

Prevalence of Physical Activity Requirements Among US Colleges/Universities Participating in the American College Health Association-National College Health Assessment II

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Abstract

Physical activity requirements (PAR; ie, courses required for graduation) have been proposed as a policy solution for increasing undergraduate physical activity. This study aimed to report prevalence of PAR among US colleges/universities participating in the American College Health Association-National College Health Assessment (ACHA-NCHA) and to understand whether these requirements were associated with campus characteristics. Data from the American College Health Association-National College Health Assessment II serial cross-sectional survey (2015–2019) were merged with researcher coded variables (2019): binary PAR status, nature of PAR (activity-based, conceptual, or combination), and number of courses required to fulfill the PAR. Logistic regression determined whether campus characteristics were associated with PAR in 2019. Nonparametric tests examined differences in nature and number of PAR courses. Of 379 schools, 59 (15.6%) had PAR, with 36 (61.0%) having activity-based PAR and 23 (39.0%) having a combination. Compared to public and four-year schools, private (OR=3.47 [1.77, 6.80]) and two-year schools (OR=6.55 [2.21, 19.45]) had significantly increased odds of having PAR. Private schools required significantly more PAR courses compared to public schools (2.42 vs. 1.73, $P=.005$). PAR were less prevalent in this sample than reported historically, indicating need for campus leadership attention to this issue. Research is needed to understand what barriers exist to implementing and maintaining PAR on college/university campuses, particularly among public and four-year schools. Understanding health promotion practices among ACHA member schools, which have made leadership commitments to promote student health, can provide greater knowledge of PAR barriers and best practices in schools across the United States and globally.

Keywords

physical activity, requirement, college/university, American College Health Association

What Do We Already Know About This Topic?

College/university physical activity requirements are one policy solution for improving undergraduate students' physical activity.

How Does Your Research Contribute to the Field?

This study demonstrates the prevalence of physical activity requirements in a current sample of colleges/universities participating in the American College Health Association-National College Health Assessment across the United States.

What Are Your Research's Implications Toward Theory, Practice, or Policy?

Physical activity requirements in this sample were less prevalent than reported historically; greater use of such policies at post-secondary institutions, particularly public and four-year schools, should be considered.

Introduction

Physical activity is an important behavioral mitigator of chronic disease.¹ Despite the known benefits of physical

activity, fewer than 50% of college students meet physical activity guidelines.² College is a developmental period during which young adults are forming self-identity and health habits that may accompany them throughout later life.³



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Literature reviews indicate that interventions to increase physical activity among college students offer substantial benefits.⁴ These benefits may last into adulthood and potentially impact population-level health.³

Campus administrations are well-positioned to promote physical activity via campus-level policy.⁵ Physical activity requirements (PAR; ie, courses required for graduation) have been proposed as a policy solution for increasing undergraduate physical activity at the campus level, especially among students at risk of being insufficiently active.⁶⁻¹⁰ In a large study including over 380,000 students from 379 post-secondary institutions in the United States, PAR were associated with greater probability of meeting national physical activity guidelines, particularly among students with underweight or obesity.⁶ Additionally, PAR may encourage students with low motivation for physical activity to engage in a more active lifestyle. For example, one study reported that a sample of students participating in a required course reported less motivation for physical activity than students on a second campus participating in an elective course,⁹ indicating that PAR may better reach students less motivated to engage in physical activity on their own.

Previous literature has grouped PAR coursework by nature into three distinct categories: (1) activity-based coursework, (2) conceptual coursework, and (3) combination coursework.¹¹ In activity-based coursework, students spend the bulk of their time engaged in moderate-to-vigorous physical activity, strength exercises, and/or flexibility activities. Activity-based coursework mainly aims to provide the resources (eg, time, space, equipment, and social support) needed for fitness development, skill development, and sport participation. Conceptual coursework is more often based in the classroom, including lectures and labs, and focuses on knowledge acquisition. Combination coursework combines both modalities. It is important to differentiate among PAR coursework when considering these policies in diverse campus contexts.

Although scientists and practitioners support the implementation and strategic use of PAR on college campuses,^{7,8} college/university PAR are in decline.^{11,12} Cardinal et al¹¹ estimated that, in 2010, 40% of four-year schools had PAR, compared to 97% of schools from 1920 to 1930.¹³ Despite this concerning trend, no studies have examined the prevalence of PAR among US colleges and universities in more than a decade. Furthermore, studies of campus-level physical activity interventions are largely conducted on four-year campuses,⁵ indicating continued need for studies that incorporate two-year and MSI schools.

In the United States, students attending two-year post-secondary institutions are more likely to be older, female, minority, part-time, and work for pay.¹⁴ Students attending public institutions are also more likely to be of minority status and lower socioeconomic status.^{15,16} However, studies indicate undergraduates' health-related behaviors and BMI differ across campus types, even after controlling for demographic and socioeconomic factors.¹⁷⁻¹⁹ These inequities evidence a need to evaluate campus policies across institution types as it is possible that differences in student health outcomes are related to differences in resource availability/allocation and policies between the campus types. For example, public colleges/universities may have more constraints associated with funding sources compared to private institutions and might, therefore, be less likely to implement new programs without designated funding to do so.

This study aimed to build upon historic knowledge of PAR by describing recent (2019) PAR policies among colleges/universities taking part in the American College Health Association-National College Health Assessment (ACHA-NCHA), a diverse group of schools committed to promoting student health and wellness. Understanding how PAR have been implemented among this sample of health-conscious colleges and universities will provide insights for implementation more broadly. First, this study aimed to describe the prevalence of PAR in in this sample. Second, this study aimed to test associations between PAR status and campus-level characteristics (public/private, two-year/four-year, Minority Serving Institution [MSI]/non-MSI, and US region). Third, among schools with PAR, this study aimed to test differences in (1) the number of courses required and (2) the nature of the requirement (ie, activity, conceptual, or combination) by campus-level characteristics (ie, public/private, two-year/four-year, and MSI/non-MSI).

Materials and Methods

A codebook informed by previous literature (eg, Ref. 11) was developed and refined to include (1) a binary variable indicating PAR status in 2019, (2) a continuous variable indicating the number of courses required to meet the PAR, and (3) a categorical variable indicating the nature of the PAR (ie, activity, conceptual, or combination). An initial list of schools was generated using the American College Health Association (ACHA) database. Two authors coded schools by reviewing school websites and course catalogues using search terms related to physical education identified in the

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literature.²⁰ Coding discrepancies (n=2) were reviewed and adjudicated by rerunning each search.

The coded schools (N=432) were merged with American College Health Association-National College Health Assessment II (ACHA-NCHA II; 2015–2019) cross-sectional survey data to create a complete, deidentified dataset with schools, campus-level characteristics (ie, public/private, two-year/four-year, MSI status, and US region [Northeast, Midwest, South, and West]), and PAR variables. MSI was operationalized as any institution with one or more of the following designations: Historically Black Colleges and Universities, Predominantly Black Institutions, Hispanic Serving Institutions, Tribal Colleges and Universities, Native American Non-Tribal Institutions, Alaskan Native- or Hawaiian-Service Institutions, Asian American- and Native American Pacific Islander-Serving Institutions, or Institutions with High Hispanic Enrollment. Schools were excluded if they did not have data for one or more of the above variables, if PAR status was uncertain in 2019, or if PAR status had changed during the survey period (2015–2019). The final sample consisted of N=379 schools.

Prevalence of PAR in the sample was determined. Logistic regression was used to explore adjusted associations between campus-level characteristics (independent variables) and binary PAR status (dependent variable). Wilcoxon and Fisher's exact tests examined differences in number of PAR courses and nature of PAR courses, respectively, by campus-level characteristics (ie, public/private, two-year/four-year, and MSI/non-MSI). Analyses were performed in StataSE 16 and RStudio; a value of $P \leq .05$ was determined a priori to denote significance.

Results

Descriptive Statistics

The final sample included 230 (60.7%) public schools and 149 (39.9%) private schools; 25 (6.6%) two-year schools and 345 (93.4%) four-year schools; and 65 (17.2%) MSI and 314 (82.8%) non-MSI. Campus-level characteristics were not mutually exclusive categories (ie, a school can be both public and four-year). By US region, the sample included 79 (20.8%) schools in the Northeast, 82 (21.6%) in the Midwest, 99 (26.1%) in the South, and 119 (31.4%) in the West (see Table 1 for descriptive statistics of the analytic sample).

Prevalence of PAR

Fifty-nine (15.6%) schools had PAR. PAR prevalence among public schools was 11.3% and among private schools was 22.1%. PAR prevalence among two-year schools was 36.0% and among four-year schools was 14.1%. PAR prevalence among MSI was 15.4% and among non-MSI was 15.6%. PAR prevalence by region was 15.2% in the Northeast, 8.5% in the Midwest, 17.2% in the South, and 19.3% in the West (see Table 1).

Table 1. Descriptive statistics and PAR prevalence for the final sample of US colleges and universities taking part in the American College Health Association-National College Health Assessment II (ACHA-NCHA II) survey (N=379).

Variable	N (%)	Prevalence of PAR (%)
All schools	379 (100.0)	59 (15.6)
Public schools	230 (60.7)	26 (11.3)
Private schools	149 (39.3)	33 (22.1)
Two-year schools	25 (6.6)	9 (36.0)
Four-year schools	354 (93.4)	50 (14.1)
MSI	65 (17.2)	10 (15.4)
Non-MSI	314 (82.8)	49 (15.6)
Region		
Northeast	79 (20.8)	12 (15.2)
Midwest	82 (21.6)	7 (8.5)
South	99 (26.1)	17 (17.2)
West	119 (31.4)	23 (19.3)

Note. PAR, physical activity requirements; MSI, Minority Serving Institution.

Campus-Level Characteristics and PAR

Compared to public and four-year schools, respectively, private (OR=3.47, $P < .001$) and two-year schools (OR=6.55, $P < .001$) had significantly increased odds of having PAR. MSI and US region were not significantly associated with PAR. Estimates are adjusted for the other predictors (Table 2).

Number of PAR

Among schools with PAR, the number of courses required ranged from 1 to 7, with 2 being the most frequent (n=25). The mean number of courses required was 2.12 ± 1.26 and the median was 2. Private schools required significantly more courses to meet the PAR requirement compared to public schools ($W=256.5$, $P=.005$) (see Table 3 for Wilcoxon tests comparing number of required courses by campus-level characteristics (public/private, two-year/four-year, MSI/non-MSI)).

Nature of PAR

Among schools with PAR, the nature of required courses included activity-based (61.0%) and combination-based (39.0%) coursework. No PAR schools required only conceptual-based coursework. No differences in PAR nature were identified by school type (see Table 3 for Fisher's exact tests comparing nature of required courses by campus-level characteristics (public/private, two-year/four-year, and MSI/non-MSI)).

Discussion

The results of this study demonstrate that in 2019, among colleges and universities participating in the ACHA-NCHA,

Table 2. Results of logistic regression analysis predicting adjusted odds of PAR from campus-level characteristics.

Variable	OR (95% CI)	% (95% CI)	P-value
Private schools vs. public schools	3.47 (1.77, 6.80)	22.15 (21.04, 23.25)	<.001
	Ref	11.30 (10.11, 12.50)	
Two-year schools vs. four-year schools	6.55 (2.21, 19.45)	36.00 (33.90, 38.10)	<.001
	Ref	14.12 (13.24, 15.00)	
MSI vs. non-MSI	.67 (.25, 1.80)	15.38 (12.35, 18.42)	.426
	Ref	15.61 (14.57, 16.64)	
Northeast (reference)	Ref	15.19 (13.71, 16.67)	
Midwest	.66 (.24, 1.81)	8.54 (7.47, 9.61)	.419
South	1.85 (.79, 4.35)	17.17 (15.26, 19.09)	.157
West	1.79 (.75, 4.28)	19.33 (17.18, 21.47)	.189

Note. OR, odds ratio; CI, confidence interval; PAR, physical activity requirement; MSI, Minority Serving Institution.

Table 3. Number and nature of PAR courses by school type.

Variable	Mean (SD)	Number of required courses		Nature of required courses	
		W	P-value	N (%) activity (vs. combination)	P-value
All schools	2.12 (1.26)	—	—	36 (61.0)	—
Private schools	2.42 (1.23)	256.5	.005	20 (60.6)	1.00
Public schools	1.73 (1.22)			16 (61.5)	
Two-year schools	1.56 (.53)	162.0	.161	8 (88.9)	.077
Four-year schools	2.22 (1.33)			28 (56.0)	
MSI	1.80 (.63)	223.5	.652	8 (80.0)	.288
Non-MSI	2.18 (1.35)			28 (57.1)	

Note. PAR, physical activity requirement; MSI, Minority Serving Institution.

Tests of course number were performed using Wilcoxon tests, test statistic = W.

Tests of course nature were performed using Fisher's exact tests, P-values reported only.

PAR prevalence was lower than last estimated in the United States in 2010. In our sample, 16% of all schools and 14% of four-year schools only had PAR. In contrast, an estimate of 2010 PAR prevalence indicated that 40% of four-year schools had PAR.¹¹ Note that in the current study, the sample was not nationally representative, and results should be interpreted with caution when comparing to previous nationally representative samples. To the authors' knowledge, there were no major changes in post-secondary level policies broadly across the United States that might explain a shift over time in PAR prevalence.

In this sample of ACHA-NCHA participant schools, private schools were more likely to have PAR than public schools, a finding in line with past research.¹¹ This finding may indicate a lack of public funding and/or leadership for undergraduate physical activity. Public policy shifts and reallocation of public funding may help bridge the gap between public and private institutions when it comes to PAR. At the campus level, institutional buy-in for PAR implementation could be measured via campus contact surveys and qualitative interviews, as previously used for studying campus health policies.²¹ At the student level, natural experiments

should be conducted across heterogeneous campus samples to test the hypothesis that PAR implementation impacts student physical activity. Methods for measuring changes in student physical activity before and after PAR implementation might include tracking fitness center use or disseminating self-report surveys of physical activity to the student body pre- and post-implementation.

In this study, we also found that two-year schools were more likely to have PAR than four-year schools. Together these results demonstrate that campus-level characteristics (eg, public and four-year) may be environmental indicators of student health disparities related to physical activity and lifestyle behaviors. Previous studies have reported health behavior disparities between two-year and four-year school students, including disparities in physical activity.¹⁸ For example, in a sample of colleges and universities in the Midwest, Laska et al (2011)¹⁸ found that two-year school students reported lower levels of physical activity compared to four-year school students, especially among females. These results are somewhat in conflict with our findings that two-year schools are more likely than four-year schools to have PAR. It is possible that two-year schools in our sample

enacted PAR to address a lack of physical activity among their students, or to support the ability to offer physical activity classes, with PAR ensuring adequate enrollment. It should further be noted that our sample contained only 7% two-year schools, indicating an underrepresentation of two-year schools in this analysis. Identifying and/or creating representative datasets containing student health data clustered by college/university type and school policies is a much-needed future direction for the field of college health policy research and practice.

Among schools with PAR in this sample, private schools required significantly more courses to meet PAR compared to public schools (2.42 vs. 1.73), which may reflect differences in funding availability and/or resource allocation decisions. Additionally, although there were no significant differences in PAR nature by school type, no PAR schools in our sample of ACHA-NCHA participant schools required only conceptual-based courses. Similarly, Cardinal et al¹¹ reported that in 2010, combination-based (n=100) course requirements were most frequent, followed by activity-based coursework (n=32). Future research among campus key leaders is needed to identify motivations regarding number and nature of PAR, as well as the barriers to PAR implementation.

The results of this analysis indicate several potential future directions. First, to better contextualize these findings, researchers and practitioners need to understand the potential barriers that exist in implementing and maintaining PAR among diverse colleges and universities (eg, public schools and four-year schools). Barriers might include perceived ease of implementation and perceived impact on student health outcomes, as well as staffing/facility resources and funding constraints. Second, more research is needed to quantify the impact of PAR on student-level physical activity outcomes, particularly among at-risk student subgroups. To date, one observational study has reported that PAR were positively associated with student physical activity, particularly among students with underweight or obesity.⁶ However, only one randomized trial of undergraduate physical activity coursework has been conducted and no long-term benefit to physical activity was detected.^{10,22}

Limitations

The sample of schools examined was derived from a self-selected group of ACHA-NCHA II responder schools and was not designed to be a nationally representative sample of US college and universities. Although our sample was diverse in terms of campus-level characteristics, regional distribution was skewed, with the majority of colleges and universities, as well as the greatest prevalence of PAR by region, observed in the West. This phenomenon may be driven by California, a state that has consistently pioneered cutting-edge educational policies, including physical education. Second, because the sample was a volunteer sample of

schools opting to survey their students on health-related measures, this sample may differ from the general population of US colleges and universities. The schools participating in this survey had already made a commitment to student health by joining the ACHA. Thus, it is possible that schools in our sample were actually more likely than the average US school to have PAR, which could indicate an even lower prevalence of PAR in the general population. Studying the current trends in PAR in a nationally representative sample remains a gap for future research to fill.

Conclusions

Results indicate that 16% of US colleges/universities taking part in the ACHA-NCHA have PAR. In this sample, private and two-year school status was associated with increased odds of having PAR. Finally, among schools with PAR, private schools required significantly more courses to meet the PAR requirement compared to public schools, and no schools required conceptual-based coursework only. Given promising associations between PAR and physical activity,⁶ more research is needed to understand what barriers exist to implementing and maintaining PAR, particularly among public and four-year institutions. Future explorations of PAR barriers can provide guidance to post-secondary leadership and policy makers regarding best practices for PAR implementation across the United States and globally.

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