

PEDAGOGY

Which Lifelong Activities Are Held in Highest Regard by Physical Education Stakeholders in Michigan: Can Stakeholders Agree? A Delphi Study

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Abstract

The purpose of this study was to identify what lifelong activities stakeholders agree upon as most important to include in physical education programs. Little research has been conducted regarding which lifelong activities are most important to include in the curriculum and if there is consensus in priorities across program stakeholders. Consensus among stakeholders at the local level would contribute to program support and guide program planning. Three hundred fifty subjects were drawn from 15 school districts across Michigan and five professional organizations with a stake in physical education programming. Subjects completed three rounds of a Delphi study, in which they shared opinions and rated the relative importance of lifelong activities. Swimming, jogging/power walking, and strength training were the highest rated of the 64 activities that received a rating in the final round. The mean dispersion of ratings by stakeholders decreased on 82 of the 86 activities, demonstrating an increase in agreement as a result of the Delphi study.

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The rank order of activities based on mean ratings also changed during the study. The decrease in the dispersion in ratings and the change in rank order based on ratings support the use of the Delphi as a consensus-building tool.

The purpose of this study was to identify the priorities held by stakeholders concerning which lifelong activities should be included in K–12 physical education (PE) programs in Michigan. A component of the National Association for Sport and Physical Education's definition of a physically literate person is the demonstration of skills necessary to participate in a variety of physical activities (American Alliance for Health, Physical Education, Recreation, and Dance, 2013). These combinations of activities serve graduates in part with a foundation of experiences that they can use to engage in health-related physical activity and/or apply in learning new activities as their life circumstances change.

Little research has been conducted regarding which lifelong activities are most important to include in the core curriculum and if there is consensus regarding the relative importance that specific activities hold in the eyes of program stakeholders. Which lifelong activities are taught in the local curriculum is most times left to the discretion of the local physical educators. However, there is little evidence that physical educators agree which activities, or which combination of activities, best match the needs, values, and interests of their local constituency.

Reaching a consensus across PE stakeholder groups would contribute to improving the status of PE programs within schools. Curriculum construction is as much a sociopolitical process as it is a result of empirical science (Goodlad, 2004; Goodson, 2005; Kirst & Walker, 1971; Levin, 2008). In a subject such as PE, program resources depend on stakeholder support. Some authors (Doolittle, 2007; Fairclough, Stratton, & Baldwin, 2002; Griffey, 1987; Siedentop, 1987) contend that one problem with which PE programs struggle is stakeholders failing to see what is taught, especially at the secondary level, as relevant in the lives of students outside of school. A major purpose of schooling is to prepare students for life as an adult. Clearly, it is important to provide students with healthy bouts of physical activity, and it is also important to engage students in activities they currently enjoy as tools to achieve learning objectives

(Brophy & Alleman, 1991). At the same time, it is important to equip students to participate successfully in healthy physical activities after they leave school and as their circumstances and interests change.

In this study, we engaged stakeholders across the state of Michigan in a modified Delphi study in an attempt to build consensus regarding which lifelong activities are most important to learn as part of a PE program. The study was framed by two research questions: (1) What is the relative importance assigned by stakeholders to lifelong activities suitable for inclusion in K–12 PE programs, and (2) did the procedure result in a greater consensus on content priorities among stakeholders?

The Delphi technique is a consensus-building process (Helmer, 1994; Hsu & Sandford, 2007; Lundberg & Glassman, 1983; Spinelli, 1983) and has been used to establish priorities in the PE curriculum construction process on a number of occasions (Bulger, 2004; Fazio, 1985; Sager, 2012; Uhl, 1983; Weaver, 1988). The final rankings of lifelong activities that resulted from this study and the process used to derive the rankings are valid only to the degree that it resulted in a greater consensus within and across stakeholder groups and if the final rank order changed as a result of the process.

The combination of the first 12 lifelong activities is varied enough to meet a wide range of criteria (e.g., cost, indoor/outdoor, climatic, large/small group, variable intensity). Providing learners with a varied set of experiences is critical on two counts. First, because different people engage in physical activity for different reasons, providing learners with a diverse set of experiences contributes to meeting the needs of a diverse audience. Second, providing learners with proficiency in a battery of diverse activities enables them to transition into different activities as they migrate through phases and circumstances of their lives.

Method

Description of the Sample

The sample for this study was drawn from a population of stakeholders residing in Michigan. In education, the term *stakeholder* typically refers to anyone invested in the welfare and success of a school and its students, including administrators, teachers, staff members, students, parents, families, community members, local business leaders, and elected officials such as school board members, city councillors, and state representatives (“Stakeholder,” 2014). School-

related stakeholder groups were identified by synthesizing the literature addressing those who influence or are influenced by what is taught in schools (“Stakeholder,” 2014). Participants were drawn from 15 school districts and specified agencies across the state relative to this definition.

The state was divided into four regions, and a purposeful sampling procedure was implemented to acquire representative schools from each region. The intent was to obtain combinations of public–private, large–small, urban–rural, poor–affluent school districts from each region to represent these differences in subpopulations. Stakeholders were then solicited within each district to represent local demographics. The number of participants varied according to the size of the school (e.g., a large school with multiple buildings was often represented by numerous building administrators, and a small school where administrators have more diverse roles typically had fewer participants). The participants by region of the state, school size, and stakeholder type are summarized in Table 1. Invitations were also extended to the following:

- individuals who teach PE curriculum and/or pedagogy courses at Michigan colleges/universities with teacher preparation programs in PE;
- all officers in Michigan’s Association for Health, Physical Education, Recreation, and Dance (MAHPERD) with a primary focus on PE;
- state senators and representatives serving on education and appropriations committees and representing school districts;
- members of the Departments of Education and Community Health who are responsible for educational programming; and
- a random sample of members of the Michigan Recreation and Park Association.

Three hundred fifty of the 412 (85.0%) stakeholders who agreed to participate completed all three rounds of the study. The composition of the stakeholder groups appears in Table 2. The attrition rate was similar across stakeholder groups, with the exception of students and representatives from the Departments of Education and Community Health. The response rates for the remaining groups ranged from 97.8% (classroom teachers) to 72.7% (MAHPERD representatives).

Table 1
Distribution of Participants by Region, School Size, and Stakeholder Type

Region	Size ^a	School	Stakeholder type										Total
			cad	bad	sbm	crt	pet	pnt	std	rec	undesigned		
North	A	A	2	1	2	3	13	2	0	1	1	25	
	D	B	2	1	0	4	2	3	2	0	1	15	
	C	C	0	3	0	3	3	2	2	0	3	16	
West	B	D	0	3	1	3	8	4	0	1	0	20	
	C	E	0	3	2	4	3	3	1	0	2	18	
	D	F	1	0	1	1	2	8	1	0	0	14	
	A	G	1	2	0	5	12	10	1	3	1	35	
Central	D	H	0	2	1	2	3	3	0	0	2	13	
	D	I	1	1	1	3	1	4	0	1	3	15	
	B	J	1	3	3	3	8	4	1	3	2	28	
	C	K	0	1	0	2	2	5	2	0	0	12	
East	A	L	2	1	0	1	11	2	0	0	1	18	
	B	M	1	3	1	4	2	3	0	1	4	19	
	A	N	0	4	0	3	5	4	0	0	6	22	
	A	O	1	3	2	2	13	8	0	2	3	34	
Total		15	12	31	14	43	88	65	10	12	29	304	

Note. cad = central administrator; bad = building administrator; sbm = school board member; crt = classroom teacher; pet = physical education teacher; pnt = parent; std = student; rec = community recreation director.

^aSchools in Michigan are divided into quartiles by the Michigan High School Athletic Association to equalize competition between like-sized schools. Class A schools represent the 25% of schools with the largest student population.

Table 2
Characteristics of Stakeholders

No.	% Completion	Stakeholder groups
12	75.0	Central School Administrator
31	83.8	Building School Administrator
14	73.7	School Board of Education
43	97.8	Classroom Teacher
88	87.1	Physical Education Teacher
65	92.9	Parent
10	45.5	Student (current or former)
16	85.7	Community Recreation Director
6	75.0	Intermediate School District
2	28.6	Legislature
8	72.7	MAHPERD Representative
17	94.0	University Physical Education
0	0.0	Department of Education
0	0.0	Department of Health
38		Undesignated
350	85.0%	Total ¹
No.		Gender
144		Male
132		Female
276		Total ¹
No.		Household income
1		Less than \$15,000
10		\$15,000–\$29,999
38		\$30,000–\$44,999
79		\$45,000–\$69,999
135		\$70,000 or more
262		Total ¹

The nature of the participating school districts is summarized in Table 3. Data are presented concerning the sample size representing each school district; the region of the state where the district is located; each district's student enrollment; whether the school is public or private, urban or rural; and the district's general economic status. Dashes appear where data were not available. Definitions for urban, urban areas, and rural were extracted from the U.S. Census Bureau (2000). The terms *inside* and *outside* refer to whether the district's population resides inside or outside an urban area. The data from Table 3 suggest that the demographic data were reasonably balanced in every category.

Table 3
School District Demographic Data

School	No. of subjects	Region	No. of students	Type	% urban	% poverty	Median family income
A	25	North	11,085	public	25 outside	7.8	\$29,561
B	15	North	1,002	public	0	18.4	\$18,280
C	16	North	1,897	public	0	22.3	\$20,092
D	20	West	3,342	public	96.2 inside	1.8	\$38,180
E	18	West	1,395	private	43.6 inside	4.22	\$35,475
F	14	West	955	private	45 inside	—	—
G	35	West	6,554	public	71.4 inside	3.6	\$39,031
H	13	Central	1,087	public	0	12.4	\$25,102
I	15	Central	1,010	public	0	9.3	\$31,907
J	28	Central	3,354	public	41.9 outside	6.8	\$33,499
K	12	Central	1,324	private	98 inside	—	—
L	18	East	24,600	public	100 inside	32	\$18,742
M	19	East	2,105	private	92 inside	0	—
N	22	East	12,825	public	99.2 inside	3.7	\$44,004
O	34	East	15,800	public	98.5 inside	3.5	\$49,047
State average	304	2,664		63 inside 8 outside		12.8	\$31,020

^aOutside refers to populations defined as urban, but located outside urbanized areas. Inside refers to populations defined as urban and located inside urbanized areas.

Description of the Survey Instrument

The initial survey instrument was designed to represent discrete leisure activities in the form of games, sports, and activities commonly included in PE programs. The instrument is an aggregation of activities proposed for inclusion by stakeholders in over 35 curriculum construction projects across Michigan prior to this study. For the instrument, 89 games, sports, and activities were listed in alphabetical order, with space to insert other activities that participants wanted to include. Demographic data were collected as part of the Consent to Participate form. Participants were asked (not required) to provide the school district with which they were associated (if appropriate), the primary stakeholder group they were representing, their gender, and the category that contained their household income. Because of the difficulty in defining and measuring socioeconomic status, household incomes were used as a general indicator. Income brackets were determined by identifying the median household income for the state of Michigan as identified in the U.S. Census data. Cut points were then estimated by identifying income levels that would subdivide the state's household incomes into quintiles.

Data Collection Procedures

The study consisted of three rounds of surveys. In the case of school districts, participants convened at a site within the district to complete each round. The instruments were mailed to all other participants in all three rounds.

Participants were first asked to peruse the instrument thoroughly and then assign priorities to what they considered to be the most important lifelong activities to teach in a K–12 PE program. They were asked to rate 15 of the 96 lifelong activities by assigning a 5 rating to the three activities they felt were most important for students to master as a result of participation in a K–12 PE program, then a 4 rating to the three next most important lifelong activities, then three 3 ratings, three 2 ratings, and three 1 ratings in a similar fashion. This forced-choice method of rating was adopted on the assumption that a limited amount of time was available to teach PE content in most Michigan school districts. It was used to avoid the risk inherent in absolute rating, which is the assignment of equally high or peak

values to a large number of lifelong activities, thus failing to discriminate between activities. Each participant was then asked to provide a statement of rationale supporting their three highest choices.

Mean values were calculated for each lifelong activity. Dispersions in ratings were represented by interquartile ranges. A committee of content experts reviewed the rationales provided for each lifelong activity. Their charge was to review the rationales for each item; eliminate arguments that conflicted with the professional literature; categorize like rationales; and then represent each unique, discrete rationale in a concise statement to be included for consideration by participants in the subsequent round. This information was incorporated into the second round instrument. The lifelong activities appeared in rank order according to mean ratings and were accompanied with their overall rank, mean rating, interquartile range, and statements of rationales constructed by the project committee.

In the second round, participants were asked to review each item's rank order and mean rating and to read and consider rationales provided from the first round for selecting an activity as a high priority. They were then asked to re-rate the activities using the same procedure as the first round. When participants rated an item outside the interquartile range from the previous round (thus assigning either more or less relative importance to the lifelong activity/program objective than at least half of the participants of the prior round), they were asked to provide a statement of rationale for why their rating was appropriate.

The data were processed in the same manner used for the first round. The rationales were sorted into those supporting higher ratings and those supporting lower ratings on each item. The project committee represented each unique rationale statement as a discrete statement for participants to read and consider in the third and final round.

For the third round instrument, the lifelong activities were presented in rank order based on data obtained in the second round. Each item was accompanied by its mean rating and interquartile range and by the rationales for rating the item higher and/or lower. Participants were asked to consider the rank order, mean ratings, and arguments for rating the item higher or lower and then to re-rate each objective in the same manner used in the second round. The

data obtained in this round were used to compile the final prioritized list of program objectives.

Data Analysis

Determining overall priorities. Mean ratings were calculated for each item at the conclusion of each survey round. Items were ranked according to mean ratings in descending order. Results from the first round represent priorities held at the onset of the study, and results from the third and final round represent the priorities established as a result of the Delphi process. The data were also separated according to subgroups specified in the design and prioritized in the same fashion.

Measuring convergence/divergence in ratings within and across groups. The dispersion in ratings for each item was calculated by averaging the absolute difference between each participant's rating and the item's median rating. Changes in dispersion from the first to the final round were represented by computing the difference in mean absolute differences from the first and third rounds on each item. The binomial test was administered to test the probability that the observed number of items with a decrease in rating dispersion would occur by chance. The procedure was used to identify a significant convergence or divergence in ratings for each item. It was applied to all participants together and then for each stakeholder group, school district, household income, gender, and region of the state.

Measuring changes in relative priorities across rounds. Rank orders for items from the first and final rounds were compared for all participants together and then by stakeholder group, school district, gender, household income, and region of the state. Wilcoxon's matched-pairs signed-ranks test was used to determine if statistically significant changes in rank order occurred. The test assesses the degree to which the distribution of objectives around their median was significantly different from the first to the third round. The Wilcoxon test accounts for the degree of change that occurs on each item.

Results

Relative Priorities of Lifelong Activities

Mean ratings of relative importance for lifelong activities were calculated by assigning zeros to lifelong activities that were unrated by the 350 participants. Ratings were averaged across each activity. The lifelong activities were then ranked according to their mean ratings in descending order. Data from the lifelong activities appear in Table 4, listed according to their final rank order by all participants. Dispersions of ratings were calculated by averaging the absolute value of the difference between each participant's rating and the item's median rating.

Table 4

Rankings, Mean Ratings, and Rating Dispersions of Lifelong Activities by Stakeholders for the First and Final Rounds

Activity	Final round			First round			Changes		
	Rank	M	Disp.	Rank	M	Disp.	Rank	M	Disp.
swimming	1	4.64	0.36	1	4.20	0.80	0	0.44	-0.44
jogging/power walking	2	4.32	0.68	2	3.06	1.81	0	1.26	-1.13
strength training	3	3.64	1.22	5	2.35	1.85	-2	1.29	-0.63
basketball	4	3.15	1.23	3	2.61	1.59	1	0.55	-0.36
tennis	5	3.06	1.14	4	2.40	1.48	1	0.66	-0.34
volleyball	6	2.85	1.10	8	1.90	1.50	-2	0.95	-0.40
golf	7	2.52	1.38	6	2.33	1.50	1	0.18	-0.12
cycling	8	2.33	1.46	9	1.76	1.68	-1	0.57	-0.22
softball	9	2.32	1.27	7	2.02	1.51	2	0.30	-0.24
dance: aerobic	10	2.11	1.43	10	1.73	1.72	0	0.37	-0.29
soccer	11	2.02	1.24	11	1.72	1.61	0	0.30	-0.37
walking	12	1.55	1.41						
skiing: cross-country	13	1.33	1.22	13	1.22	1.22	0	0.11	0.00
track: running	14	1.00	1.00	16	1.00	1.00	-2	0.01	0.01
hiking	15	0.99	0.99	12	1.30	1.30	3	-0.31	-0.31
skating: in-line	16	0.82	0.82	15	1.00	1.00	1	-0.18	-0.18
dance: social	17	0.70	0.70	17	0.86	0.86	0	-0.16	-0.16
bowling	18	0.70	0.70	14	1.04	1.04	4	-0.34	-0.34
rope jumping	19	0.69	0.69	18	0.81	0.81	1	-0.12	-0.12
swimming: life saving	20	0.68	0.68	20	0.73	0.73	0	-0.05	-0.05
gymnastics:									
tumble/floor	21	0.47	0.47	23	0.61	0.61	-2	-0.14	-0.14

Table 4 (cont.)

Activity	Final round			First round			Changes		
	Rank	<i>M</i>	Disp.	Rank	<i>M</i>	Disp.	Rank	<i>M</i>	Disp.
badminton	22	0.38	0.38	26	0.39	0.39	-4	-0.01	-0.01
step aerobics	23	0.32	0.32						
racquetball	24	0.31	0.31	24	0.59	0.59	0	-0.28	-0.28
football: flag/touch	25	0.29	0.29	19	0.80	0.80	6	-0.51	-0.51
track: field	26	0.19	0.19	30	0.35	0.35	-4	-0.16	-0.16
camping	27	0.19	0.19	21	0.66	0.66	6	-0.47	-0.47
hockey:									
ice/in-line/floor	28	0.17	0.17	27	0.39	0.39	1	-0.22	-0.22
backpacking	29	0.15	0.15	31	0.34	0.34	-2	-0.20	-0.20
dance: line	30	0.12	0.12	41	0.17	0.17	-11	-0.05	-0.05
skating: ice	31	0.12	0.12	28	0.38	0.38	3	-0.26	-0.26
dance: square	32	0.11	0.11	43	0.14	0.14	-11	-0.03	-0.03
table tennis	33	0.10	0.10	33	0.25	0.25	0	-0.15	-0.15
skiing: downhill	34	0.09	0.09	29	0.37	0.37	5	-0.28	-0.28
swim: WSI	35	0.09	0.09	40	0.17	0.17	-5	-0.08	-0.08
self-defense	36	0.07	0.07						
tai chi	37	0.06	0.06	44	0.13	0.13	-7	-0.08	-0.08
fishing: bait casting	38	0.05	0.05	32	0.26	0.26	6	-0.20	-0.20
Frisbee: skills/games	39	0.05	0.05	36	0.21	0.21	3	-0.16	-0.16
martial arts: karate	40	0.05	0.05	37	0.20	0.20	3	-0.14	-0.14
canoing	41	0.05	0.05	25	0.41	0.41	16	-0.36	-0.36
archery	42	0.04	0.04	34	0.24	0.24	8	-0.19	-0.19
wrestling	43	0.04	0.04	42	0.15	0.15	1	-0.11	-0.11
skating: roller	44	0.04	0.04	35	0.22	0.22	9	-0.19	-0.19
orienteering	45	0.04	0.04	38	0.19	0.19	7	-0.15	-0.15
team handball	46	0.04	0.04	53	0.08	0.08	-7	-0.05	-0.05
dance: modern	47	0.03	0.03	56	0.06	0.06	-9	-0.03	-0.03
dance: creative	48	0.03	0.03	50	0.10	0.10	-2	-0.08	-0.08
martial arts: others	49	0.02	0.02	55	0.07	0.07	-6	-0.04	-0.04
crew	50	0.02	0.02	80	0.01	0.01	-30	0.01	0.01
card games	51	0.02	0.02						
snowshoeing	52	0.02	0.02						
gymnastics:									
apparatus	53	0.02	0.02	58	0.06	0.06	-5	-0.04	-0.04
dance: folk/ethnic	54	0.02	0.02	39	0.17	0.17	15	-0.15	-0.15
speedball	55	0.02	0.02	64	0.05	0.05	-9	-0.03	-0.03
handball	56	0.01	0.01	46	0.11	0.11	10	-0.10	-0.10
lacrosse	57	0.01	0.01	71	0.03	0.03	-14	-0.02	-0.02
fishing: spin casting	58	0.01	0.01	45	0.12	0.12	13	-0.11	-0.11
sailing	59	0.01	0.01	48	0.11	0.11	11	-0.10	-0.10

Table 4 (cont.)

Activity	Final round			First round			Changes		
	Rank	<i>M</i>	Disp.	Rank	<i>M</i>	Disp.	Rank	<i>M</i>	Disp.
shuffleboard	60	0.01	0.01	62	0.05	0.05	-2	-0.04	-0.04
kayaking	61	0.01	0.01	65	0.04	0.04	-4	-0.03	-0.03
hockey	62	0.01	0.01	84	0.01	0.01	-22	0.00	0.00
horseshoes	63	0.01	0.01	51	0.09	0.09	12	-0.09	-0.09
skiing: water	64	0.01	0.01	68	0.04	0.04	-4	-0.03	-0.03
hockey: field	65	0.00	0.00	49	0.11	0.11	16	-0.11	-0.11
shooting: riflery	66	0.00	0.00	57	0.06	0.06	9	-0.06	-0.06
boxing	67	0.00	0.00						
walking: race	68	0.00	0.00	22	0.61	0.61	46	-0.61	-0.61
horseback riding	69	0.00	0.00	47	0.11	0.11	22	-0.11	-0.11
gymnastics: rhythmic	70	0.00	0.00	52	0.09	0.09	18	-0.09	-0.09
fishing: fly casting	71	0.00	0.00	54	0.07	0.07	17	-0.07	-0.07
climbing (rock)	72	0.00	0.00	59	0.06	0.06	13	-0.06	-0.06
diving: SCUBA	73	0.00	0.00	60	0.06	0.06	13	-0.06	-0.06
Frisbee: ultimate	74	0.00	0.00	61	0.06	0.06	13	-0.06	-0.06
paddleball	75	0.00	0.00	63	0.05	0.05	12	-0.05	-0.05
pickleball	76	0.00	0.00	66	0.04	0.04	10	-0.04	-0.04
martial arts: judo	77	0.00	0.00	67	0.04	0.04	10	-0.04	-0.04
diving: springboard	78	0.00	0.00	69	0.03	0.03	9	-0.03	-0.03
shooting: clays/trap	79	0.00	0.00	70	0.03	0.03	9	-0.03	-0.03
dance: jazz	80	0.00	0.00	72	0.03	0.03	8	-0.03	-0.03
dance: tap	81	0.00	0.00	73	0.02	0.02	8	-0.02	-0.02
fencing	82	0.00	0.00	74	0.02	0.02	8	-0.02	-0.02
water polo	83	0.00	0.00	75	0.02	0.02	8	-0.02	-0.02
croquet	84	0.00	0.00	76	0.02	0.02	8	-0.02	-0.02
dance: ballet	85	0.00	0.00	77	0.02	0.02	8	-0.02	-0.02
diving: skin	86	0.00	0.00	78	0.02	0.02	8	-0.02	-0.02
bocce ball	87	0.00	0.00	79	0.01	0.01	8	-0.01	-0.01
swimming:									
synchronized	88	0.00	0.00	81	0.01	0.01	7	-0.01	-0.01
tennis: platform	89	0.00	0.00	82	0.01	0.01	7	-0.01	-0.01
tetherball	90	0.00	0.00	83	0.01	0.01	7	-0.01	-0.01
shooting: other	91	0.00	0.00	85	0.01	0.01	6	-0.01	-0.01
squash	92	0.00	0.00	86	0.01	0.01	6	-0.01	-0.01
aerial darts	93	0.00	0.00	87	0.01	0.01	6	-0.01	-0.01
rugby (modified)		0.00	0.00				0	0.00	0.00
korfball		0.00	0.00				0	0.00	0.00
snowboarding		0.00	0.00				0	0.00	0.00

According to the results summarized in Table 4 for all respondents, the single most important activity for students to master through participation in a quality PE program in Michigan is competency in swimming. The activity's mean rating of 4.64 was 0.32 higher than the next activity, and its final mean rating dispersion of 0.36 was nearly half as large as any other of the highest rated activities. Of the first 11 activities, swimming, jogging/power walking, strength training, cycling, and aerobic dance can be classified as fitness oriented, and basketball, volleyball, softball, and soccer are more skill and team oriented.

Of the 96 lifelong activities listed on the survey in the first round, 64 received ratings in the final round. Walking and step aerobics were added after the first round as a result of participants' recommendations, even though walking is included in the activity of jogging/power walking and step aerobics is a form of aerobic dance. Because of the difficulty in providing effective rationales to anonymous contributors as to why their suggestions were disregarded, it was decided to include them among potential activities in subsequent rounds. Self-defense, card games, snowshoeing, and boxing were also added per participants' suggestions.

Convergence in Priorities Within and Across Groups

The overall results for lifelong activities from Table 4 show that the number of activities receiving a rating decreased from 81 activities in the initial round to 64 activities in the final round. Only 37 lifelong activities received ratings by 10 or more of the 350 respondents who completed this section of the survey. Of those that received ratings in the first round, the mean rating dispersion increased on two activities (track: running and crew), stayed the same for two other activities (cross-country skiing and hockey), and decreased on the other 82 (95.3% of the activities).

The binomial test was used to test the probability that the observed number of lifelong activities that decreased in rating dispersion from the first round to the third round would occur by chance. The results, appearing in Table 5 for all participants, indicate that the convergence obtained is highly significant ($p < .001$). The number of lifelong activities that decreased in rating dispersion for each subgroup are also displayed in Table 5. The ratings of lifelong activities also indicate a significant convergence within all stakeholder groups

and all school districts and across all household incomes, regions of the state, and genders.

Table 5

P Values Associated With the Probability of Rating Convergence on 87 Lifelong Activities

Grouping category	No. of lifelong activities	<i>p</i>
Overall	84	<i>p</i> < .001
Stakeholder Groups		
central administrator	77	<i>p</i> < .001
building administrator	81	<i>p</i> < .001
classroom teacher	80	<i>p</i> < .001
physical education teacher	82	<i>p</i> < .001
parent	77	<i>p</i> < .001
school board member	82	<i>p</i> < .001
student	72	<i>p</i> < .001
recreation director	77	<i>p</i> < .001
intermediate school district	74	<i>p</i> < .001
subject matter expert	73	<i>p</i> < .001
MAHPERD delegate	80	<i>p</i> < .001
legislator	75	<i>p</i> < .001
School District		
A	80	<i>p</i> < .001
B	71	<i>p</i> < .001
C	76	<i>p</i> < .001
D	85	<i>p</i> < .001
E	75	<i>p</i> < .001
F	84	<i>p</i> < .001
G	77	<i>p</i> < .001
H	75	<i>p</i> < .001
I	81	<i>p</i> < .001
J	74	<i>p</i> < .001
K	80	<i>p</i> < .001
L	80	<i>p</i> < .001
M	73	<i>p</i> < .001
N	76	<i>p</i> < .001
O	77	<i>p</i> < .001

Table 5 (cont.)

Grouping category	No. of lifelong activities	<i>p</i>
Household Income		
< \$15 K	87	<i>p</i> < .001
< \$30 K	81	<i>p</i> < .001
< \$45 K	80	<i>p</i> < .001
< \$70 K	87	<i>p</i> < .001
> \$70 K	79	<i>p</i> < .001
Region		
North	78	<i>p</i> < .001
West	64	<i>p</i> < .001
Central	80	<i>p</i> < .001
East	80	<i>p</i> < .001
Gender		
female	75	<i>p</i> < .001
male	80	<i>p</i> < .001

Change in Relative Importance Within and Across Groups

Changes in rankings of lifelong activities by participants between the first and third rounds are portrayed in Table 4. Changes in rank must be observed with caution because of the addition of lifetime activities included after the first round. For example, the ranking for every activity appearing after boxing (ranked 67) increased six places because of the inclusion of six activities after the first round (walking, step aerobics, self-defense, card games, snowshoeing, and boxing). The total increase in this case is not related to changing opinions or priorities.

Wilcoxon's matched-pairs signed-ranks test was used to determine if a statistically significant change in rank order occurred. The test assesses the degree to which the distribution of lifetime activities around their median is significantly different from the first to the third round. The Wilcoxon test accounts for the degree of change that occurs on each item. The *p* values from the Wilcoxon test appear in Table 6.

The tests indicate the rank order of the entire list of lifelong activities for the participants as a whole changed significantly from the first and final round ($p < .001$). With respect to stakeholder groups, the rank order from the first and final rounds was significantly different at the .01 level for building administrators, classroom teachers, PE teachers, parents, and school board members. The rank order changed significantly for only one of the 15 participating school districts (School O) at the 0.01 level and three others (A, B, G) at the 0.05 level. The rank order changed for those with household incomes between \$30,000 and \$45,000 ($p < .05$) and for those with household incomes of over \$45,000 ($p < 0.01$). The order changed for all regions of the state except West Michigan ($p < 0.01$) and for males and females ($p < 0.01$).

Information about significant changes in rank order is useful to justify the benefits of sharing information when considering program inclusions. It may not be useful in the practical process of selecting lifetime activities to include in a PE program because districts lack the time and resources to address so many lifelong activities effectively. Accordingly, a practical approach to analyzing changes in relative priority would be to analyze the 15 highest ranked activities (excluding walking, which is embedded in jogging/power walking).

The 15 highest ranked activities appear in Table 4. Analysis of the top 15 lifelong activities shows few large changes in rank order among the 15 highest ranked activities. Fourteen activities remained among the top 15 in both rounds. Five activities maintained their ranking from the first to the final round, and five changed their rank one position, four moved two positions, and one moved three places. In all, 10 of the 15 highest ranked activities changed in order.

The Wilcoxon test was administered to determine the significance of the changes in order of the 15 highest ranked activities. The p values for the tests appear in Table 6. The change in rank order of the first 15 activities for all participants as a whole was more than what would have been attributed to chance ($p = .0045$). Among stakeholder groups, changes for central building administrators, classroom teachers, and community recreation directors were significant at the 0.01 level, whereas changes for building administrators, intermediate school district representatives, PE teachers, and parents were significant at the 0.05 level. The p values were below

.05 for all school districts except one (G). The changes in order were significant at $p = 0.05$ for all levels of household income except those earning less than \$15,000 ($p = .7695$), both genders, and all regions of the state except West Michigan.

Table 6

P Values for Changes in Rankings of Lifelong Activities From the First and Third Rounds

Grouping category	All activities	First 15 activities
All Participants	$p < .001$.0045
Stakeholder Groups		
central administrator	.0745	.0045
building administrator	.0144	.0199
classroom teacher	.0046	.0064
intermediate school district	.9615	.0268
legislator	.2473	.0571
MAHPERD delegate	.4180	.0571
physical education teacher	.0005	.0231
parent	.0082	.0231
recreation director	.4712	.0054
school board member	.0025	.0736
subject matter expert	.1060	.0738
student	.1350	.2681
School Districts		
A	.0462	.0231
B	.0362	.0309
C	.0691	.0146
D	.0531	.0171
E	.1224	.0309
F	.0636	.0076
G	.0146	.0884
H	.0959	.0115
I	.0571	.0468
J	.0900	.0356
K	.3769	.0022
L	.2265	.0018
M	.4665	.0184
N	.1361	.0268
O	.0059	.0184

Table 6 (cont.)

Grouping category	All activities	First 15 activities
Region		
North	.0002	.0268
West	.2196	.0691
Central	.0042	.0076
East	.0012	.0022
Gender		
female	.0002	.0106
male	.0007	.0064

Discussion

Results of the Prioritization Process

The most practical finding in this study is the overall priorities assigned to lifelong activities and program objectives by Michigan stakeholders. The credibility of this information is enhanced to the degree that priorities held by stakeholders converged from the first to the final round. Convergence in priorities across stakeholder groups implies increased agreement. Increased agreement in turn may result in increased advocacy for programs that consist of high-priority content and may provide insight to consumer needs, values, and interests.

The three lifelong activities held in highest regard by all participants are competence in swimming, jogging/power walking, and strength training, respectively (see Table 4). Swimming and jogging/power walking were ranked first and second, respectively, in both the first and the final rounds. The mean rating for strength training is .49 higher than the fourth ranked activity, which substantially separates it and the two higher ranked activities from the remaining lifelong activities.

Of the first 12 activities (excluding walking) from Table 4, seven could be categorized as individual activities and five could be dual or team in nature. Swimming is unique because its utility includes fitness, sport, safety, and recreation. It also provides a unique bridge to safe participation in many other water sports. Six activities (swim-

ming, jogging/power walking, strength training, cycling, aerobic dance, and cross-country skiing) are activities commonly used to achieve or maintain personal fitness level (Physical Activity Council, 2014). The high ratings are consistent with the growing body of evidence heralding the benefits of participation in regular physical activity.

The combination of the first 12 lifelong activities is varied enough to meet a wide range of criteria (e.g., cost, indoor/outdoor, climatic, large/small group, variable intensity). Providing learners with a varied set of experiences is critical. According to Sherwood and Jeffery (2000), physical activity is a complex and dynamic process in which individuals typically move through various phases of exercise participation. From an educational perspective then, it makes sense conceptually to equip graduates with a battery of diverse activities that enable them to transition into different activities as their life circumstances change.

Effectiveness of the Procedure

Because the curriculum construction process is a sociopolitical process, an integral part of curriculum construction should include building consensus among stakeholder groups (Curry & Temple, 1992). The Delphi technique provides a systematic procedure for achieving a consensus within a controversial sociopolitical arena of debate (Goodlad, 2004; Goodson, 2005; Kirst & Walker, 1971; Levin, 2008). Using the Delphi technique to guide the selection of curricular content is justified when the procedure meets two criteria. First, the technique needs to facilitate a convergence in opinions. A convergence in opinions results in greater support of and confidence in the results across stakeholder groups. Second, there should be change in the priorities obtained as a result of the process. The Delphi technique is a rigorous and time-consuming procedure when used to prioritize potential content for educational programs. If the process of sharing information and considering the opinions of others does not result in changes in priorities held by stakeholders, a simple survey technique would suffice.

This study resulted in a convergence in ratings of lifelong activities. The number of lifelong activities that received a rating in the first and final rounds decreased by 21%. The dispersion in ratings on

each activity also decreased on 95.3% of the lifelong activities. There was convergence on a majority of lifelong activities for all stakeholder groups, for all school districts, within all regions of the state, for all divisions of household income, and for males and females.

These data clearly support the notion that use of the Delphi technique can increase agreement in ratings and change stakeholder priorities when assigning relative value to lifelong activities and program objectives suitable for inclusion in PE programs. This finding supports, therefore, the use of the Delphi technique as a viable process for establishing content priorities as part of an eclectic model for developing quality PE programs.

Limitations

The application of these findings regarding what stakeholders hold most important to teach as lifelong activities in PE programs is limited, in this case to programs in the state of Michigan. Stakeholders across America hold similar values and expectations of their educational programs as do those residing in Michigan, but differences can be assumed to exist. Factors contributing to overall priorities may include climate and terrain as well as socioeconomic status.

Results from this study are limited in the representation of stakeholder groups, specifically members of the legislature and representatives from the Departments of Education and Community Health. Two participants from the legislature completed all phases of the study, and no participants completed the study from the Departments of Education or Community Health. The lack of participation limits the generalizability of the study across these populations of stakeholders.

Conclusion

The purpose of the study was to identify stakeholders' priorities regarding the inclusion of lifelong activities in K–12 PE programs in Michigan. The stakeholders' priority ranking of lifelong activities resulted in swimming, jogging/power walking, and strength training as the most important activities for inclusion in K–12 PE programs in Michigan. The highest rankings include a balance of fitness-oriented and skill/team-oriented activities.

The Delphi technique is a consensus-building process that is frequently used in the curriculum development process; therefore, it is most suitable for this research. Engaging stakeholders in a modified Delphi procedure resulted in greater agreement in content priorities with respect to potential lifelong games, sports, and activities. The process resulted in a convergence in ratings across stakeholders and changes in relative order. Consequently, use of the Delphi can increase the likelihood that content included in PE programs better represent the priorities held by informed stakeholders. With regard to the procedure itself, special care must be taken to emphasize the importance of participation in stakeholders who are not directly affected by the results. Face-to-face invitation and personal contact through the procedure may result in larger numbers completing the study.

The potential applications of this study occur on three levels. First, the results from the study can guide policy and program improvement in general terms. Although this study does not represent a definitive set of priorities for any single school district, it provides the best information available about what informed stakeholders across Michigan can agree upon as being the most important lifelong activities to teach in Michigan's PE programs. Focusing on creating quality materials and assessments on activities deemed of highest priority in this study will provide the greatest rate of return in achievement for the time and resources invested in their creation. The identification of what is deemed most important across the entire state assists with professional development as well. If programs across a state are more similar in content than dissimilar, greater collaboration can occur within and across districts.

Teacher preparation programs can benefit through use of these results in preparing preservice teachers as well. No teacher preparation program can prepare future teachers to teach every activity effectively that they will be required to teach. The results from this study can help those programs decide which ones to focus on the most.

At the local level, the procedure used in this study can be used to navigate through what will undeniably be a sociopolitical process. This procedure demonstrated the ability to engage a large number of subjects from diverse backgrounds and contexts to a greater degree

of agreement on what is most important to teach. Results by a significant number of respected individuals across the community can educate stakeholders on the potential value of specific activities in the curriculum. Greater agreement on what to teach can result in a better aligned curriculum, resulting in more competent graduates.

Because participants in this study were located exclusively in Michigan, the degree to which the findings would apply in other locations across the country is questionable. The process used in deriving the findings, however, would be beneficial for each state's organization to complete. The results specific to that state can result in the same applications as for the state of Michigan.

All stakeholder groups also need educated on the importance of systematic content selection. Stakeholders who understand the importance of appropriate content and the selection of it will become better advocates for quality programs. It is reasonable to expect that informed stakeholders will have a greater commitment to the program and to participating in the rigors of content selection.

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