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The United States National Physical Activity Plan: Is it being integrated into exercise science curriculum?

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ABSTRACT

Purpose: No research has evaluated the extent to which exercise science graduate curriculum incorporates content from the National Physical Activity Plan (NPAP). The purpose of this study was to examine awareness and utilization of the NPAP among university faculty. **Methods:** A population-based, cross-sectional study design was employed that surveyed the university exercise science faculty; 60 universities granting a doctoral degree in Kinesiology were sampled, with 13 ultimately providing data for this study. Three sectors within the NPAP were evaluated, which included: Health care; Education; and Transportation, Land Use, and Community Design. **Results:** About 100% of evaluated faculty reported awareness of the U.S. NPAP. With regard to the Health Care and Education strategies, 100% included at least one strategy and 85% included at least one Transportation, Land Use, and Community Design strategy. The percentages indicating use of all strategies in each sector was much lower with 39% of institutions reporting use of all Health Care strategies, 23% reported use of all education strategies, and 38% reporting use of all Transportation, Land Use, and Community Design strategies. **Conclusion:** Our findings demonstrate that while awareness of the NPAP among faculty is high, implementation is much lower.

KEY WORDS: Curriculum, exercise, National Physical Activity Plan, physical activity

INTRODUCTION

Regular participation in physical activity has been shown to provide numerous health benefits, including, but not limited to, prevention of cardiovascular, metabolic, neurological, and cancer-related diseases [1,2]. This, coupled with the low adherence to National Physical Activity Guidelines [3], has prompted national organizations to develop reports/guidelines to facilitate the promotion of physical activity. For example, in 2008, the United States Department of Health and Human Services developed the first government-issued physical activity guidelines. Other important government initiatives that have been developed to promote physical activity include the Healthy People 2020, the Physical Activity Guidelines Advisory Committee Report, the Exercise is Medicine Initiative, and the U.S. National Physical Activity Plan (NPAP).

With regard to the U.S. NPAP, the plan provides specific evidence-based recommendations for policy and best practices to inform physical activity behavior change across 8 societal sectors, including health care; public health; education; business and industry; mass media; parks, recreation, fitness and sports; transportation, land use, and community design; and volunteer and non-profit. As such, it is pivotal that future exercise-focused health professionals are aware of the NPAP and have adequate training to help implement and facilitate the goals of the NPAP. In a 2013 study by Evenson *et al.* [4], and among 291 members of the National Society of Physical Activity Practitioners in Public Health, 79% reported awareness of the NPAP. Among these individuals aware of the NPAP, few participants (15%) reported using the plan at least 6 times. Although speculative, inadequate use may be a result of inadequate knowledge of the NPAP, and in particular, inadequate educational training of the NPAP.

To our knowledge, no study, to date, has examined the extent to which exercise science curriculum integrates aspects of the NPAP. Doctoral students studying health behaviors are an important population to address because of their direct contact with target NPAP audiences across the various sectors as they enter into their career fields. As a result, the purpose of this study was to examine the extent to which graduate exercise science curriculum incorporates aspects of the NPAP into their curriculum. Identification of the extent to which graduate exercise science curriculum incorporates aspects of the NPAP may help in identifying the potential need for curricular modification, which ultimately may play an important role in population health.

METHODS

This study was approved by the authors' Institutional Review Board, and participant consent was waived given the de-identified nature of this study. A population-based,

cross-sectional study design was employed. Currently, there are 61 institutions granting a doctoral degree in the field of Kinesiology (as identified by the National Academy of Kinesiology), located across 35 states. 60 of the 61 institutions were contacted with the exclusion of the researchers' institution. The department chair of each of the programs was contacted via e-mail and asked to provide the e-mail address of the appropriate faculty member(s) who are teaching or have taught a course related to the study topic within the past 3 years. The researcher then contacted the appropriate faculty via e-mail and asked them to complete the survey, with responses recorded electronically using Qualtrics™ Online Survey Software.

Among the 8 societal sectors addressed in the NPAP, the present study focuses on the following 3 sectors: Health Care; Education; and Transportation, Land Use, and Community Design. These 3 sectors were selectively chosen for two reasons: (1) To minimize participant burden by reducing the length of the survey and (2) these 3 sectors we believe were the most likely to have been addressed in exercise science graduate curriculum.

The first question delivered to all participants was, "Are you aware of the U.S. NPAP?" (Yes/No response option). The remaining survey questions were in direct alignment with the NPAP strategies from each of the three evaluated sectors. Note the specific strategies were not identified in the survey. The authors piloted the survey with several content experts to evaluate clarity and appropriateness of the survey items. The survey took approximately 3-5 min to complete. The survey questions are reported in Tables 1 and 2.

Data Analysis

Proportional estimates for all binary variables were calculated. In the case that more than one faculty member from a university completed the survey, responses were narrowed down to have an overall representative response for each university. If there was at least one "Yes" among answers for a question, the university was considered to have a "Yes" and calculated as such for data analysis purposes. Relatedly, if, for example, there were 3 participants from a single university, and 1 of them said "Yes" to an item with the other 2 saying "No," we considered the university response to be a "Yes." A Chi-square test was used to determine if there were proportional differences in the evaluated questions across schools ranked 1-35 or 36+ by the National Academy of Kinesiology. Our initial plan was to examine differences across schools ranked above and below the top 10, but this cut point (1-35 vs. 36+) was applied because we had too few respondents ranking in the top 10 and the cut-point of 35 provided a more reasonable distribution. School rankings were evaluated from the 2010 Review and Evaluation of Doctoral Programs by the National Academy of Kinesiology. Statistical significance was established as $P < 0.05$ using Stata version 12.

RESULTS

Around 60 of the 61 institutions were surveyed, excluding the authors' institution. Among the 60 schools who we contacted, 13 institutions were identified and 26 surveys were completed. Among these 13 schools, 5 were ranked in the top 35 (i.e., 1-35, with 8 ranked as 36 or higher). 100% of the 13 evaluated institutions were aware of the NPAP [Table 1].

The results indicating responses to the NPAP curriculum survey can be found in Table 1. With regard to the Health Care sector, 69% of the evaluated institutions reported incorporating Strategy 1 into their class curriculum, 92% reported incorporating Strategy 2, 46% reported incorporating Strategy 3, 69% reported incorporating Strategy 4, 92% reported incorporating Strategy 5, and 92% also reported incorporating Strategy 6. When evaluated collectively, 100% of the schools reported incorporating at least 1 of the Strategies, with 39% of the institutions incorporating all 6 strategies.

With regard to the Education sector, 2 questions were asked pertaining to Strategy 1. 100% of the evaluated institutions reported incorporating Strategy 1, Question 1, whereas 85% reported incorporating Strategy 1, Question 2. Within the same sector, 62% reported incorporating Strategy 2, 77% reported incorporating Strategy 3, 62% reported incorporating Strategy 4, 77% reported incorporating Strategy 5, 46% reported incorporating Strategy 6, and 54% reported incorporating Strategy 7. When evaluated collectively, 100% of the schools reported incorporating at least 1 of the strategies, with 23% of the institutions incorporating all 7 strategies.

With regard to the Transportation, Land Use, and Community Design sector, 77% of the evaluated institutions incorporated Strategy 1, 62% reported incorporating Strategy 2, 70% reported incorporating Strategy 3, and 54% reported incorporating Strategy 4. When evaluated collectively, 85% of the schools reported incorporating at least 1 of the Strategies, with 38% of the institutions incorporating all 4 strategies.

With regard to the Chi-square analyses examining proportional differences across school ranking, these findings can be found in Table 2. Based on all Chi-square analyses being non-significant, these findings demonstrated that there was no significant association between knowledge of the NPAP or strategy utilization across school rankings. However, these findings should be interpreted with caution given the low sample size, creating the likelihood of minimal statistical power.

DISCUSSION

The U.S. NPAP promotes physical activity behavior change among 8 societal sectors by its provision of specific evidence-based suggestions for policy and best practices. This study specifically looked at awareness of the NPAP among faculty at the institutions offering a doctoral degree in Kinesiology. 100% of evaluated faculty reported awareness of the NPAP. The utilization of 3 sectors (Health Care, Education, Transportation, Land Use, and Community Design) in curricula among the evaluated institutions was also observed. With regard to the Health Care and Education strategies, 100% included at least one strategy, and 85% included at least one Transportation, Land Use, and Community Design strategy. The percentages

Table 1: Responses to the National Physical Activity Plan Curriculum Survey among 13 universities regarding the Health Care, Education, and Transportation, Land Use, and Community Design sectors

NPAP Strategies	% Yes (SE)	% No (SE)
1. Are you aware of the NPAP	100	0
Question "In your course, [course title]".....	% Yes (SE)	% No (SE)
Health Care sector		
Strategy 1: Did students learn about the importance or need for health care providers to assess and discuss physical activity as a "vital sign" with their patients?	69.23 (0.13)	30.77 (0.13)
Strategy 2: Did students learn about the effects that physical activity can have in preventing and treating various chronic diseases?	92.3 (0.08)	7.70 (0.08)
Strategy 3: Did students learn ways in which health care professionals can use a health care systems approach to promote physical activity and to prevent and treat physical inactivity?	46.15 (0.14)	53.85 (0.14)
Strategy 4: Did students learn ways to help reduce disparities in access to physical activity services in health care	69.23 (0.13)	30.77 (0.13)
Strategy 5: Did students learn about the importance or need for physical activity education in the training of all health care professionals?	92.31 (0.08)	7.69 (0.08)
Strategy 6: Did students learn about the importance or need for advocating at the local, state, and institutional levels for policies and programs that promote physical activity?	92.31 (0.08)	7.69 (0.08)
Education sector		
Strategy 1: Q-1: Did students learn about the importance or need for children to have access to and opportunities for high-quality physical education/physical activity programs, in pre-kindergarten through grade 12?	100%	
Strategy 1: Q-2: Did students learn about the importance or need for the programs to be physically active, inclusive, safe, and developmentally and culturally appropriate?	84.62 (0.10)	15.38 (0.10)
Strategy 2: Did students learn about the importance or need for the development and implementation of state and school district policies requiring school accountability for the quality and quantity of physical education and physical activity programs?	61.54 (0.14)	38.46 (0.14)
Strategy 3: Did students learn about the importance or need for schools to partner with other sectors for the purpose of linking youth with physical activity opportunities in schools and communities?	76.92 (0.12)	23.08 (0.12)
Strategy 4: Did students learn about the importance or need for early childhood education settings for children ages 0-5 years to promote and facilitate physical activity?	61.54 (0.14)	38.46 (0.14)
Strategy 5: Did students learn about the importance or need for school-age children to have access to and opportunities for physical activity before and after school?	76.92 (0.12)	23.08 (0.12)
Strategy 6: Did students learn about the importance or need for post-secondary institutions to provide access to physical activity opportunities, including physical activity courses, robust club and intramural programs, and adequate physical activity and recreation facilities?	46.15 (0.14)	53.85 (0.14)
Strategy 7: Did students learn about the importance or need for post-secondary institutions to incorporate population-focused physical activity promotion training in a range of disciplinary degree and certificate programs?	53.85 (0.14)	46.15 (0.14)
Transportation, Land Use, and Community Design sector		
Strategy 1: Did students learn about the importance or need for the increase accountability of project planning and selection to ensure infrastructure supporting active transportation and other forms of physical activity?	76.92 (0.12)	23.08 (0.12)
Strategy 2: Did students learn about the importance or need for prioritizing resources and providing incentives to increase active transportation and other physical activity through community design, infrastructure projects, systems, policies, and initiatives?	61.54 (0.14)	38.46 (0.14)
Strategy 3: Did students learn about the importance or need for integrating land-use, transportation, community design and economic development planning with public health planning to increase active transportation and other physical activity?	69.23 (0.13)	30.77 (0.13)
Strategy 4: Did students learn about the importance or need for increasing connectivity and accessibility to essential community destinations to increase active transportation and other physical activity?	53.85 (0.14)	46.15 (0.14)

indicating use of all strategies in each sector was much lower with 39% of institutions reporting use of all Health Care strategies, 23% reported use of all Education strategies, and 38% reporting us of all Transportation, Land Use, and Community Design strategies. Of the 13 evaluated institutions, 5 were ranked in the top 35 according to the 2010 review and evaluation by the National Academy of Kinesiology. This study found no significant association between knowledge/utilization of the NPAP and school ranking.

Previous research [4] has shown that among a sample in Public Health, 79% reported awareness, while approximately 15% utilized the plans at least 6 times in their practice, and identified state-wide promotion of the plan to practitioners as a major area in need of attention. This is worthy of noting as additional research [5] supports an increased effort to promote implementation by Society of Health and Physical Educators America, its members, and similar organizations. Implementation difficulty and cost, as well as infrequencies regarding other policies, have been found as challenges to the plan regarding the public health sector, with further investigation into understanding and inclusion of the other sector strategies recommended [6]. The results of this study indicate that while a higher percentage of the evaluated institutions incorporated at least 1 of the strategies, when evaluated collectively, <40% incorporated all of the strategies from each of the 3 sectors into their curriculum. With previous literature showing a need for better dissemination and implementation explanation, the present study suggests that a lack of thorough incorporation into curricula may result in inadequate implementation among those with direct access to the public. Of course, this is speculative and will need to be assessed in future research.

Table 2: Association between knowledge and utilization of the National Physical Activity Plan and School Rankings According to the 2010 Review and Evaluation of Doctoral Programs by the National Academy of Kinesiology

NPAP Strategies	Ranking					
	1-35		36+		χ^2	*P*
	Yes (N)	No (N)	Yes (N)	No (N)		
Health Care sector						
Strategy 1: Did students learn about the importance or need for health care providers to assess and discuss physical activity as a "vital sign" with their patients?	4	1	5	3	0.44	0.50
Strategy 2: Did students learn about the effects that physical activity can have in preventing and treating various chronic diseases?	4	1	8	0	0.68	0.41
Strategy 3: Did students learn ways in which health care professionals can use a health care systems approach to promote physical activity and to prevent and treat physical inactivity?	2	3	4	4	0.12	0.73
Strategy 4: Did students learn ways to help reduce disparities in access to physical activity services in health care	4	1	5	3	0.44	0.51
Strategy 5: Did students learn about the importance or need for physical activity education in the training of all health care professionals?	5	0	7	1	0.68	0.41
Strategy 6: Did students learn about the importance or need for advocating at the local, state, and institutional levels for policies and programs that promote physical activity?	5	0	7	1	0.68	0.41
Education sector						
Strategy 1: Q-1: Did students learn about the importance or need for children to have access to and opportunities for high-quality physical education/physical activity programs, in pre-kindergarten through grade 12?	5	0	8	0	-	-
Strategy 1: Q-2: Did students learn about the importance or need for the programs to be physically active, inclusive, safe, and developmentally and culturally appropriate?	5	0	6	2	-	-
Strategy 2: Did students learn about the importance or need for the development and implementation of state and school district policies requiring school accountability for the quality and quantity of physical education and physical activity programs?	2	3	6	2	1.59	0.21
Strategy 3: Did students learn about the importance or need for schools to partner with other sectors for the purpose of linking youth with physical activity opportunities in schools and communities?	4	1	6	2	0.04	0.84
Strategy 4: Did students learn about the importance or need for early childhood education settings for children ages 0-5 years to promote and facilitate physical activity?	2	3	6	2	1.59	0.21
Strategy 5: Did students learn about the importance or need for school-age children to have access to and opportunities for physical activity before and after school?	3	2	7	1	1.31	0.25
Strategy 6: Did students learn about the importance or need for post-secondary institutions to provide access to physical activity opportunities, including physical activity courses, robust club and intramural programs, and adequate physical activity and recreation facilities?	2	2	4	5	0.12	0.73
Strategy 7: Did students learn about the importance or need for post-secondary institutions to incorporate population-focused physical activity promotion training in a range of disciplinary degree and certificate programs?	3	2	4	4	0.12	0.73
Transportation, Land Use, and Community Design Sector						
Strategy 1: Did students learn about the importance or need for the increase accountability of project planning and selection to ensure infrastructure supporting active transportation and other forms of physical activity?	4	1	6	2	0.04	0.84
Strategy 2: Did students learn about the importance or need for prioritizing resources and providing incentives to increase active transportation and other physical activity through community design, infrastructure projects, systems, policies, and initiatives?	4	1	4	4	1.17	0.28
Strategy 3: Did students learn about the importance or need for integrating land-use, transportation, community design and economic development planning with public health planning to increase active transportation and other physical activity?	4	1	5	3	0.44	0.51
Strategy 4: Did students learn about the importance or need for increasing connectivity and accessibility to essential community destinations to increase active transportation and other physical activity?	4	1	3	5	2.24	0.14

(–) Chi-square and *P*-values were not calculable among variables that had a zero response

Given the purpose of the NPAP, along with high awareness among faculty but low implementation, efforts are needed to increase implementation of strategies across various sectors to increase the desired outcome. Efforts should include further investigation into why implementation is low and what can be done to promote implementation across relevant sectors. Doctoral students studying exercise behaviors are key components of the NPAP program success, as they are likely to have opportunities to disseminate NPAP goals and strategies to target populations as they enter into their careers. For example, if they enter the world of academia, they will have the opportunity to extend their knowledge of the NPAP to their students. Community design and programers often have one-on-one contact with practitioners, and those entering cooperate health have access to several sectors as well. Low utilization of NPAP strategies across public health sectors may have detrimental implications for the health of our population.

Strengths of this study include the novel examination of faculty awareness and implementation of the NPAP and the implications of the results for future investigation on the matter. Limitations of this study include the small sample size due to

the low response rate and only investigating responses regarding the three sectors evaluated.

In conclusion, these findings demonstrate that while awareness of the NPAP among faculty is high, implementation is much lower. Future research employing a larger proportion of universities will be needed to confirm our null findings between school ranking and implementation of NPAP strategies. If future research using larger sample sizes and inclusion of student surveys confirms low implementation, investigation into barriers to implementing strategies into curricula as well as possible strategies to overcome these barriers will be needed. If implementation of NPAP strategies into exercise science curriculum remains low, then this may impede efforts into promoting physical activity at the population level.

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