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Original article

## “Coaching Boys into Men”: A Cluster-Randomized Controlled Trial of a Dating Violence Prevention Program

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### A B S T R A C T

**Purpose:** Dating violence (DV)—physical, sexual, and psychological aggression in adolescent romantic relationships—is prevalent among youth. Despite broad calls for primary prevention, few programs with demonstrated effectiveness exist. This cluster-randomized trial examined the effectiveness of a DV perpetration prevention program targeting coaches and high school male athletes.

**Methods:** The unit of randomization was the high school (16 schools), and the unit of analysis was the athlete (N = 2,006 students). Primary outcomes were intentions to intervene, recognition of abusive behaviors, and gender-equitable attitudes. Secondary outcomes explored bystander behaviors and abuse perpetration. Regression models for clustered, longitudinal data assessed between-arm differences in over-time changes in mean levels of continuous outcomes in 1,798 athletes followed up at 3 months.

**Results:** Intervention athletes’ changes in intentions to intervene were positive compared with control subjects, resulting in an estimated intervention effect of .12 (95% CI: .003, .24). Intervention athletes also reported higher levels of positive bystander intervention behavior than control subjects (.25, 95% CI: .13, .38). Changes in gender-equitable attitudes, recognition of abusive behaviors, and DV perpetration were not significant. Secondary analyses estimated intervention impacts according to intensity of program implementation. Compared with control subjects, athletes exposed to full-intensity implementation of the intervention demonstrated improvements in intentions to intervene (.16, 95% CI: .04, .27), recognition of abusive behaviors (.13, 95% CI: .003, .25), and positive bystander intervention (.28, 95% CI: .14, .41).

**Conclusion:** This cluster-randomized controlled trial supports the effectiveness of a school athletics-based prevention program as one promising strategy to reduce DV perpetration.

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### IMPLICATIONS AND CONTRIBUTION

DV is prevalent among adolescents. Recent prevention efforts target attitudes that legitimize violence perpetration by engaging men and boys to intervene when witnessing harmful behaviors. Evaluation of this athletic coach-delivered violence prevention program showed increases in high school male athletes’ intentions to intervene and actual bystander intervention behaviors.

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Dating violence (DV)—physical, sexual, and psychological aggression in adolescent romantic relationships—is prevalent among youth, with one in three U.S. girls reporting physical, emotional, or verbal abuse from a dating partner [1]. Despite broad calls for primary DV prevention [2,3], few programs with demonstrated effectiveness exist.

Attitudes that legitimize DV perpetration have been identified as modifiable perpetration risk factors [4–12]. Because DV perpetration often emerges in the context of male peers who demonstrate negative attitudes toward women and promote abuse perpetration [13–15], prevention requires addressing perpetrator attitudes and behaviors as well as the peer environment in which they are embedded. Studies suggest the utility of interventions rooted in social norms theory, which posits that individual behavior is informed by perceptions and misperceptions of others' attitudes and behaviors [13,16]. Engaging men and boys to promote nonviolent, gender-equitable attitudes is increasingly recognized by major global health organizations as a critical public health strategy to reduce violence against women [17–19].

Perceived peer tolerance for DV may reduce men's and boys' comfort and ability to intervene when witnessing such negative behaviors among their peers. The bystander approach—teaching individuals to intervene when faced with their peers' DV-related behaviors, rather than respond with apathy or tolerance—could be a powerful component of such social change [20,21]. In a college sample, inclusion of a bystander education component facilitated greater modification of harmful attitudes compared with standard sexual assault training [22]. Other sexual violence prevention programs have successfully engaged college students to intervene when witnessing peers' abusive behaviors [14,23–26]. A bystander approach to address DV has not been rigorously evaluated among high school students.

Male student athletes constitute an important target for DV prevention, given the relatively higher prevalence of DV perpetration and endorsement of attitudes supportive of violence against women among athletes [26,27]. Athletes also demonstrate greater leadership ability compared with nonathletes [28], suggesting that interventions with this population may diffuse through student populations [29–31]. Coaches are a natural ally for such interventions; their role as influential, nonparental role models renders them uniquely poised to positively impact how young men think and behave [29]. Thus, training coaches to teach adolescent male athletes to prevent DV may be a promising strategy to increase knowledge, attitudes, and behaviors that reduce DV perpetration. Earlier successes of athletics-based DV interventions in college contexts [26], coupled with the high prevalence of such abuse among high school youth, point to the need for a cluster-randomized controlled trial to evaluate the impact of training coaches to participate in DV prevention.

## Methods

### Recruitment and data collection

Five large urban school districts in Sacramento County, CA, were approached to participate in an evaluation of the "Coaching Boys into Men" (CBIM) program in October 2009; one district declined. Of the remaining four districts, three had 100% participation of their high schools, and 56% of high schools participated in the fourth district, for a total of 16 schools (i.e., clusters). Schools declined because of losing an athletics program owing to funding cuts, as well as focusing on other academic priorities. Each school's athletic director approached all head coaches of male and co-educational sports to participate each season (winter 2009–2010, spring 2010, and fall 2010). Of the coaches approached, 87% agreed to participate. The primary participation barrier reported by coaches was lack of time.

Student athletes received parental consent forms and an informational letter (available in multiple languages) from study staff about the study. Students who returned signed parental consent forms and completed youth assent forms were eligible to take the surveys. Girls were eligible, but completed a separate female-specific survey, not included in the present analyses. Fifteen-minute online surveys were collected at schools for intervention and control site student athletes (in grades 9 through 12) at the start of each sports season (winter, spring, fall) (time 1). Time 2 follow-up surveys were collected for these same athletes at the end of each sports season (approximately 12 weeks after time 1, following program implementation at the intervention sites). To facilitate anonymous matching of baseline and follow-up surveys for statistical analysis, youth self-created an identification code by responding to questions for which only they would know the answer. Students received a \$10 gift card for participating in each survey. Study methods were approved by the University of California Davis Human Subjects Research Committee and by each school district.

### Intervention and control conditions

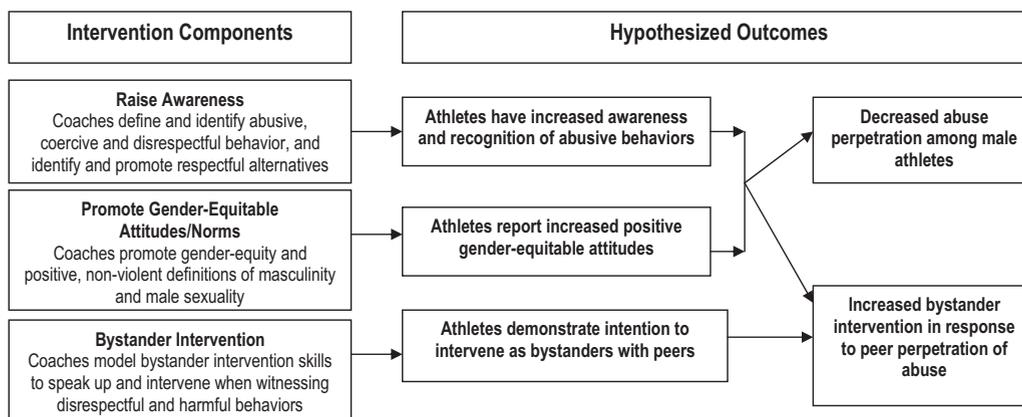
CBIM is intended to alter norms that foster DV perpetration by engaging athletic coaches as positive role models to deliver violence prevention messages to adolescent male athletes. The program consists of a 60-minute training for coaches led by a trained violence prevention advocate to introduce the Coaches Kit (available at <http://coachescorner.org>), which provides strategies for opening conversation about violence against women with athletes. Eleven "Training Cards" guide coaches to lead brief (10–15 min) weekly discussions with athletes about respect and DV prevention throughout the sports season. The advocate is available to assist coaches with concerns that arise during program delivery, including disclosures. Through this brief coach-led intervention, the CBIM program is intended to translate into measurable positive changes in athletes' attitudes and behaviors related to DV (Figure 1).

A parallel group of athletes in schools randomized to the control condition received coaching as usual, meaning the coaches were asked to interact with their athletes as they customarily do, without additional guidance. These students were assessed using identical surveys, measurement protocols, and research staff as for the intervention condition.

### Outcomes

#### Primary knowledge, attitude, and behavior outcomes.

1. Recognition of abusive behavior: A scale developed by Silverman et al [32] to assess perceptions of the degree of abusiveness of specified relationship behaviors, such as "telling them which friends they can or can't see or talk to," using a 5-point Likert-like scale ranging from "not abusive" to "extremely abusive" (Cronbach  $\alpha = .93$ ). Recognition of abusive behavior was modeled as a mean of responses to 12 items.
2. Gender-equitable attitudes: This scale includes questions modified from Barker's Gender-Equitable Norms Scale [33], such as "if a girl is raped it is often because she did not say no clearly enough." Responses range from "strongly agree" to "strongly disagree" on a 5-point scale (Cronbach  $\alpha = .80$ ), modeled as a mean of responses to 11 items.
3. Intentions to intervene when witnessing abusive behaviors: These investigator-developed items were pilot tested [34]. For



**Figure 1.** Conceptual model of intervention design and hypothesized outcomes.

each item representing abusive behaviors, participants report how likely they would be to do something to stop the behavior. Responses range from “very unlikely” to “very likely” (Cronbach  $\alpha = .87$ ), modeled as a mean of eight items.

#### Secondary outcomes.

- 4–5. Positive and negative bystander intervention: Similar to items assessing intentions to intervene, these investigator-developed items were piloted in a previous study intended to identify commonly witnessed behaviors among adolescent male athletes (Appendix 1). For each of nine abusive behaviors witnessed among peers or friends in the past 3 months, participants reported how they responded to the behavior (if witnessed), by selecting all applicable responses from a list with two negative behaviors (“I didn’t say anything” and “I laughed or went along with it”) and four positive behaviors (“I told the person in public that acting like that was not okay”; “I told the person in private that acting like that was not okay”; “I talked to our coach about it privately”; “I talked to another adult [not coach].”). For each abusive behavior, separate binary indicators (for any positive and for any negative intervention) were created. If an abusive behavior was not witnessed, both indicators were coded 0. The nine positive and nine negative indicators were summarized separately to create the positive and negative bystander intervention behavior scores.
6. Abuse perpetration: Athletes who had ever dated a female were asked about perpetrating any of 10 abusive behaviors toward a female partner in the past 3 months, modified from the Conflict Tactics Scale 2 [35], with additional items tested during a separate pilot study [34]. A summary DV perpetration score was created by adding together any “yes” responses.

#### Sample size

Power and sample size estimates were calculated from analyses of pilot study data, incorporating outcome-specific variance inflation factor estimates that accounted for cluster randomization design effects and nonresponse to translate the anticipated sample size of 1,500 athletes from 14 schools into outcome-specific effective sample sizes of 750, 395, and 221 for the primary knowledge, attitudes, and behavior outcomes, respec-

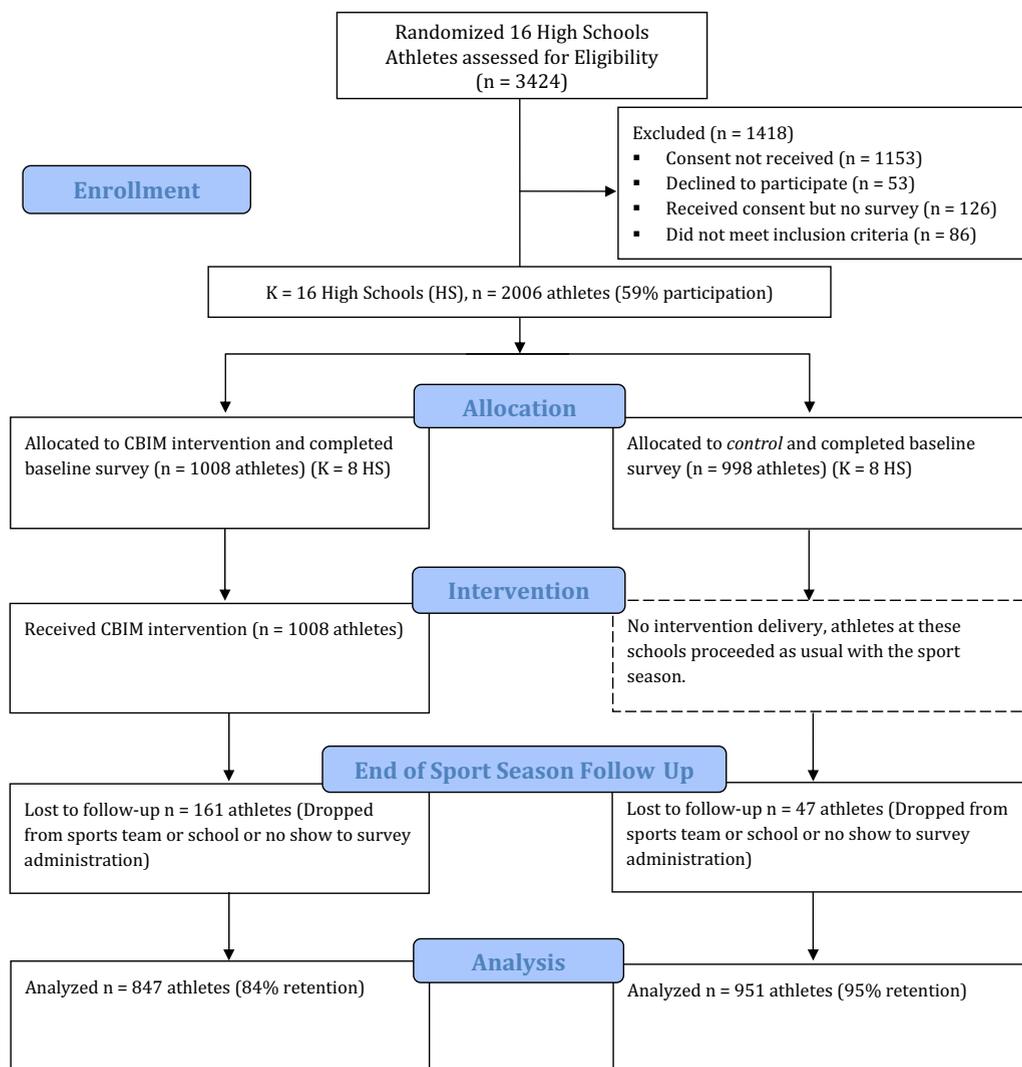
tively, sufficient to achieve >80% power (under two-sided testing with  $\alpha = 5\%$ ) to detect minimum standardized effects of interest [36]. Actual sample size exceeded these targets, as more schools agreed to participate (16 clusters) and the study enrolled more than 2,000 athletes at baseline.

#### Randomization

After all schools were enrolled, the study statistician developed the computer-generated random allocation schedule, ensuring that each school had an equal chance of being randomized to either arm.

#### Statistical methods

In light of the intensity of within-school interactions among coaches, athletes, and nonathlete peers, the unit of randomization for this trial was the high school, and the unit of analysis was the athlete. To account for the clustered randomized study design and the hierarchical arrangement of our data (up to two measurements per athlete, nested within team, nested within school, the unit of randomization), a combination of survey data analysis methods and multilevel mixed-effects models in SAS/STAT software (SAS Institute, Cary, NC) were used [36–38]. Bivariate tests of association and differences in means were adjusted for design effects, specifying schools as clusters. Adjusted between-arm differences in over-time changes in mean levels of continuous outcomes were used to estimate intervention effects and to adjust for baseline differences in outcomes, race, grade, immigration status, and parental education. These were assessed using mixed-effects models for all outcomes except for the bystander intervention outcomes, where clustered data regression point and variance estimates were used, to account for heteroskedasticity. The primary assessment of intervention effects analyzed all available data from athletes who completed follow-up. A secondary analysis was conducted to assess whether intervention effects were stronger with more intensive uptake of the intervention. Two-sided testing with a per-comparison  $\alpha$  of 5% was used for all study hypotheses, with corresponding single-inference 95% confidence intervals reported for intervention effects on each outcome.



**Figure 2.** Participant flow—CONSORT (Consolidated Standards of Reporting Trials diagram) RCT abbreviated for randomized controlled trial; K indicates the number of schools (clusters).

## Results

### Participant flow and attrition analysis

Figure 2 illustrates the randomization of schools and flow of athletes through the study.

Two hundred eight athletes were lost to follow-up (10.4%), with more athletes lost to follow-up in the intervention schools. These athletes were more likely to be non-Hispanic black and less likely to be white, compared with athletes who completed the study. Those lost to follow-up were slightly less likely at baseline to recognize abusive behaviors than those retained; no differences were found regarding baseline values of other study outcomes.

### Baseline data

The male high school athletes in this study included all grade levels equally (Table 1). Self-reported race/ethnicity by the athletes

reflected the race/ethnicity composition of each school. Control athletes were more likely to be white and to have a parent who had completed college or graduate school. The sports included were basketball and wrestling (winter); baseball, golf, lacrosse, rugby, swimming, tennis, track-and-field, and volleyball (spring); and cross-country, football, soccer, and water polo (fall).

Eighteen percent of athletes reported any abuse perpetration against a female partner in the past 3 months. The mean summary scores for past 3-month abuse perpetration were <1 at baseline and similar in both intervention and control arms (where the highest possible score was 10), meaning that few athletes reported perpetrating more than one abusive behavior against a female partner. Emotional and verbal abuse were the most common DV perpetration reported (Table 2).

### Primary outcomes

Intervention and control participants who completed follow-up differed in mean baseline values for intentions to in-

**Table 1**

Demographic characteristics for the total sample, intervention arm, and control arm

Sample characteristics	% Total (N) N = 2,006	% Intervention (N) N = 1,008	% Control (N) N = 998
Grade			
9	25.2 (500)	25.0 (249)	25.4 (251)
10	25.9 (514)	25.8 (257)	26.0 (257)
11	24.4 (484)	23.7 (236)	25.1 (248)
12	24.6 (488)	25.7 (256)	23.5 (232)
Chi-square <i>p</i> value			.70
Race			
White	34.2 (680)	28.3 (282)	40.2 (398)
Non-Hispanic black	22.1 (439)	24.9 (248)	19.3 (191)
Hispanic	19.6 (389)	22.1 (220)	17.1 (169)
Asian	9.7 (192)	7.8 (78)	11.5 (114)
Native American/Pacific Islander	4.7 (94)	6.1 (61)	3.3 (33)
Other	9.7 (193)	10.7 (107)	8.7 (86)
Chi-square <i>p</i> value			<.0001
Country of origin			
Born in United States	91.7 (1,814)	91.0 (903)	92.4 (913)
Born outside of United States	8.3 (164)	8.9 (89)	7.6 (75)
Chi-square <i>p</i> value			.27
Parental education			
Some high school	4.6 (93)	5.8 (58)	3.5 (35)
High school graduate	17.0 (340)	20.4 (206)	13.4 (134)
Some college/technical school	24.5 (492)	25.3 (255)	23.8 (237)
College graduate	27.1 (543)	24.5 (247)	29.7 (296)
Completed graduate school	15.3 (307)	9.8 (99)	20.8 (208)
NA	11.5 (231)	14.2 (143)	8.8 (88)
Chi-square <i>p</i> value			<.0001

*p* values are from clustered survey data Wald  $\chi^2$  tests for association, to account for within-school correlation.

tervene, gender-equitable attitudes, and negative bystander intervention scales ( $p < .05$ ) (Table 3). Regarding "intentions to intervene," control athletes' adjusted mean scores decreased (i.e., worsened) somewhat over time (adjusted mean change =  $-.08$ ;  $p = .07$ , not statistically significant), whereas intervention athletes' mean scores remained stable (adjusted mean change =  $.04$ ;  $p = .29$ ), resulting in an estimated intervention effect of  $.12$

**Table 2**

Abusive behaviors perpetrated in the past 3 months by intervention, full-intensity intervention, and control participants

Abusive behaviors against female partner	Intervention (all) % (N)		Intervention (full intensity) % (N)		Control % (N)	
	Baseline (N = 830)	Follow-up (N = 829)	Baseline (N = 495)	Follow-up (N = 494)	Baseline (N = 926)	Follow-up (N = 925)
Call her names like ugly or stupid	7.6 (63)	6.2 (51)	8.1 (40)	6.7 (33)	3.2 (30)	5.3 (49)*
Spread rumors about her sexual reputation	3.7 (31)	3.3 (27)	4.4 (22)	2.6 (13)	2.1 (19)	4.4 (41)**
Yelled at her or destroyed something that belonged to her	4.5 (37)	2.8 (23)	5.5 (27)	2.4 (12)*	1.9 (18)	3.0 (28)
Talked to your friends about what you and your girlfriend do sexually	9.8 (81)	10.5 (85)	11.3 (56)	10.5 (52)	11.9 (110)	11.9 (110)
Showed your friends or posted pictures of her naked	1.5 (12)	2.3 (19)	1.4 (7)	1.8 (9)	2.3 (21)	4.0 (37)**
Told her not to talk to others, or told her who she could hang out with	4.6 (38)	3.9 (32)	4.0 (20)	3.9 (19)	3.9 (36)	3.2 (30)
Threatened to hurt her if she did not do what you wanted her to do	.4 (3)	1.0 (8)	.4 (2)	.6 (3)	.1 (1)	.5 (5)
Physically hurt her	.5 (4)	1.3 (11)	.2 (1)	1.0 (5)	.8 (7)	.9 (8)
Convinced her to have sex after she said no	2.8 (23)	3.3 (27)	3.0 (15)	3.4 (17)	3.4 (31)	3.4 (31)
Made her have sex when she did not want to	.5 (4)	.7 (6)	.4 (2)	.8 (4)	.9 (8)	1.3 (12)
Any abuse perpetration in past 3 months	19.4 (161)	19.2 (159)	22.2 (110)	19.8 (98)	17.0 (157)	19.1 (177)

\* Within-group *p* value  $< .05$ .

\*\* Within-group *p* value  $< .01$ .

(95% CI:  $-.003$ – $.24$ ). Intervention effects on gender-equitable attitudes ( $-.01$ ; 95% CI:  $-.09$ ,  $.07$ ) and on recognition of abuse ( $.06$ ; 95% CI:  $-.06$ ,  $.17$ ) were not statistically significant.

### Secondary outcomes

Intervention athletes showed a significant increase in positive bystander intervention behavior compared with control subjects ( $.25$ , 95% CI:  $.13$ ,  $.38$ ). Changes in DV perpetration and negative bystander behavior across intervention and control arms were not statistically significant in adjusted analyses (Table 3).

### Post hoc analyses based on intervention intensity

According to program guidelines, the minimum requirements for completed intervention delivery (i.e., "full intensity") are coaches' discussions of at least 9 of the 11 training cards and these discussions being conducted across a minimum of one-third of the sports season (i.e., 4 weeks). Based on coaches' biweekly phone or e-mail contact with the violence prevention advocate as well as a tracking sheet the coaches completed about which card was delivered on what date and for what length of time, 60.3% of the intervention coaches fulfilled these criteria and were scored "1.00" on intervention intensity. All the intervention coaches reported implementing at least some portion of CBIM, thus the remaining intervention coaches were given discounted scores between  $.5$  and  $1.0$  to reflect the number of cards discussed and weeks spent implementing the program. The primary reason coaches offered for not completing the cards in the intended sequence was not having time in their practice schedule to have these discussions with their athletes. In addition, owing to personal time constraints, some of the coaches were trained after the start of their sports season, and had fewer weeks in which to complete the series.

Intensity-adjusted intervention effects were estimated by substituting the intervention intensity score in place of the binary intervention indicator used in the primary analysis (far right column, Table 3). In addition to the same outcomes with statistically significant effects in the primary analyses,

**Table 3**

Baseline and follow-up means and standard deviations for outcomes of interest among intervention and control participants and regression-adjusted intervention effects on mean improvements from baseline to follow-up

Study outcomes	Baseline			Follow-up		Primary analyses	Secondary analyses
	Intervention Mean (SD)	Control Mean (SD)	<i>p</i>	Intervention Mean (SD)	Control Mean (SD)	Adjusted intervention effect (95% CI)	Adjusted intensity-weighted intervention effect (95% CI)
Intention to intervene	3.69 (.79)	3.61 (.72)	.03	3.73 (.81)	3.51 (.75)	.12 (.003, .24)	.16 (.04, .27)
Gender attitudes	2.99 (.59)	3.08 (.58)	.002	3.00 (.65)	3.09 (.63)	-.01 (-.09, .07)	.05 (-.04, .13)
Recognition of abuse	3.33 (.88)	3.39 (.81)	.11	3.37 (.92)	3.38 (.82)	.06 (-.06, .17)	.13 (.003, .25)
Bystander intervention							
Positive intervention	.59 (1.25)	.56 (1.16)	.59	.73 (1.42)	.48 (1.07)	.25 (.13, .38)	.28 (.14, .41)
Negative intervention	1.84 (2.09)	2.37 (2.14)	<.0001	1.46 (1.97)	2.04 (2.14)	-.27 (-.48, .06)	-.28 (-.52, .04)
Abuse perpetration	.36 (.91)	.30 (.84)	.20	.35 (.97)	.38 (1.06)	-.08 (-.27, .02)	-.11 (-.25, .04)

For all scores, except for negative intervention behavior and abuse perpetration, higher scores denote more positive change, that is, higher score in "intentions to intervene" indicates athletes reporting greater likelihood to intervene.

For negative intervention behavior and abuse perpetration, higher scores indicate more negative intervention behaviors and abuse perpetration reported.

Analysis restricted to 1,798 athletes who completed follow-up. Adjusted intervention effects were estimated in multiple regression models that adjusted for race, grade, parental education, and immigrant status. Adjusted intervention effects represent the between-arm contrast in mean over-time changes in study outcomes. Secondary analyses estimate intervention effect for athletes exposed to programs with full implementation of the intervention (see text for details). Mixed-effects longitudinal models for a nested cohort design (with random effects for schools, for school changes over time, for teams nested within schools, and for athletes nested within teams) that used restricted maximum likelihood estimation were used for point estimates and confidence intervals for all outcomes except for the two bystander intervention outcomes, for which survey data regression analysis methods for clustered data (with schools specified as clusters and with the athlete's baseline value included as a covariate in models with follow-up values as the dependent variable) were used to provide heteroskedasticity-robust confidence intervals. The estimated intraclass correlation coefficients from the nested cohort analysis of our primary outcomes are computed as the ratio of the estimated variance component for the school-specific changes to the sum of this variance component and the estimated residual error variance component and equal .036, .028, and .024 for the intention to intervene, gender attitudes, and recognition of abuse scores, respectively.

intensity-adjusted intervention effects were associated with increases in recognition of abuse.

## Discussion

### Interpretation

This cluster-randomized controlled trial supports the effectiveness of a school athletics-based prevention program as one promising strategy that may help reduce DV perpetration among male adolescents. Compared with control participants, athletes assigned to the CBIM intervention reported increased intentions to intervene and more positive bystander behavior. In secondary analyses that adjusted for the intensity of intervention delivery (at the program level), full implementation of the intervention was also associated with better recognition of abuse.

This program builds on social norms change theory to increase bystander behavior related to DV prevention. It is encouraging that this easy-to-implement, coach-delivered prevention program was able to achieve small-to-moderate effect sizes using rigorous (and conservative) analyses for both intentions to intervene and positive bystander behavior. Even with limited time available for training coaches and short discussions with athletes (constrained by parameters set by coaches to integrate this program into busy athletic program schedules), the shifts in bystander behavior observed are congruent with the proposed conceptual model for this program (Figure 1). Among control athletes, the slight decline in intentions to intervene and positive bystander behaviors at follow-up might also reflect that in the absence of such specific DV education, the peer context of high school male athletes may increasingly dissuade youth from being positive bystanders during this critical developmental period. Furthermore, emotional and verbal abuse perpetration toward a female partner appeared to increase among control athletes (Table 2), suggesting that the peer context may in fact encourage such behaviors. The overall increase in intentions to intervene and positive bystander intervention behaviors demon-

strated among intervention athletes compared with control subjects suggests the program may protect against the negative effects of a social context that discourages bystander intervention, a hypothesis that merits further study.

In the intensity-adjusted analyses, statistically significant effect estimates also emerged for recognition of abusive behaviors. Only 60% of the coaches delivered the intervention as intended, pointing to the need to better understand barriers in implementing this program and identifying strategies to assist coaches to deliver the entire program throughout the sports season, which may be helpful for increasing program effectiveness.

Incidence of physical or sexual violence perpetrated by athletes who had ever dated was low, suggesting that the timing of this program, which targets high school-aged athletes, is appropriate for primary prevention. There was no statistically significant difference in overall recent DV perpetration comparing intervention and control athletes who had ever dated. Sexual violence prevention programs among college students, which used a bystander approach, have demonstrated not only improvements in bystander intervention behaviors [23] but also reductions in sexual aggression perpetration [24]. Similarly, bystander intervention approaches with elementary school students to reduce bullying behaviors [39] and with middle school students to reduce sexual harassment [40] have been demonstrated to be effective in reducing perpetration behaviors. Our intervention may not have detected significant effects on self-reported abuse perpetration, as the outcome measured was DV perpetration toward a female partner only (not abusive behaviors against any female more broadly). In addition, it is possible that, over time, the increased positive bystander behaviors may create a social context that discourages DV and sexual violence perpetration. Longitudinal research is needed to explore the longer-term impact of this program on overall perpetration behaviors beyond just in romantic relationships.

The CBIM program did not appear to have an effect on gender-equitable attitudes, which suggests that masculinity scripts, including attitudes that condone sexual violence, may be less ame-

nable to change. Instead, CBIM effects may operate through increasing recognition of what constitutes abusive behaviors and increasing youth self-efficacy to intervene (i.e., strengthening the context for more positive bystanders to emerge), rather than fundamentally influencing gender attitudes. The theory that increasing bystander behaviors over time will result in shifts toward more gender-equitable attitudes and less violence perpetration remains to be tested.

### Generalizability

As a cluster-randomized trial located in urban, racially and economically diverse public school districts in California, the findings from this study may not generalize to students in private schools, suburban or rural areas. The study was restricted to youth who returned signed parental consents and were present in school to complete both baseline and follow-up surveys (i.e., athlete selection bias), and the engagement of willing coaches and athletic departments within intervention schools may have introduced additional selection bias. Although the cluster randomization at the school level was intended to address such biases, it is possible that the intervention arm differed from the control arm in unmeasured ways. In addition, the program content specifically focuses on adolescent male behaviors toward females, and does not address DV among same-sex couples or sexual violence occurring outside of relationships.

### Limitations

These findings should be considered in light of several limitations. First, reliance on self-report of abuse perpetration and bystander intervention may result in underestimates of these behaviors. The use of a self-generated anonymous code and computerized survey administration were intended to reduce underreporting of sensitive items. Second, CBIM was presented to the coaches as a voluntary program, thus despite frequent contact with coaches to support fidelity to intervention, some coaches delivered the program in ways that differed from original intention. The secondary analyses, which incorporated an intensity score, were conducted to examine whether stronger effects of the program would emerge among athletes known to have been exposed to the program as intended. Third, control school athletes were exposed only to coaching as usual, without any additional program. Although it is possible that the observed changes in the intervention arm were related to having a coach simply paying greater attention to their athletes, the changes in recognition of abusive behaviors indicate a change in knowledge related to program content, suggesting that program effects extend beyond simple coach engagement with their athletes. In addition, the nature of the sample and potential selection biases may temper the generalizability of these findings to diverse youth settings. Finally, whether intervention effects last beyond the immediate postseason remains to be seen.

### Overall evidence

These limitations notwithstanding, this cluster-randomized controlled trial found that a brief athletic coach-led DV prevention program for high school-aged male athletes is associated with small-to-moderate increases in youth intentions to intervene in peer abuse perpetration, positive bystander behaviors, and recognition of abusive behaviors. CBIM offers several inno-

vations to the field of DV prevention: (1) engaging nontraditional allies, namely, coaches, as active participants in violence prevention; (2) translating the success of bystander programs among college students to a high school population; (3) focusing on shifting gender norms and bystander behaviors related to violence against women; (4) ensuring relevance to the setting and population by using real-world examples where messages to athletes are tailored by coaches. The ease of implementation of CBIM, that is, short training time and straightforward weekly mini-sessions that are simple to deliver, may facilitate its uptake among coaches in diverse settings. CBIM may be a useful adjunct to school-based violence prevention efforts to reduce DV perpetration.

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### References

- [1] Davis A. Interpersonal and physical dating violence among teens. National Council on Crime and Delinquency Focus [Online] Available at: [http://www.nccd-crc.org/nccd/pubs/2008\\_focus\\_teen\\_dating\\_violence.pdf](http://www.nccd-crc.org/nccd/pubs/2008_focus_teen_dating_violence.pdf). Accessed January 21, 2012.
- [2] Basile KC, Black MC, Simon TR, et al. The association between self-reported lifetime history of forced sexual intercourse and recent health-risk behaviors: Findings from the 2003 national youth risk behavior survey. *J Adolesc Health* Nov 2006;39:752.e 1-7.
- [3] Silverman JG, Raj A, Mucci LA, Hathaway JE. Dating violence against adolescent girls and associated substance use, unhealthy weight control, sexual risk behavior, pregnancy, and suicidality. *JAMA* 2001;286:572-9.
- [4] Abbey A, McAuslan P. Longitudinal examination of male college students perpetration of sexual assault. *J Consult Clin* 2004;72:747-56.
- [5] Cleveland H, Herrera V, Stuewig J. Abusive males and abused females in adolescent relationships: Risk factor similarity and dissimilarity and the role of relationship seriousness. *J Fam Violence* 2003;18:325-39.
- [6] Degue S, DiLillo D. Understanding perpetrators of nonphysical sexual coercion: Characteristics of those who cross the line. *Violence Vict* 2004;19: 673-88.

- [7] Foshee VA, Linder F, MacDougall JE, Bangdiwala S. Gender differences in the longitudinal predictors of adolescent dating violence. *Prev Med* 2001;32:128–41.
- [8] Hines DA. Predictors of sexual coercion against women and men: A multi-level, multinational study of university students. *Arch Sex Behav* 2007;36:403–22.
- [9] McMahon S. Rape myth beliefs and bystander attitudes among incoming college students. *J Am Coll Health* 2010;59:3–11.
- [10] Reed E, Silverman JG, Raj A, et al. Social and environmental contexts of adolescent and young adult perpetrators of intimate partner violence. *Am J Mens Health* 2008;2:260–72.
- [11] Santana MC, Raj A, Decker MR, et al. Masculine gender roles associated with increased sexual risk and intimate partner violence perpetration among young adult men. *J Urban Health* 2006;83:575–85.
- [12] Warkentin JB, Gidycz CA. The use and acceptance of sexually aggressive tactics in college men. *J Interpers Violence* 2007;22:829–50.
- [13] Berkowitz A, Schewe PA. Fostering men's responsibility for preventing sexual assault. In: Schewe P, ed. *Preventing Violence in Relationships: Interventions Across the Life Span*. Washington, DC: American Psychological Association, 2002.
- [14] McMahon S, Postmus JL, Koenick RA. Conceptualizing the engaging bystander approach to sexual violence prevention on college campuses. *J Coll Stud Dev* 2011;52:115–30.
- [15] Verma RK, Pulerwitz J, Mahendra V, et al. Challenging and changing gender attitudes among young men in Mumbai, India. *Reprod Health Matters* Nov 2006;14:135–43.
- [16] Fabiano PM, Perkins HW, Berkowitz A, et al. Engaging men as social justice allies in ending violence against women: Evidence for a social norms approach. *J Am Coll Health* 2003;52:105–12.
- [17] United Nations Population Fund (UNFPA), Promundo. Engaging men and boys in gender equality and health, 2010; Available at: <http://www.unfpa.org/public/home/publications/pid/6815>. Accessed January 21, 2012.
- [18] World Health Organization. Engaging men and boys in changing gender-based inequity in health: Evidence from programme interventions. Geneva, Switzerland. 2007; Available at: [http://www.who.int/gender/documents/Engaging\\_men\\_boys.pdf](http://www.who.int/gender/documents/Engaging_men_boys.pdf). Accessed January 21, 2012.
- [19] International Center for Research on Women, Instituto Promundo. Engaging men and boys to achieve gender equality: How can we build on what we have learned? 2007; Available at: <http://www.icrw.org/files/publications/Engaging-Men-and-Boys-to-Achieve-Gender-Equality-How-Can-We-Build-on-What-We-Have-Learned.pdf>. Accessed January 21, 2012.
- [20] Banyard VL, Plante EG, Moynihan MM. Bystander education: Bringing a broader community perspective to sexual violence prevention. *J Community Psychol* 2004;32:61–79.
- [21] Foubert JD, Perry BC. Creating lasting attitude and behavior change in fraternity members and male student athletes: The qualitative impact of an empathy-based rape prevention program. *Violence Against Women* 2007;13:70–86.
- [22] Foubert JD, Newberry JT. Effects of two versions of an empathy-based rape prevention program on fraternity men's survivor empathy, attitudes, and behavioral intent to commit rape or sexual assault. *J Coll Stud Dev* 2006;47:133–48.
- [23] Banyard VL, Moynihan MM, Plante EG. Sexual violence prevention through bystander education: An experimental evaluation. *J Community Psychol* 2007;35:463–81.
- [24] Gidycz CA, Orchowski LM, Berkowitz AD. Preventing sexual aggression among college men: An evaluation of a social norms and bystander intervention program. *Violence Against Women* 2011;17:720–42.
- [25] Langhinrichsen-Rohling J, Foubert JD, Brasfield HM, et al. The men's program: Does it impact college men's self-reported bystander efficacy and willingness to intervene? *Violence Against Women* 2011;17:743–59.
- [26] Moynihan MM, Banyard VL, Arnold JS, et al. Engaging intercollegiate athletes in preventing and intervening in sexual and intimate partner violence. *J Am Coll Health* 2011;59:197–204.
- [27] Boeringer S. Associations of rape-supportive attitudes with fraternal and athletic participation. *Violence Against Women* 1999;5:81–9.
- [28] Dobosz RP, Beatty LA. The relationship between athletic participation and high school students' leadership ability. *Adolescence* 1999;34:215–20.
- [29] Fraser-Thomas J, Cote J, Deakin J. Youth sport programs: An avenue to foster positive youth development. *Phys Educ Sport Pedagogy* 2005;10:19–40.
- [30] Jackson TL, Davis JL. Prevention of sexual and physical assault toward women: A program for male athletes. *J Community Psychol* 2000;28:589–605.
- [31] Katz J, Heisterkamp HA, Fleming WM. The social justice roots of the mentors in violence prevention model and its application in a high school setting. *Violence Against Women* 2011;17:684–702.
- [32] Rothman E, Decker M, Silverman J. Evaluation of a teen dating violence social marketing campaign: Lessons learned when the null hypothesis was accepted. *New Dir Eval* 2006;110:33–44.
- [33] Pulerwitz J, Barker G. Measuring attitudes toward gender norms among young men in Brazil: Development and psychometric evaluation of the GEM scale. *Men Masculinities* 2007;10:322–38.
- [34] Miller E, Heisterkamp A, Moideen F. "Coaching boys into men": Training coaches to influence young male athletes to prevent violence against women and girls. Presented at: American Public Health Association; San Diego, CA, 2008.
- [35] Straus MA, Hamby SL, Boney-McCoy S, Sugarman DB. The revised conflict tactics scales (CTS2): Development and preliminary psychometric data. *J Fam Issues* 1996;17:283–316.
- [36] Hayes R, Moulton L. Cluster randomised trials. Boca Raton, FL: Chapman & Hall/CRC, 2009.
- [37] LaVange LM, Koch GG, Schwartz TA. Applying sample survey methods to clinical trials data. *Statist Med* 2001;20:2609–23.
- [38] Version 9.2 of the SAS System for Windows. [computer program]. Cary, NC: SAS Institute. Copyright 2002–2008.
- [39] Karna A, Voeten M, Little T, et al. A large-scale evaluation of the KiVa anti-bullying program: Grades 4–6. *Child Dev Special Issue* 2011;82:311–30.
- [40] Taylor B, Stein ND, Woods D, Mumford E. Shifting boundaries: Final report on an experimental evaluation of a youth dating violence prevention program in New York City middle schools: U.S. Department of Justice; 2011.

#### Appendix 1

##### Abusive behaviors witnessed among male peers/friends

- Making rude or disrespectful comments about a girl's body, dressing, or makeup, such as catcalling or jeering
- Telling sexual jokes that make fun of women and girls
- Telling a girl who she can talk to or hang out with
- Bragging about what they and their girlfriend may do sexually
- Showing other people sexual messages or pictures of a girl on a cell phone or the Internet
- Doing unwelcome or uninvited things toward a girl (or group of girls), such as howling, whistling, or making sexual gestures
- Fighting with a girl and the boy starts to cuss at or threaten her
- Shoving, grabbing, or otherwise physically hurting a girl
- Taking sexual advantage of a girl who is drunk or high from drugs (like touching, kissing, having sex with)