating Role of Functional Body Orientation

Another goal of this study was to assess the potential mediator role of adolescent women's functional body

orientation in each of the bivariate associations between sports involvement and sexual behavior/health (see H4; see Baron and Kenny, 1986). Results from a series of regression analyses (described above) indicated that adolescent women's functional body orientation did not mediate the significant association between sports involvement and sexual-risk-taking behavior.

A separate series of regression analyses indicated that functional body orientation did mediate the association between sports involvement and sexual/reproductive health-seeking behavior. Specifically, (1) sports involvement was significantly related to sexual/reproductive health-seeking behavior ($r = 0.24$, $R^2 = 0.06$, $F(3, 104) = 6.60$, $p < 0.01$); (2) sports involvement was significantly related to functional body orientation ($r = 0.58$, $R^2 = 0.34$, $F(3, 106) = 21.39$, $p < 0.001$); (3) functional body orientation was significantly related to sexual/reproductive health-seeking behavior ($r = 0.22$, $R^2 = 0.05$, $F(3, 104) = 3.77$, $p < 0.05$); and (4) the previously significant association between sports involvement and sexual/reproductive health-seeking behavior ($r = 0.24$, $p < 0.01$) was reduced to a level of nonsignificance ($r = 0.10$, ns) when functional body orientation was entered into the equation. Application of Sobel's formula to the present data yielded a statistically significant t ratio of 3.86. On the basis of this result, it was determined that the drop in the magnitude of the path coefficient for the association between adolescent women's sports involvement and sexual/reproductive health-seeking behavior, after functional body orientation was introduced into the model, was statistically significant (providing confirmation for the mediational model).

Regression analyses also revealed a mediating effect of functional body orientation in the association between adolescent women's sports involvement and sexual/reproductive health. Specifically, (1) sports involvement was significantly related to sexual/reproductive health ($r = 0.21$, $R^2 = 0.04$, $F(3, 173) = 5.22$, $p < 0.01$); (2) sports involvement was significantly related to functional body orientation ($r = 0.65$, $R^2 = 0.44$, $F(3, 173) = 21.46$, $p < 0.001$); (3) functional body orientation was significantly related to sexual/reproductive health ($r = 0.18$, $R^2 = 0.03$, $F(3, 173) = 4.34$, $p < 0.05$); and (4) the previously significant association between sports involvement and sexual/reproductive health ($r = 0.21$, $p < 0.01$) was reduced to a level of nonsignificance ($r = 0.13$, ns) when functional body orientation was entered into the equation. Indirect effect analyses revealed that the indirect effect from adolescent women's sports involvement to sexual/reproductive health, via functional body orientation was statistically significant ($t = 4.14$), providing confirmation for the mediational model.

DISCUSSION

The goals of the present research were to confirm and understand more fully the favorable link, found in earlier studies (e.g., Rome *et al.*, 1998; Sabo *et al.*, 1999), between adolescent women's sports involvement during the high-school years and the tendency to engage in less sexual-risk-taking behavior and to experience greater sexual/reproductive health. The present study, which used more sensitive and appropriate measures than those utilized in the extant literature, found that among adolescent women who had ever engaged in sexual intercourse with a male, those who were relatively more involved in sports during their high-school years were indeed less likely to have engaged in sexual-risk-taking behaviors and more likely to have experienced greater sexual/reproductive health. These results suggest, in particular, that the adolescent women who were more involved in organized sports during their high-school years were older at time of first sexual intercourse experience, had engaged in sexual intercourse with fewer partners, were more likely to have used birth control at all or more regularly while engaging in sexual intercourse, and were less likely to have been intoxicated while engaging in sexual intercourse. Moreover, the adolescent women who were relatively more involved in organized sports during their high-school years were less likely to have been pregnant or to have been treated for an STD.

Moving beyond the usual risk perspective on adolescent sexuality, this study was also interested in the possible link between adolescent women's sports involvement and sexual-health-seeking behaviors—behaviors that are important in the development of positive sexual health for adolescent females (see Tolman, 1999), but which have not, to date, been considered in their connection to sports involvement. As was predicted, adolescent women's sports involvement was significantly and positively related to adolescent women's sexual/reproductive health-seeking behavior, such that adolescent women who were more involved in organized sports during their high-school years were also more likely to have engaged in sexual/reproductive health-seeking behavior (a finding which was maintained after statistically controlling for SES and ethnicity). Thus, the results suggest that, among those adolescent women who had engaged in sexual intercourse with a male, those who had been relatively more involved in sports during their high-school years also were more likely to have discussed contraception, sexual history, and HIV status with their male intercourse partner(s); to have discussed sexual-health-related precautions with a health professional; and to have had a gynecological exam.

Potential Mediators in the Sports Involvement–Sexual Behavior/Health Association

A major shortcoming of the existing research on the link between adolescent women's sports involvement and sexual behavior/health has been the failure to delve deeper than simple bivariate connections and explain the mechanisms that account for those associations. Indeed, although existing scholarship and theory (i.e., CRT) have directly proposed or implied that the connection between adolescent women's sports involvement and sexual behavior/health is mediational in nature (e.g., Miller *et al.*, 1998), to date, no empirical studies have addressed that proposition. The mediating factors assessed in the current study—adolescent women's self-empowerment/efficacy and functional body orientation—emerged from CRT (Miller *et al.*, 1998) and were found to play a critical role in the sports involvement–sexual behavior/health connection.

Specifically, as expected, adolescent women's self-empowerment/efficacy emerged as a mediator in each of the following associations: (a) sports involvement and sexual-risk-taking behavior; (b) sports involvement and sexual/reproductive health-seeking behavior; and (c) sports involvement and sexual/reproductive health. Viewed from the CRT perspective, the adolescent women's sports involvement (which likely provided them with opportunities to be assertive and proactive) resulted in their adherence to a less traditional gender script, marked by high levels of self-efficacy and self-reliance—characteristics of empowerment. In turn, such empowerment likely extended to the adolescent women's sexual lives as manifested in assertive sexuality-related behaviors that decreased their sexual health risks and enhanced their sexual/reproductive health.

Because of the one-time-of-measurement design of the current study, the causal ordering of the association between sports involvement and self-empowerment/efficacy could be questioned. Notably, however, content analysis of the adolescent women's written comments suggests that their involvement in sports during their high-school years, indeed resulted in enhanced feelings of self-empowerment/efficacy. For example, one adolescent woman wrote

There are many positive aspects to sports involvement, however, I can't think of a negative one. From my involvement in sports, I developed a greater sense of self-confidence and determination to tackle any problem head on (as in an opponent in a race). It also encouraged me to strive hard and work hard to achieve my goals and dreams (my determination to excel academically was high too). Sports also gave me a positive outlook on life! I feel like

I can do whatever I put my mind to. I've also gained a new awareness of myself, realizing my limitations and strengths.

The possibility that sport-derived empowerment might extend to aspects of life outside of sports also was expressed by several of the participants. For example, an adolescent woman who played softball during her high-school years wrote, "Because of my involvement in sports, I am more confident and strong-willed. I am not afraid to try new things or say what I think. I feel comfortable to stand up for myself, whatever the situation." Another participant wrote, "Through sports, I became more confident in myself and more in control of things in my life. I gained the ability to cope with incredibly tough situations on and off the field. I feel like I can handle whatever comes my way."

Functional body orientation—having an appreciation for one's own body for what it can do/for its athletic ability—is another factor suggested by CRT (Miller *et al.*, 1998) to be a mediator in the associations between adolescent women's sports involvement and sexual behavior/health. As predicted, in the present analyses, functional body orientation emerged as a mediator in each of the following associations: (a) sports involvement and sexual-health-seeking behavior; and (b) sports involvement and sexual/reproductive health. According to CRT (Miller *et al.*, 1998), sports participation encourages the dismissal or at least the de-emphasis of the traditional feminine cultural script. As a result, those adolescent women who were involved in sports likely focused less on what their bodies looked like (i.e., less focused on achieving culturally prescribed heterosexual appeal) and focused more on what their bodies could do athletically (i.e., they adopted a functional body orientation). The participants who assumed such a functional orientation towards their bodies may have been likely to make concerted efforts to maintain the health of their bodies in order to maintain/improve their athletic performance. Such health maintenance efforts may have included the engagement in health-enhancing behaviors, such as sexual-health-seeking behaviors, which in turn, may have increased the likelihood of sexual health.

Contrary to expectations, functional body orientation did not emerge as a mediator in the association between sports involvement and sexual-risk-taking behavior. The regression coefficient for the association between sports involvement and sexual risk-taking behavior after functional body orientation was entered into the equation did not reach a level of nonsignificance ($p > 0.05$); however, it did reach trend-level ($p = 0.0449$). Therefore, the decision was made to conduct a post hoc indirect effects

analysis. That analysis revealed that the drop in the regression coefficient for the association between sports involvement and sexual-risk-taking behavior after functional body orientation was entered into the equation was, in fact, significant. Therefore, on the basis of the mediational and indirect effect tests, as well as the reported patterns concerning the mediating role of functional body orientation in the associations between sports involvement and sexual/reproductive health-seeking behavior and sexual/reproductive health, it can be concluded that functional body orientation was a "trend-level" mediator in the association between sports involvement and sexual-risk-taking behavior.

The emergence of functional body orientation as a mediator in the above associations is consistent with existing scholarship which has suggested that adolescent girls' involvement in organized sports is favorably linked to adolescent girls' body image and body orientation (e.g., Blinde *et al.*, 1993; Jaffee and Lutter, 1995; Zimmerman and Reavill, 1998). Additionally, the current findings provide empirical support for the contention that adolescent girls' functional body orientation (an appreciation of the body for what it can do) has the potential to promote girls' sexual health (see Melnick *et al.*, 1999).

Because of the one-time-of-measurement design of the current study, it is unclear whether sports involvement resulted in adolescent women's functional body orientation or whether adolescent women who had a functional body orientation self-selected into sports involvement. However, on the basis of the written comments of the participants, it appears that they perceived an increase in their functional body orientation as a result of their involvement in sports. For example, one participant wrote, "I know that my body needs nutrients and I need to eat properly and keep active to stay healthy and function. Participating in tennis since I was 12 taught me the importance of staying healthy so that my body can do what I need it to do on the [tennis] court." The comments of another participant illustrated a functional body orientation and the development of such an orientation via sports involvement: "Through sports, I gained a sense of appreciation for my body and what it can do in an athletic sense." In fact, one participant's written comments not only described the effect of her sports involvement on her body orientation, but also described how her feelings about her body, in turn, resulted in her avoidance of potentially harmful situations (which may have included dangerous sexual situations):

Swimming definitely affected the way I view and treat my body. I've often thought any positive feelings I have about my body differentiate me from other girls my age. I'm no supermodel, but I'm happy with the way I look. My physique works for me. I can swim, run, do whatever.

I make an effort to keep my body healthy—I try to eat healthily and I'm careful not to allow myself to become lazy or to put myself in dangerous situations that could be harmful to my body. I never need to weigh myself because I understand by feel and by appearance what a healthy weight is for me. By the way, I especially like my feet!!

Limitations and Future Directions

Although the current study provided interesting and meaningful findings, it was limited in several ways. First, because the sample was relatively small, there was some chance of sample bias and random error. Also, as a result of asking the participating adolescent women (who were 18- and 19-year-old college students) to reflect on their experiences during their high-school years, bias or error associated with retrospective reports may have been introduced into the study (Henry *et al.*, 1994; Smith *et al.*, 1999). However, given that most of the participants had recently graduated from high school, it is likely that their reflections were fairly accurate. Also, because of the sensitive nature of some of the items in the questionnaire (particularly those that concerned sexuality-related behaviors), the veracity of the adolescent women's responses to those items could be doubted. However, steps were taken to ensure participant confidentiality and, in so doing, helped to ensure truthful responses. The generalizability of the reported findings also is limited given the constricted variation in the ethnic composition of the sample and the fact that the participants were all college students.

Notwithstanding these limitations, the reported results illustrating the mediated models may be valid representations of ways in which adolescent women's sports involvement is linked to their sexual behavior/health. Future research efforts should be aimed at replicating the findings with a larger, more diverse sample, using longitudinal designs and applying longitudinal analytic techniques, such as growth curve modeling. Another important direction for future research would be to investigate whether the sexuality-related benefits of adolescent women's sports involvement during the high-school years extend into young adulthood or whether continued participation in sports is necessary to sustain such benefits.

Future studies also should explore whether particular dimensions of sports involvement (e.g., subjective dimensions) or different types of sports (e.g., those that are most challenging to the traditional female gender script) are relatively more important to the sexual health of adolescent women. Also, an empirical question that deserves attention is whether the reported processes are unique to sports involvement or whether adolescent involvement in

other extracurricular activities might follow similar patterns. Preliminary studies that have addressed this distinction suggest that there may be a difference (see Miller *et al.*, 1998; Sabo *et al.*, 1999).

Implications

The current study suggests the potential for involvement in organized team sports to favorably influence adolescent women's sexual behavior and sexual/reproductive health and pinpoints key mechanisms that help to clarify the nature of that influence. While the reported findings must not be overstated or oversimplified, the preventative implications are worth serious consideration. For example, programmatic efforts aimed at decreasing sexual/reproductive health risks and enhancing sexual/reproductive health among female adolescents might focus on involving teenage girls in sports programs (i.e., organized team sports), with a particular emphasis on encouraging those adolescent girls to be assertive and proactive and to appreciate their bodies for their athletic ability.

An important issue to consider when designing teenage pregnancy/sexually transmitted infection prevention programs is that a majority of female adolescents will become involved in sexual relationships during their teenage years (Sexuality Information and Education Council of the United States (SIECUS), 2001; The Alan Guttmacher Institute, 1999). In fact, in the United States, by the age of 18, the vast majority of adolescent women have engaged in deep kissing (85–90%) and heavy petting (70–75%; Coles and Stokes, 1995; as cited in Haffner, 1998); and by the 12th grade, approximately 60–70% of adolescent women have engaged in sexual intercourse with a male (a percentage that increases to about 76% by the age of 20 (SIECUS, 2001; Youth Risk Behavior Surveillance—United States (YRBS), 1999).

With respect to sexual behaviors, the adolescent women who participated in the current study are "typical." The overwhelming majority (both sports participants and nonsports participants) had engaged in a range of nonintercourse sexual behaviors and approximately 62% of the adolescent women had engaged in sexual intercourse with a male. Notably, post hoc analyses (chi-square analyses) revealed that the adolescent women who were involved in sports and those who were not involved in sports were equally likely to have ever engaged in sexual intercourse with a male. However, additional analyses revealed that, compared to adolescent women who were not involved in sports, those who were involved in sports were more likely to be safe (i.e., use contraception and not be intoxicated) when they did engage in sexual intercourse

(which certainly has implications for sexual/reproductive health).

On the basis of the current results as well as existing scholarship and a health perspective of adolescent sexuality (e.g., Brooks-Gunn and Paikoff, 1993; Tolman, 1999), programmatic efforts (including those that are sports-based) aimed at decreasing rates of teen pregnancy and STDs should not ignore adolescent women's sexuality (or assume that the only option is to promote abstinence). Instead, as argued by contemporary scholars (Haffner, 1998; Tolman, 1999), such programmatic efforts should recognize adolescent women's sexual needs and desires, help adolescent women to evaluate their own readiness for mature sexual relationships, and focus on providing adolescent women with the sexuality-related information they need to make responsible sexual decisions.

In light of the potential for adolescent women's sports involvement to favorably influence their sexual behavior/health, a worthwhile endeavor might be to encourage parents to support their adolescent girls in pursuing organized team sports as an extracurricular activity. Indeed, according to a recent report, 44% of female adolescent athletes listed "parental support/involvement" as the factor that gave them the most encouragement in their athletic activities (The Wilson Report, 1988). Such parental support may be particularly important in the teenage years when sports participation dramatically declines for girls (Zimmerman and Reavill, 1998). Parental support also may be important in the childhood and pre-teenage years given that early participation in sports appears to be a key predictor of such participation during the adolescent and young adulthood years (Zimmerman and Reavill, 1998).

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