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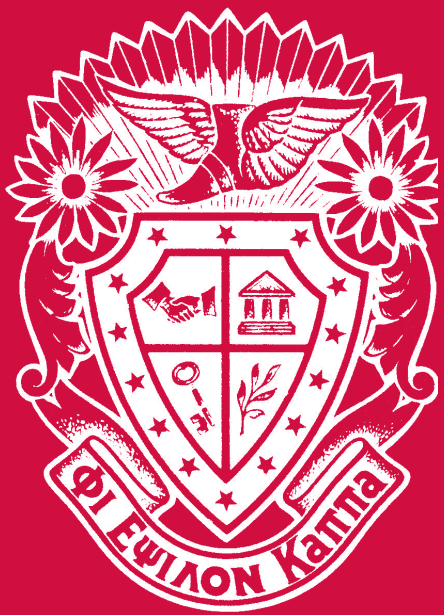

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ADAPTED PHYSICAL EDUCATION

Modeling the Elements of a Training Plan Aimed at Physical Education Teachers When Working With Students With Disabilities: The Case of Cordoba, Spain

Ignacio González López and David Macías García

Abstract

The aim of this article is to respond, by means of a nonexperimental empirical study, to the training professional demands of primary education teachers, who understand that their professional undertaking must be fully inclusive of all student profiles. By means of a scaled assessment questionnaire, this article describes the training needs of a representative and standardized group of teachers in the Spanish city of Cordoba. Additionally, through the application of factor analysis, it channels these demands into training modules that should guide specific teaching activities in the future. The principal components extracted understand continuing professional development through five spheres of actions: the teaching of physical education, education and teaching tools, working strategies in the classroom, teaching abilities, and information communication technologies resources. These basic training lines pursue the triple goal of ensuring the professional development of teachers, promoting academic success among all students, and fostering quality teaching.

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The notion of "which teachers and for which students" can be found repeatedly at the heart of the different education reforms passed as a result of the political changes that have taken place in recent decades in Spain. Without digression with regard to the suitability of the initial preservice training teachers received and whether it responds appropriately to social demands, in-service teachers are the subject of study and research in relation to their professional development (Imbernón, 1994; Manzanares & Galván, 2012; Marcelo, 2002) with a view toward achieving quality teaching, understood as the interconnection of all the core elements of the education system based on the principles of functionality, efficacy, and efficiency (De la Orden, 1998).

New social demands that have emerged from new forms of social coexistence are calling for teaching models that respond effectively to the needs of all students (Ainscow et al., 2001). In this regard, the current education legislation based on the development of key competencies to guarantee student success (Ley Orgánica, 2006) emphasizes the globalism of individual capacities and the need to reconstruct contents from less academic perspectives and with a greater focus on problem solving (Álvarez et al., 2010), where students become the lynchpin around which the teaching process revolves, endowing them, according to Puig and Martín (2007), with autonomy and responsibility. Competency-based training and education are geared more toward action and linked to experience, reflecting on and observing actual performance in problematic situations (R. García & Castro, 2012). In this professional scenario, teachers are moving away from a model of teaching centered on the transmission of knowledge toward a role based on the facilitation of experiences through the principles of collaborative learning (Sarramona, 2014).

Within this framework, the continuing professional development of teachers becomes one of the most relevant aspects to improve education practice (Jiménez, 2007), since it opens up the teacher's mind to new ways of acquiring knowledge and generates interest in understanding their professional practice. This is where Imbernón (2007) argues that this mode of training, this "constant attitude of learning" (p. 45), is an extraordinary professionalizing medium, which aims to optimize the profession of education.

From this perspective, Cardona (2008) understands that, in the continuing professional development of teachers, customary teaching practices must be reconsidered and methodologies must be adapted to classroom circumstances; hence, the achievement of academic success by the students is considered a necessity.

For primary physical education teachers, their professional development has moved from the solitude of the specialism within its disciplinary sphere to satisfaction through the generation of collaborative teams that put interdisciplinary teaching into motion to encourage holistic development. Continuing professional development for these teachers has also been the subject of different studies that pursue the goal described here (Calderón & Martínez de Ojeda, 2014; Fraile, 1993; Hortigüela et al., 2015; Zapatero et al., 2018).

Within this type of training, certain demands emerge when physical education lessons must encompass diversity. In other words, they must promote inclusive spaces that guarantee quality teaching for all students. Moriña (2008) proposes that continuing professional development must respond to the real needs of these teachers, emphasizing teaching innovation and reflection on teaching practice and based on scientific and didactic upskilling, understanding this as an awareness strategy that generates a positive attitude, which will allow the education system to evolve toward levels of excellence (Ezquerra et al., 2015).

Within this context, Fraile (1995) proposed that physical education teachers should move toward more active methods of teaching and learning and that they should train through research-action, understanding that the task of designing teaching materials, lesson activities, and evaluation systems should be carried out by means of continuous collaboration between all members of the school community, where each member takes on responsibilities and is involved in decision-making processes. Muntaner (2010) shares this mode of training, stressing the need for the involvement of the entire institution in the shared responsibility of ensuring the success of all students and allowing teachers to examine, by means of empirical procedures, their professional actions and their different defining elements (methodology, tasks, resources, attitudes, beliefs, theories, roles, coordination, etc.), seeking positive results for one and all.

Along these lines, Sicilia and Delgado (2002) and Esteve (2008) insist on the need to find new formats within the continuing professional development of physical education teachers, geared toward reflection and practice, as well as the development of competencies that define the professional profile of these teachers from the perspective of effective teaching.

At this point, it is important to refer to the order issued in 2014 that approves Andalusia's Plan for the Continuing Professional Training of Teachers (Orden de 31 de julio de 2014, 2014). This plan sets out strategic areas of action with regard to teacher training, with a view to supporting the implementation of the priority lines of education within this region. Priority Line 1, "Teacher training linked to the improvement of education practices, performance, and the academic success of all students," deals with the issue of "inclusive schooling for equality and equity," which is described on the basis of two core elements:

- **addressing diversity:** Continuing professional development in Andalusia has helped to change the perspective of teachers in accordance with the model of inclusive schooling (Booth & Ainscow, 2002) and has met the demands of teachers within this sphere by launching initiatives that contribute to the development of the professional teaching competencies required in accordance with this model.
- **harmonious coexistence and equality:** The conflicts generated within the school context occasioned by the coincidence in space and time of people from different cultural backgrounds, different ideologies, with functional diversity, can be turned into opportunities to learn to coexist in harmony (Uruñuela, 2012).

These elements, which foreshadow teaching quality, are promoted among teachers through two training avenues in accordance with the contexts of action in which they develop. The first such avenue encompasses training projects within schools, which are understood as an initiative associated with the education project pursued by schools aimed at responding to the training needs of a broad collective of faculty members. These demands are detected on the basis of a diagnosis of training requirements, are understood as a shared process of analysis and reflection, and are linked to processes of

self-assessment and improvement in schools (D'Angelo & Rusinek, 2014). The second avenue pertains to working groups, in other words, people who get together, collaborate, and interact for a particular purpose. These individuals have complementary skills and knowledge, and they are committed to a shared responsibility; hence, there is an interdependence of parties that fosters actions linked to their professional reality (Velázquez et al., 2014).

In short, to foster teaching that promotes education for all (*Conferencia Mundial*, 1990), it is fundamental to adopt the dynamic that characterizes an inclusive school; in other words, to favor the professional development of teachers and to build, from a collaborative perspective, what Cuesta (1999) refers to as a professional community. This inclusive professional community works together when planning work to meet all the needs and tasks that arise within the school, designing action plans with regard to specific cases; drawing up an integrated and globalized curriculum between all areas; contrasting different points of view; analyzing life narratives, supported by the advice of specialists for specific situations; and working with the community to conduct a comprehensive evaluation of the school. All of this will promote the success of all students (Ainscow, 2001). As indicated by Imbernón (2005), the aim is to encourage teachers to truly reflect on their work in the classroom and, as highlighted by Soto (2002), to minimize any discrepancy between the classroom and the student's social context. Therefore, in the continuing professional development of teachers, it is important that teachers work not only on internal knowledge with regard to the school itself but also on external knowledge through different formats based on study, innovation, and research (Cardona, 2008), which would generate significant learning about the contents received and improve professional intervention.

Method

The aim of this paper is to describe, analyze, and systematize the reality that occurs within physical education classes during primary education, when teachers work with students who have a physical disability.

The research design is grounded in a descriptive methodology, which aims to provide an in-depth and exhaustive understanding of a unique reality (Arnal et al., 1992). This design was chosen because

of its potential in terms of obtaining basic information for decision-making and generating knowledge about situations, attitudes, and behaviors. Specifically, the methodological design is based on one of the descriptive types of method, the survey-type study, responding to problems in descriptive terms and also with regard to linking variables, thus ensuring the collation of in-depth information (Galindo, 1998).

Sample

The sample population was made up of physical education teachers (primary education) in the city of Cordoba, in the 2016–2017 school year. Fifty-six teachers took part in this study, representing 74.7% of the total population ($N = 75$). The whole group was contacted, but only 56 responded. This group was dominated by male teachers (70.9% vs. 29.1% female). The average age of the participants was 37.55 ($SD = 6.388$), with the youngest participant being 26 and the oldest 53. Their teaching experience ranged from 2 to 25 years.

Instruments

For the objective, set out here, an instrument was designed ad hoc, owing to the fact that the scientific literature did not provide any valid instruments that could achieve the proposed research goals. The designed instrument comprised two dimensions. The first refers to the characteristics of the participating teacher (gender, age, highest university qualification held, participation in training activities, reasons for participating in training activities, number of years' teaching experience in primary education and physical education, level of education at which they teach, teaching in other subjects, and presence of students with disabilities in their lessons). The second section, designed in accordance with a 5-point scale evaluation protocol (1 = *completely disagree* and 5 = *completely agree*), includes 18 elements that compile information about training in curricular adaptations of the program or of any type of activity, training in the creation of material resources for students, working with students with a disability, verbal and nonverbal communication techniques, and alternative communication systems. It also compiles information about the training demands made by teachers in the area of physical education in aspects such as evaluation of learning among

people with disabilities, creation and use of information and communication technologies, civic responsibilities in schools, first aid, social skills, education research, and activities about the four specific content blocks in the area of physical education. This information aligns with the provisions set out under the aforementioned order issued in 2014 by Andalusia's Regional Government (Orden de 31 de julio de 2014, 2014), which approves Andalusia's III Continuing Professional Development Plan for Teachers.

After the launch of a pilot of 30 teachers from the city of Seville, a study of the internal consistency of the measures obtained showed that the total alpha coefficient for the scale (.904) indicated a high correlation and a high level of stability in the responses, taking into consideration the interpretation established by Huh et al. (2006). The behavior of each of the items on the scale yielded alpha coefficients in excess of .830 in each case, confirming that each of the elements contained on this questionnaire measures a portion of the trait studied and, therefore, that the instrument offers reliability. Furthermore, item discrimination coefficients (Ebel & Frisbie, 1986) were calculated and the content validity of the scale elements were estimated. The sum total was recoded into three groups (high: 35–66, medium: 67–72 and low: 73–86), with the application of Student's *t* test for independent samples between low and high groups, and revealed that 100% of the items ($p < .05$) possess acceptable discriminatory power and guarantee the validity of the same.

Results and Discussion

Before a rigorous examination of the results was conducted, it was verified that the variables were normally distributed, in spite of the small sample size. As Table 1 shows, the values recorded for the coefficients of asymmetry (< 3.00) and kurtosis (< 8.00) indicate univariate normality of the data (Etxeberría & Tejedor, 2005). Furthermore, the goodness of fit of the statistical model underlying the observations was established, assuming a discrete character in the scaled values by means of the chi-square test, significant in all elements with the exception of number 8, which was nonetheless maintained owing to its significance as a formative element in primary education (Navarro et al., 2015). This indicates that the data are distributed over a normalized continuum of observations and can be generalized to the reference population.

Table 1
Evaluation of Training Demands by Teachers and Fit of the Measures Obtained

				Goodness of fit		Asymmetry		Kurtosis	
Training demands		***M***	***SD***	χ^2	***p***	**Coef.**	***SE***	**Coef.**	***SE***
Item 1	I have specific training in the curricular design of a Significant Curricular Adaptation	3.87	1.156	21.091	.000	-.789	.322	-.276	.634
Item 2	I need specific training in the creation and use of materials and resources for the area of Physical Education	3.60	1.180	12.182	.016	-.424	.322	-.865	.634
Item 3	I would attend specialist training courses about people with physical disabilities	4.07	0.836	17.509	.001	-.338	.322	-.976	.634
Item 4	I need specific training in verbal and nonverbal communication techniques and alternative communication systems	3.95	0.989	29.091	.000	-.841	.322	.345	.634
Item 5	I would attend training activities related with learning evaluation systems for students with physical disabilities	4.33	0.840	56.909	.000	-.664	.322	.894	.634
Item 6	I believe that training focused on the educational and didactic uses of information and communication technologies to work with students with disabilities is necessary	3.45	1.199	15.818	.003	-.625	.322	-.448	.634
Item 7	Specific training about the civil and penal responsibilities of teachers is necessary	3.96	0.881	14.164	.003	-.433	.322	-.585	.634
Item 8	I need training in contents related to first aid at school	3.11	1.370	3.455	.485	-.069	.322	-1.113	.634
Item 9	Adequate training in social skills is necessary to the teaching profession	3.75	1.004	31.818	.000	-.940	.322	1.188	.634
Item 10	I need specialized training in motor skills	3.53	1.152	14.909	.005	-.408	.322	-.831	.634

Table 1 (cont.)

Training demands		*M*	*SD*	Goodness of fit		Asymmetry		Kurtosis	
				χ^2	*p*	Coef.	*SE*	Coef.	*SE*
Item 11	Basic training in education research is necessary	3.54	1.299	9.333	.050	-.567	.325	-.787	.639
Item 12	Specialized training is required in the design of education innovation projects	3.80	1.026	21.273	.000	-.543	.322	-.314	.634
Item 13	I would attend training courses related with mediation systems to improve coexistence in the classroom	4.05	0.870	40.545	.000	-.985	.322	1.589	.634
Item 14	Courses are needed that explore the utility of artistic-expressive physical activities to work with students with physical disabilities	4.04	0.999	32.909	.000	-1.115	.322	1.349	.634
Item 15	Courses are needed that explore the utility of motor skills to work with students with physical disabilities	3.87	1.090	28.364	.000	-1.076	.322	.847	.634
Item 16	Courses are needed that explore the utility of image and body perception to work with students with physical disabilities	4.20	0.931	25.945	.000	-1.561	.322	3.276	.634
Item 17	Courses are needed that explore the utility of physical activity and health to work with students with physical disabilities	3.75	1.126	19.455	.001	-.685	.322	-.012	.634
Item 18	I would attend training courses related with popular and alternative games to work with students with physical disabilities	4.02	0.913	49.636	.000	-1.402	.322	2.938	.634

The descriptive statistics show that teachers show good willingness to engage in training in subjects related with physical education and working with students with physical disabilities, and furthermore, they see training in the adaptation of curricular elements of the program as being acceptable with a view to improving the learning process of all students.

Because the ambition of this article was to design continuing professional development strategies adapted to the demands put forward by this group of teachers, and because it sought to endow the future training model with construct validity, exploratory factor analysis (Pett et al. 2003) was applied to the information complied, with a view to reducing the dimensionality of data to study relations between the proposed variables and see if there is a dimensional structure between them that would allow for the ascertainment of key formative points that should guide this training. One requirement that must be fulfilled to apply this technique is that the variables must be concomitant. In this respect, it is worthwhile to study the matrix of correlations between all the elements of the instrument to decide whether it is appropriate to subject it to a process of factorization (Comrey, 1973). The existence of high correlations in this matrix indicates the existence of interdependence between them, which supposes that the use of this technique is advisable. Its study is determined by various statistical procedures that, once applied, would determine whether factor analysis should be applied. These techniques and their results are as follows:

1. **identification of the correlations matrix determinant:** This indicates the degree of correlations between the variables. As indicated by Bisquerra (1989) and E. García et al. (2000), a very low determinant supposes the existence of variables with very high correlations, which indicates that the data could be suitable for factor analysis. In this case, the determinant obtained an extremely low value of $3.148 \bullet 10^{-5}$, which indicates the existence of high correlations between the variables, thus enabling the application of this technique.
2. **Bartlett's test of sphericity:** This test verifies the hypothesis that the correlations matrix is an identity matrix, a matrix whose main diagonal is made up of 1s (item's correlation with itself) and the rest are 0s (null variables). It involves

estimating chi-square values based on a transformation of the correlations matrix (Snedecor & Cochran, 1989). The value obtained is 478.575 that, with a value of $p < .01$, has proven to be significant, suggesting that the null hypothesis should be rejected, which indicates that the correlations matrix is not an identity matrix, with significant, probably high correlations, given that the value yielded by the test is statistically high. This indicates that the data matrix is adequate for factor analysis.

3. **anti-image correlations:** These indicate the strength of relations between two variables, eliminating the influence of others. The coefficients of the anti-image correlations matrix must be low outside of the main diagonal for the sample to be subjected to factor analysis. A study of this matrix shows that the correlation coefficients are largely less than .05 (Martín et al., 2007), which permits factor analysis and allows the 18 items to be summarized in the form of factors.
4. **KMO test for sampling adequacy, by Kaiser–Meyer–Olkin:** This test compares the magnitudes of the correlation coefficients observed in the correlation matrix with the magnitudes of the correlation coefficients observed in the anti-image correlation matrix. This value was .683 (> .5), a good value that indicates the suitability of factor analysis, since the correlations between pairs of variables cannot be explained by the other variables (Kaiser, 1974).

As the tests carried out show, the data available are suitable for the application of the test. Hence, we were in a position to determine the minimum number of common factors capable of satisfactorily reproducing the correlations observed between the variables. We carried out this process by means of the principal components extraction method (E. García et al., 2000).

Given that the main objective is to explain the common variance between the variables (communality) with the fewest number of factors (parsimony), the first task is to verify, by studying the communalities, that all the extracted components explain the total variability of the matrix (Barbero et al., 2011). The study of these communalities yielded values in excess of .506, which indicates that the extracted components explain all the variables in the study.

Subsequently, in accordance with the rule of retaining components with eigenvalues greater than unity, five factors had a total explained variance of 68.086%, which facilitated subsequent tasks, in which the technique assumed their effectiveness (see Table 2).

Table 2
Percentage of Total Variance Explained by Each Factor Resulting From Factor Analysis

Factor	Eigenvalue	% explained variance	% accumulated
1	3.577	19.875	19.875
2	2.400	13.334	33.208
3	2.312	12.844	46.053
4	2.012	11.180	57.232
5	1.954	10.853	68.086

The correlations matrix between the different components extracted (see Table 3) shows that the linear association is high and significant between all the components with the exception of the association between Factors 2 and 5.

Table 3
Correlation Matrix for the Components

Factor	1	2	3	4	5
1	1	.330**	.356**	.455**	.418**
2	.330**	1	.239*	.293*	.005
3	.356**	.239**	1	.917**	.273*
4	.455**	.293*	.917**	1	.281*
5	.418**	.005	.273*	.281*	1

** Correlation significant at level .01.
* Correlation significant at level .05.

Varimax rotation (recommended by Kim & Mueller, 1978), which extracts orthogonally the value of the variance correlation in the factor (zero correlation between the factors), was used to make interpretation of the components more straightforward. By determining the relations between each factor and the variables studied,

we can ascertain the content of each factor, thus facilitating their interpretation. As a result of the rotation, a rotated components matrix was obtained, made up of five components. To interpret them, we examined the saturations shown by each of the elements that compose them. Elements that yielded saturation in more than one factor have been assigned to the component with which they possess a higher value in the correlation (E. García et al., 2000). Elements that contribute a factor loading in excess of .40 (Mavrou, 2015) were considered as the integrating factors of each component. Table 4 offers ordered variables for each factor in terms of their correlation with said factor and their associated covariance, indicating a linear association between the elements of the model and their factor, as well as a high intensity between them, guaranteeing at the same time the randomization of the data and the measurement scale.

Table 5 shows the five factors resulting from the analysis, their contribution to the model (variance explained by each of them), their reliability (Cronbach's alpha values), and their names. These are turned into modeled dimensions, which can be used to configure the estimated continuing professional development plan.

The next step was to confirm the effect and the relations between the multiple variables considered in the two groups, applying a confirmatory structural model (Cupani, 2002). The ultimate aim of this analytical test was to verify the suitability of the elements selected in the configuration of training actions, in other words, to verify how they covary to identify the starting constructs. A confirmatory structure was generated, with absolute fit measures based on determining the degree to which the models predict the initial data matrix (Hu & Bentler, 1999). The data in Table 6 show how the underlying training model fits with the expected model of interrelation between the proposed variables and the dimension to which they are assigned. An initial object of study is the root-mean-square error of approximation (RMSEA), which specifies the discrepancy between the matrix reproduced by the model and the matrix of the observations from a population point of view. Values of less than .06 indicate a good fit to the model. Furthermore, the goodness of fit index has to be approximated, which provides information about the variability explained by the model with values ranging between 0 (no fit) and 1 (perfect fit), always striving for values in excess of .90.

Table 4

Items That Saturate Each Component as a Result of Factor Analysis (Factor Loading and Covariance)

		Components									
		1		2		3		4		5	
Item	**Evaluation elements**	***r***	**Cov**	***r***	**Cov**	***r***	**Cov**	***r***	**Cov**	***r***	**Cov**
17	Courses are needed that explore the utility of physical activity and health to work with students with physical disabilities	.819	.921								
14	Courses are needed that explore the utility of artistic-expressive physical activities to work with students with physical disabilities	.801	.801								
15	Courses are needed that explore the utility of motor skills to work with students with physical disabilities	.738	.804								
16	Courses are needed that explore the utility of image and body perception to work with students with physical disabilities	.704	.655								
18	I would attend training courses related with popular and alternative games to work with students with physical disabilities	.586	.536								

Table 4 (cont.)

		Components									
		1		2		3		4		5	
Item	Evaluation elements	*r*	Cov	*r*	Cov	*r*	Cov	*r*	Cov	*r*	Cov
2	I need specific training in the creation and use of materials and resources for the area of Physical Education			.872	.628						
4	I need specific training in verbal and nonverbal communication techniques and alternative communication systems			.740	.638						
5	I would attend training activities related with learning evaluation systems for students with physical disabilities			.640	.536						
1	I have specific training in the curricular design of a Significant Curricular Adaptation			.506	.587						
10	I need specialized training in motor skills					.821	.947				
12	Specialized training is required in the design of education innovation projects					.801	.620				
13	I would attend training courses related with mediation systems to improve coexistence in the classroom					.728	.633				

Table 4 (cont.)

		Components									
		1		2		3		4		5	
Item	Evaluation elements	*r*	Cov	*r*	Cov	*r*	Cov	*r*	Cov	*r*	Cov
9	Adequate training in social skills is necessary to the teaching profession							.683	.685		
7	Specific training about the civil and penal responsibilities of teachers is necessary							.677	.597		
8	I need training in contents related to first aid at school							.647	.886		
11	Basic training in education research is necessary							.426	.547		
3	I would attend specialist training courses about people with physical disabilities									.867	.724
6	I believe that training focused on the educational and didactic uses of information and communication technologies to work with students with disabilities is necessary									.778	.932

Table 5
Factors Obtained, Contribution of Each Component to the Model, and Reliability iIndex of the Elements Resulting From Factor Analysis

Factor	Name	% of variance	Cronbach's alpha
1	Teaching of Physical Education	19.875	.850
2	Education and teaching tools	13.334	.723
3	Working strategies in the classroom	12.844	.764
4	Teaching abilities	11.180	.580
5	ICT resources	10.853	.675

Table 6
Fit Measures of the Confirmatory Factor Analysis

Fit measures	Value
Chi square	236.516
df	125
p	.000
RMSEA	.012
GFI	.712

Finally, differential analysis by gender was considered, considering the factors as variables created, dependently and interrelated, applying multivariate analysis of variance (*ns* = .05), since it allows us to work with cases where there is more than one dependent variable that cannot be combined simply and detects multivariate response patterns (Belluerka & Vergara, 2002). The results (Wilks's lambda = .806, F = 2.306, p = .059] indicate that the underlying training model based on this analysis responds to the demands of all teachers regardless of their gender. For this same operation in the case of years' teaching experience in the area of physical education (Wilks's lambda = .576, F = .617, p =. 943), the data show that this variable does not affect the construct of the training dimensions.

Conclusion

To fulfill the general aim of this article, we have systematically specified the basic lines for designing a training plan, with a view to optimizing the teaching work of primary education teachers in physical education classes with regard to students with motor disabilities. The dimensions obtained are constituted by elements that emerged from an empiric study based on the demands expressed by teachers, which have been labeled the teaching of physical education, education and teaching tools, working strategies in the classroom, teaching abilities, and ICT (information and communication technologies) resources. Calderón and Martínez de Ojeda (2014) referred to the aforementioned dimension within the continuing professional development plans of physical education teachers.

These five formative dimensions are the key elements to design the intended training plan, and their conceptual descriptions and contents, defined prior to drawing up the training courses, follow:

- **teaching of physical education:** This first formative element encompasses aspects related with the four content blocks set out under Royal Decree 126/2014 (Real Decreto 126/2014, 2014), which establishes the minimum teaching curriculum for primary education and which is enacted in Andalusia by means of Decree 97/2015 (Decreto 97/2015, 2015) and Order 17 March 2015 (Orden de 17 de marzo, 2015). These content blocks, which are demanded by the physical education teachers surveyed, are related with physical activity and health, artistic-expressive physical activities, motor skills and games, popular and alternative games, and sports.
- **education and teaching tools:** The second formative block supports aspects related to tools for approaching physical education classes in the best possible way (Lleixà, 2017); hence, training is demanded in the creation and use of materials for working in the area of physical education with students with physical disabilities, verbal and nonverbal communication techniques, alternative communication systems, and the use and knowledge of different systems of evaluation.

- **working strategies in the classroom**: This third dimension encompasses relevant aspects that ensure that work in the classroom with students with physical disabilities is as effective and efficient as possible for all students. Based on the principle of fairness present in the order passed on 25 July 2008 (Orden de 25 de julio, 2008), which regulates the management of student diversity in Andalusia's basic state education, specific training is demanded with regard to motor skills, the design of innovation projects to update the subject, group work learning, and conflict mediation systems so that, as indicated by Tomlinson (2005), life in the classroom is productive and so that students can enjoy a high level of well-being and are motivated to acquire new learning.
- **social skills for teaching:** One element demanded as a guarantor of quality teaching is related to training in social skills for teaching, confirmed by Martínez (2015). Among other specific contents, the participants request training in their civil and penal responsibilities as primary education teachers, and more specifically as physical education teachers, and in first aid. In addition to these contents and training demands, in this section, the participants demand training in education research as a support to teaching innovation.
- **ICT resources:** The last content block extracted from the analyses performed encompasses aspects related with the use of new information and communication technologies of interest with regard to training in this area (Prat et al., 2013). Training is required in the creation of technological resources and the use of resources and materials related with digital competency, at both a general level and a more specific level, more explicitly in digital resources that can assist the teacher when working with motor disabilities.

The size of the sample prevents generalizable conclusions from being applied to the whole national territory, but it does allow us to provide elements for reflection. Through the training dimensions shown, we aim to have a positive impact on teaching quality within the subject of physical education, and for this purpose, the institu-

tions responsible must guarantee support for teachers and schools when taking on the tasks, functions, and demands required of them (Córdoba, 2015), along with training that responds to their reality. Furthermore, it is essential to design actions derived from this study about the training model based on competencies, which can enable the creation of integrated learning models and the development of complex cognitive capacities (López et al., 2016).

Finally, it is important for this training to have a clear practical component; in other words, it must be easy to apply in the classroom since, as established by Igbinomwanhia (2009), this is one of the most important factors when putting together a teacher training plan, and since this will have a positive impact on improving their professional development (González & Barba, 2013).

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COACHING EDUCATION

An Assessment of the Benefits of Off-Season Training Among Teenage Basketball Players

Donnie Andrews and Chris Banks

Abstract

The purpose of this research study was to establish the benefits of off-season training among teenage basketball players. The goal of every school basketball team is to achieve the best outcomes possible among its athletes; hence, the study intends to investigate the possible outcomes of off-season training on a junior level basketball team setting. In this regard, 40 youth participants aged between 14 and 18 years were selected from their respective school basketball teams to voluntarily take part in the off-season training program. For the sample, anthropometric measures such as weight or height were not taken into account. A quantitative research design was used in which 20 participants were assigned to the control group and 20 remaining participants were assigned to the test group. The focus was to establish the development of athletes' rebounding, passing, scoring, and dribbling skills at the end of the off-season training. The descriptive statistics of the study entailing the mean, standard deviation, sample variance, skewness, and confidence interval indicated a significant improvement in the dribbling, scoring, passing, and rebounding skills in the test group, whereas there was a significant drop in the same skills observed in the control group. The correlation analysis in the pretest assessment had values of (r = 0.17), (r = 0.5), (r = -0.5), and (r = 0.28) and posttest assessment had values of (r = -0.76), (r = -0.58), (r = -0.47), and (r = -0.99) in dribbling, scoring, passing, and rebounding, respectively. Thus, this

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indicates that off-season training is a positive predictor of better performance among teenage basketball players.

Training forms a critical component in the achievement of success in any sporting activity. Normally, there is a recommended method of implementing training in a specific sport, which is strongly driven by the objectives of the coach and players. Training approaches can be implemented during either an active season or an off-season. This will depend on the choice of the coach and the availability of a plan to be followed by players. Basketball as a sport demands its players to be taken through rigorous training for them to achieve the best outcome in their respective sports.

For these training objectives to be achieved, the respective team coach needs to prepare a timetable that takes care of the athletes' needs in the best way possible. Most training manuals tend to recommend a program that can be adjusted over an active season so that athletes achieve their best form. On-season training has advantages and disadvantages of which teams are aware. This could be attributed to strength training perspectives, occurrence of injuries, recovery time, and rest time, among others. However, it is also important to know the challenges, gains, and problems that off-season training may have on basketball players.

Thus, this forms the core of this research, which is to examine the potential benefits of carrying out off-season training among basketball players. The main focus is on the specific attributes that off-season training entails for a basketball player enrolled in any team setting. The team setting will specifically include institutions with a strong bias for those who participate in a competitive environment in which team members are required to achieve outlined performance objectives. Even though some level of focus has been given on the relative benefits of implementing an off-season training program among athletes, the study focuses on basketball as a game that is loved by many Americans.

According to Preedy (2012), there are three main phases for basketball coaches: the off-season in which the main focus is on improving anaerobic and aerobic conditioning, the preseason in which technical and anaerobic abilities are improved, and the in-season in which maintenance of players' fitness capacity is a priority. This shows that off-season training is an equally important phase

that deserves to be given significant consideration. In this regard, the results of the study provide significant contribution into the body of knowledge regarding aerobic and anaerobic conditioning, which are the main attributes of performing off-season training.

Additionally, the study provides valuable information for basketball coaches and players participating in competitive settings. This is in the form of tips that coaches need to consider for players to achieve the best outcome in an off-season training program. The main goal of every coach is to see their team prowess regardless of the situation or opponent that their team is playing against. Thus, the study also raises the standards of off-season training by showing how it can be used to improve team performance.

In the contemporary world of sports, strength training of athletes is done to ensure athletes are in their best shape possible. The goals for training vary depending on the game, due to the unique movements entailed in each. Most of the time, the focus is mainly on preseason and in-season training because of the timing of the athletes' active involvement in their respective games. Preseason, in-season, and off-season training in basketball mainly focuses on enhancing the power, strength, balance, speed, fitness, skill work, and mobility of the players. However, the intensity given to each of these elements varies in each of the seasons. In most situations, off-season training is used to complement the strength training initiatives to be implemented in the other seasons. As a result, off-season training in basketball has been debated in different professional sports forums as a major phase in the development of professional skills of athletes.

Method

Participants and Sampling Procedures

The subjects for this research were selected from a group of youth basketball players participating in a high school setting. In this regard, 40 youth participants aged between 14 and 18 years were chosen from their respective school basketball teams. Coaches in these schools play an important role of linking the researcher to the athletes. During the off-season, athletes who wanted to participate in the study were required to submit their names to their coaches. Because getting a good number of study participants willing to remain committed to the program for the entire off-season

proved challenging, permission letters addressed to the school head teacher were circulated to at least five schools belonging to the same school district. The selection process did not give preference to athletes based on their anthropometric measures such as weight, height, body fat percentage, and VO_2 max. Because athletes portray these traits differently, the focus of the study was on how the off-season training program affected their performance.

Research Design

This research employed a quantitative study design because the focus was on the outcomes based on a comparison between youth athletes who attended an off-season training program versus youth athletes who chose not to attend a training program. A true experimental design was used whereby subjects were divided into two groups, experimental and control, on a voluntary basis (Andrew et al., 2011, p. 47). In this regard, a pretest–posttest group design was administered to each participant in the experimental and control groups. The pretest ascertained the skill level of each participant, which was used as the baseline information. On the other hand, the posttest established the skill level of athletes at the end of the off-season training season. Of the 40 voluntary study participants, 20 were allocated to the control group and 20 were allocated to the experimental group.

Experimental Manipulations and Interventions

First, behavior observation form a major component of retrieving baseline information and any differences observed on their performance skill set. For purposes of this research, the dependent variable was the differences observed in the performance skill set, focusing on how the off-season training changes the attributes of the baseline information that was retrieved. The independent variable was the off-season training design to which participants were subjected. The skill sets to be assessed included dribbling, scoring, passing, and rebounding. These influenced the desired measurement units that were used in assessing the presence of improvement or no improvement after the off-season training.

The pretest training stage relied on information provided by the respective coaches of each participant. This was used as baseline data based on the average figures provided by the coaches. When

these members rejoined their respective teams at the beginning of a new season, a postassessment that established the presence or lack of improvement was conducted. Scoring of the instrument was based on whether an athlete's skill set was high, medium, or low. Because this is a unique approach employed by the research, it has a positive impact on the reliability of the data because it showcases an improvement or lack of improvement among the participants in their normal school team setting. Thus, the data were meaningful for similar youth school settings. Additionally, the instrument eliminated any bias, because the pre- and postassessments for all athletes were done in a controlled setting.

Data Collection

As explained, the coaches of the respective participants played an important role in providing baseline information. They used the instrument tool that was provided to assess players' skill sets in scoring, dribbling, rebounding, and passing. At the end of the study, the same study instrument assessed whether there was an improvement in the mentioned skill sets.

Tests and Testing Protocol

The drills used in the off-season training entailed plyometrics and conditioning, agility, explosive movements in the weight room, core training, and hand–eye coordination skills. Table 1 shows the program that was used.

Table 1
Program Schedule

Week	Pylometrics and conditioning	Explosive movements in the weight room	Core training	Hand–eye coordination drills
1	Mon, Tue, Wed	Tue, Fri	Wed, Thur	Thur, Fri
2	Mon, Tue, Wed	Tue, Fri	Wed, Thur	Thur, Fri
3	Mon, Tue, Wed	Tue, Fri	Wed, Thur	Thur, Fri
4	Mon, Tue, Wed	Tue, Fri	Wed, Thur	Thur, Fri

Results

Sample

The sample that was used for the research was divided into two main groups: the test group and the control group. These groups were subjected to preliminary assessment for collecting baseline information that indicates the respective level of proficiency exhibited by both groups. After the preliminary assessment, the test group was subjected to the training drills, whereas the control group was not subjected to any training drill. The samples were generated from a high school setting of students who are active members of their school basketball teams (this was not limited to members who had been previously involved in competitive competitions).

Survey Findings

This section provides in tables and figures pretest and posttest data for the dribbling, scoring, passing, and rebounding skills of both the test group and control group.

Pretest Data

Table 2 and Figures 1 and 2 show the baseline information collected in the preliminary assessment of the athletes' skill sets.

Table 2
Baseline Information Collected in the Preliminary Assessment of the Athletes' Skill Sets

Skill	High	Medium	Low
Test group			
Dribbling	4	8	8
Scoring	6	3	11
Passing	7	8	5
Rebounding	7	6	7
Control group			
Dribbling	6	6	8
Scoring	5	5	10
Passing	8	5	7
Rebounding	5	6	9

Figure 1
Graphical Representation of the Test Group Baseline Assessment Information

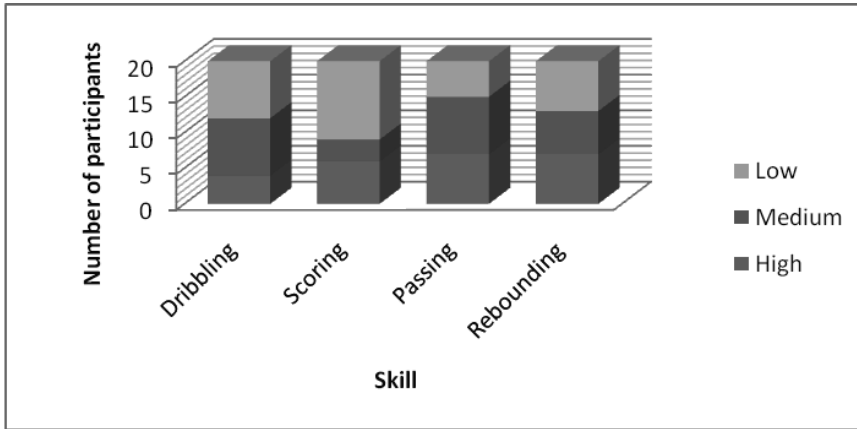
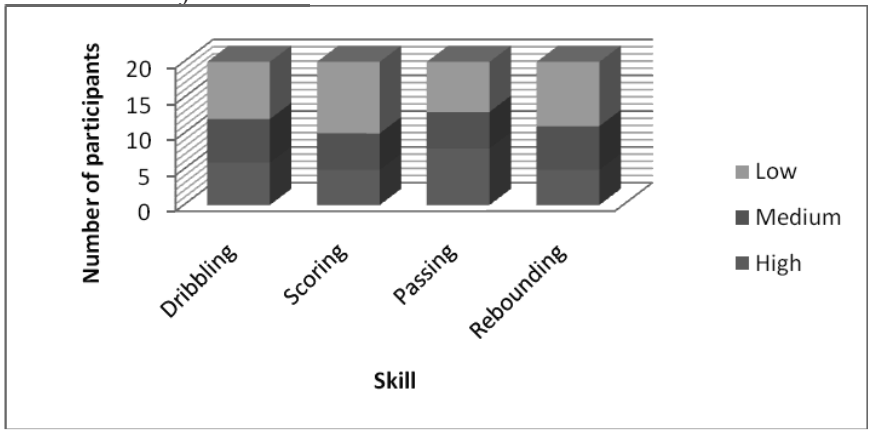


Figure 2
Graphical Representation of the Control Group Baseline Assessment Information



Posttest Data

Table 3 and Figures 3 and 4 show the baseline information collected in the preliminary assessment of the athletes' skill sets.

Table 3
Information Collected in the Postassessment of the Athletes' Skill Sets

Skill	High	Medium	Low
Test group			
Dribbling	12	4	4
Scoring	14	3	3
Passing	13	4	3
Rebounding	15	4	1
Control group			
Dribbling	4	6	10
Scoring	3	4	13
Passing	5	4	11
Rebounding	3	8	9

Figure 3
Post-Off-Season Training Assessment of the Test Group Athletes' Skill Sets

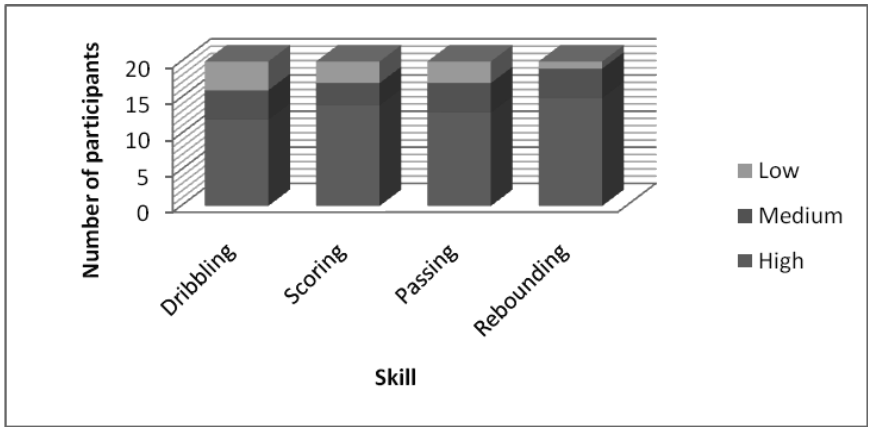
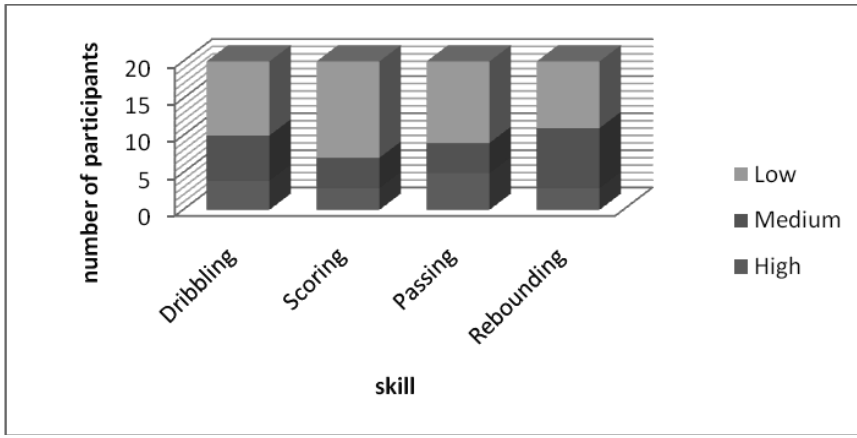


Figure 4
Post-Off-Season Training Assessment of the Control Group Athletes' Skill Sets



Analysis

Descriptive Statistics

The descriptive statistics function in Microsoft Excel 2010 established the mean, standard deviation, sample variance, skewness, and confidence level (95%) of the test and control groups during preassessment and postassessment after athletes had been taken through the off-season training program. Tables 4 and 5 list the descriptive stastics preassement for the test group and the control group, respectively. Tables 6 and 7 list the descriptive stastics postassement for the test group and the control group, respectively.

Table 4
Descriptive Statistics Pretest Assessment for the Test Group

Descriptive statistic	Dribbling	Scoring	Passing	Rebounding
Mean	6.67	6.67	6.67	6.67
Standard deviation	2.31	4.04	1.53	0.58
Sample variance	5.33	16.33	2.33	0.33
Skewness	-1.73	0.72	-0.94	-1.73
Confidence level (95.0%)	5.74	10.03	3.79	1.43

Table 5
Descriptive Statistics Pretest Assessment for the Control Group

Descriptive statistic	Dribbling	Scoring	Passing	Rebounding
Mean	6.67	6.67	6.67	6.67
Standard deviation	1.15	2.89	1.53	2.08
Sample variance	1.33	8.33	2.33	4.33
Skewness	1.73	1.73	-0.94	1.29
Confidence level (95.0%)	2.87	7.17	3.79	5.17

Table 6
Descriptive Statistics Posttest Assessment for the Test Group

Descriptive statistic	Dribbling	Scoring	Passing	Rebounding
Mean	6.67	6.67	6.67	6.67
Standard deviation	4.62	6.35	5.51	7.37
Sample variance	21.33	40.33	30.33	54.33
Skewness	1.73	1.73	1.67	1.41
Confidence level (95.0%)	11.47	15.78	13.68	18.31

Table 7
Descriptive Statistics Posttest Assessment for the Control Group

Descriptive statistic	Dribbling	Scoring	Passing	Rebounding
Mean	6.67	6.67	6.67	6.67
Standard deviation	3.06	5.51	3.79	3.21
Sample variance	9.33	30.33	14.33	10.33
Skewness	0.94	1.67	1.6	-1.55
Confidence level (95.0%)	7.59	13.68	9.40	7.99

Correlation Analysis

The correlation analysis entailed a correlation of the test and control groups in the pretest and posttest assessment stages. Tables 8 and 9 show the *r* value for each skill preassessment and postassessment, respectively.

Table 8
Pretest Assessment r Value

Skill	*r*
Dribbling	0.17
Scoring	0.5
Passing	-0.5
Rebounding	0.28

Table 9
Posttest Assessment r Value

Skill	*r*
Dribbling	-0.76
Scoring	-0.58
Passing	-0.47
Rebounding	-0.99

Discussion

First, the study supports Jay et al.'s (2005) findings that training is a positive predictor in the demonstration of positive performance among athletes. In the research, the results of the regression analysis for the test group illustrate that athletes who participated in training showed improvement in their respective skills of passing, scoring, rebounding, and dribbling.

Second, the findings also reveal an increase in the average performance of athletes, as demonstrated in the graphical illustrations. Indeed, the average scores for dribbling, scoring, passing, rebounding improved significantly in the test group and dropped in the control group. In the initial assessment, the performance of the two groups was almost at par. This supports Margaret's (2010) view that participation in off-season training can lead to positive outcomes in the performance of athletes.

Third, the results also imply that athletes who participate in agility drills, explosive movements in the weight room, core training, and eye–hand coordination skills during their off-season training will experience improved performance and coordination when the

season resumes. Thus, these results can be of use in institutional teams that usually go on breaks during which the coaches have little or no access to the athletes. Finally, more research still needs to be done in determining how the length of off-season training might impact the performance of athletes.

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PHYSICAL ACTIVITY

Secondary Student and Teacher Perceptions of Classroom Physical Activity

Peter Stoepker and Brian Dauenhauer

Abstract

Recent literature has shown that the implementation of classroom physical activity (PA) has had a positive impact on overall student performance. However, most of the classroom-based PA literature has explored the impact on elementary students. The purpose of this study was to examine how high school students and teachers feel about the implementation, feasibility, and application of integrating movement into the classroom. Findings from nine individual teacher interviews, one teacher focus group (n = 4), and five student focus groups (n = 20) were analyzed. Four themes were created from the teacher interviews and student focus groups: (a) implementation time of classroom PA, (b) desirable minutes of classroom PA, (c) yoga is the preferred activity, and (d) classroom PA value. Results from this study suggest that students and teachers value the integration of classroom PA but that they have conflicting viewpoints on various components that go into providing movement opportunities.

Regular participation in physical activity (PA) is essential to achieving optimal health and development of children (Centers for Disease Control and Prevention [CDC], 2015). Because children and adolescents spend a large percentage of time at school, the school environment can act as an important setting for youth to engage in and accumulate PA (Dollman et al., 2005; Mahar et al.,

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2006; Wilson et al., 2016). With adolescents spending the majority of their day in the school setting, it is becoming important to consider whole-of-school strategies for PA promotion. The Comprehensive School Physical Activity Program (CSPAP) model is a multicomponent approach to increase daily PA among children and adolescents. The CDC has adopted this strategy as the national framework for physical education and PA (CDC, 2017). CSPAP includes five components: physical education, PA during the school day, before and after school PA, family/community engagement, and staff involvement (CDC, 2013).

Due to high-stakes testing and the cutting of physical education classes, classroom PA during the school day is becoming an important strategy for increasing student PA levels (McMullen et al., 2016; Webster et al., 2017). Integrating PA into the classroom has shown positive effects in improving in-class student on-task behavior (Goh et al., 2016; Howie, Beets, & Pate, 2014; Stoepker et al., 2018), academic performance (Howie et al., 2015; Mahar et al., 2006; Mullender-Wijnsma et al., 2015), and daily PA participation (Kriemler et al., 2011; Wilson et al., 2016).

Even with the documented evidence to support how classroom PA has positive effects on student learning and overall daily PA, it is still an underutilized strategy by classroom teachers. According to the CDC (2016), only 10.7% of elementary, 7.5% of middle school, and 2.2.% of high school districts require that schools provide regular classroom PA breaks during the school day. Due to the limited amount of schools integrating PA into the classroom, recent literature has started to explore school stakeholder perceptions and barriers to classroom movement integration. Examinations of stakeholder perceptions have found that teachers are less likely to implement movement into the classroom due to time and space (Goh et al., 2016), lack of PA knowledge (Benes et al., 2016), and threats to classroom control (McMullen et al., 2014). Due to these recent findings, it is becoming important to explore whether classroom movement integration is an appropriate instructional strategy (McMullen et al., 2016). Furthermore, most of the literature surrounding classroom PA has focused on the elementary school context, with little evidence relating to stakeholder perceptions or the effects of classroom PA at the secondary level.

We know a great deal known about classroom PA at the elementary school level (e.g., Erwin et al., 2011; Kibbe et al., 2011; Mahar et al., 2011), and numerous resources are available for teachers to incorporate PA into the classroom (e.g., GoNoodle, Classroom Energizers, Take 10!). However, we know much less about the integration of classroom PA at the secondary level due to the limited amount of classroom PA resources that cater to this specific age level. Evidence has shown that of high school students across the United States, only 27.1% participate in the recommended amount of PA per week and 29.8% attend physical education class daily (CDC, 2015). A potential solution that could help address the low levels of PA for this age population is the integration of classroom movement. However, we know very little about why teachers are not implementing PA and why student participation rates are low when classroom PA is offered.

The purpose of this study was to examine high school (Grades 9 to 12) student and teacher perceptions of classroom PA and to determine what types of activities are perceived to be age appropriate and relevant at the high school level, in hopes to maximize student and teacher PA participation. Findings from this study could aid in the development of how to plan and implement classroom PA at the secondary level.

Method

Before data collection, both the University Institutional Review Board and the schools in which the project was implemented granted approval for this study. The parents of the students gave written consent, and the students verbally affirmed assent. All high school students and teachers within the district had the opportunity to take part in the study.

Areas of Inquiry

This study examined three areas of inquiry and their relation to understanding student and teacher perceptions of classroom PA. The primary areas of inquiry were (a) what types of classroom physical activities do students and teachers want to participate in, (b) what is the desirable amount (in minutes) of classroom PA that is preferred by students and teachers, and (c) do teachers and students at the secondary level value the implementation of classroom PA. Interview

questions related to specifics around types of PA activities, preferred classroom PA length, amount, feasibility, and perceived importance of integrating PA into the classroom.

School Environment and Participant Characteristics

Students and teachers from two of the district high schools were selected for this study based on convenience and recommendations from the district wellness coordinator. The two high schools were rural public schools located in the Western United States that served a total of 1,988 students across Grades 9 to 12. School-level reported ethnic/racial data for one high school was 75% Hispanic, 21% White, 1% American Indian/Alaskan Native, 1% Asian, 1% Black, and 1% two or more races. The second high school ethnic/racial data was 60% Hispanic, 30% White, .3% American Indian/Alaskan Native, 4% Asian, 3% Black, and 1% two or more races. School 1 reported 66% and School 2 reported 65.2% of students were eligible for free or reduced-price lunch, per the state's Department of Education website in 2017.

Participants

After selection of the two high schools with help from the district wellness coordinator, teachers who participated in the study were recruited via email. After teachers agreed to participate in the study, a research team member visited a class selected by the teacher, to discuss the study for student recruitment. Individual student and teacher demographic information was collected during the focus group and interview process at the beginning of each session. Five student focus groups were conducted. These included 10 seniors, seven juniors, and three sophomores, for a total of 20 high school students. Nine individual teacher interviews and one teacher focus group ($n = 4$) from various disciplines were conducted (see Table 1 for complete teacher demographic characteristics). A teacher focus group was conducted because a group of teachers in a single department (math) preferred to discuss as a group instead of being interviewed individually. Additionally, of the teachers who participated in the study, only one had classroom PA integration experience. The remaining teachers had not implemented PA into the classroom as part of their classroom routine and teaching practice.

Table 1
Teacher Demographic Characteristics

Name	Years of experience	Grade level	Discipline
Jim	10	Senior	Math/Science
Joan	7	Soph–Senior	Special Education/Math
Roger	20	Junior–Senior	English
Jessica	7	Soph–Senior	Foreign Language
Tiffany	3	Senior	Science
Pierre	3	Junior–Senior	Math
Susan	4	Senior	Math
Cynthia	20	Junior–Senior	Math
Brandon	4	Soph–Senior	Math
Marie	5	Soph–Senior	Math
Dorothy	4	Junior–Senior	Math
Marybeth	6	Junior–Senior	Math
Jones	18	Soph–Senior	Math

Note. Grade Level column refers to the grade range taught by the individual teacher. "Soph" is an abbreviation for "Sophomore," which usually indicates second year of high school.

Data Collection

Interview Protocol

All semistructured interviews (n = 9) and student focus groups (n = 4) were conducted by the lead author and took place between January 2017 and April 2017 in person at a convenient time for the teacher and students. The interview guide included questions that were asked to all participants in addition to unique questions for both types of participants (i.e., teacher or student). All interviews and focus groups were audio recorded and later transcribed verbatim, and pseudonyms were assigned during data analysis.

Student Focus Groups. Student focus groups were conducted during scheduled break periods (e.g., during lunchtime or before school). While other students were on break, a small group of

students remained in the classroom with the researcher. Focus group questions were related to (a) if students want to be active during class, (b) what types of activities would they like, (c) when during the class period would they like PA to be implemented, and (d) do they value PA in the classroom. A sample student question was "What types of physical activities would you like to participate in?" Focus groups lasted between 12 and 22 min (M = 17), were audio recorded using a digital audio recording device, uploaded to a password-protected computer, and transcribed verbatim for subsequent analysis.

Teacher Interviews. One-on-one teacher interviews and one teacher focus group were conducted. The interviews were scheduled on a day and time when the teacher had the most availability. Interview questions were related to (a) the feasibility of implementing PA into the classroom, (b) how often the teacher is willing to implement classroom PA, (c) main barriers that hinder the implementation of classroom PA, and (d) is the implementation of PA into the classroom important. A sample teacher interview question was "How important do you believe the implementation of classroom PA breaks is?" The interviews lasted between 13 and 26 min (M = 18) and the same audio recording and transcriptions procedures used for student focus groups were employed for teacher interviews. For all questions in both of the focus groups and teacher interviews, detailed oriented, elaboration, clarification, and contrast probes were used to elicit additional information from participants (Patton, 2002; Rubin & Rubin, 2005).

Data Analysis

Data were analyzed inductively (Creswell, 2013). Before analysis, interviews were transcribed and transcriptions were imported into an analysis software program (NVivo 11). Data analysis data began with open and axial coding methods. These methods allowed for identification of emerging themes (Creswell, 2013). Once data were coded, similar codes were grouped and themes were identified. After the completion of the coding process, key findings from student focus groups were compared with results from the teacher interviews. These comparisons allowed for exploration of similarities and differences between student perspectives and teacher perspectives.

Trustworthiness. Trustworthiness was ensured during the data analysis process through multiple strategies. Transcriptions from

the interviews and preliminary interpretations were sent to the participants, ensuring accuracy (member checking; Creswell, 2013). Findings were triangulated through student focus groups and teacher interviews. Additionally, a qualitative research expert reviewed codes, commented on emerging themes, and provided support and input on the analysis process (peer debriefing). Last, a negative case analysis was completed, which ensured generated themes did not have an abundance of contrasting support (Merriam, 2009).

Results

Findings from this study suggest that students and teachers value the integration of classroom PA but that they have conflicting viewpoints on various components that go into providing movement opportunities. The data associated with each theme (implementation time of classroom PA, desirable minutes of classroom PA, yoga is the preferred activity, classroom PA value) are presented separately and represented by experts from the data.

Implementation Time of Classroom Physical Activity

Both teachers and students were asked what time they preferred classroom PA to be integrated during class. Classroom teachers differed in their views of the "best" time for classroom PA. Teachers preferred PA to be implemented during the halfway point of class, whereas students preferred PA toward the end of the class period.

Teachers Preferred Movement to Be Implemented During the Halfway Point of Class

Jim mentioned, "I would like it in the middle of class just because they get really bored taking notes and listening to me." Marybeth stated, "I say middle of class because it provides a certain amount of motivation, if I see a student who is not doing anything, then I could say, you need to focus now, in 20 minutes you are going to get a break and I feel like it provides motivation." Brandon confirmed this theme by adding, "I need to do them in the middle of class; that's when I believe they are most useful."

Students Preferred Movement to Be Implemented Toward the End of Class

One student said, "The end of class, we only have 1 hour in class, why would you move in the middle? I just think it is better at the

end, so you can get all your stuff ready and you can be ready to go." Another student stated, "I said the end because we usually get bored and irritated from what we are doing; we would be able to refresh our memory and go to a different class." Another student confirmed with others by simply stating, "I would prefer the activity break to be implemented toward the end of class."

Desirable Minutes of Classroom PA

A question asked to both teachers and students was what length (in minutes) of classroom PA they would prefer. As in the implementation time theme, the teachers and students had different preferences in regard to the amount of time they prefer for classroom PA. Teachers preferred classroom PA to be less than 5 min, whereas students desired a longer duration of PA time (> 5 min).

Teachers Felt That 5 Min or Less Is the Ideal Time for Integrating Physical Activity

During the interviews, teachers answered the question, "How long would you like (in minutes) the movement to be?" Jones responded, "Obviously 20 minutes is too long, it needs to be something that we can do quickly but still be useful, the 3- to 5-minute range would be ideal." Jessica stated, "1 to 3 minutes is great, perfect, more than that is no, I have got other things to do." Dorothy added, "Realistically the intervention would have to be between 3 and 5 minutes."

Students Preferred for Movement to Be 5 Min or Longer

One student stated, "The 1- to 4-minute range is too short because it goes by really fast and you get caught up in the moment and then it's done, and you are like I want to continue though." Another student added, "it would depend on what we are doing, I mean if we are doing something like a walk, then 10 to 15 minutes, if we are doing something vigorous then 5 to 10 minutes." Another student mentioned, "I would say 5 to 10 minutes because it would help people wake up."

Yoga Is the Preferred Activity

Due to the limited experience both the teachers and the students had with classroom PA, they were asked what types of activities they

would prefer doing. After review of transcriptions, it became evident that yoga was the preferred activity for both teachers and students.

Teachers and Yoga

Tiffany stated, "Yoga and the meditation stuff, I talk a lot about just trying to relax, just trying to breathe low in your abdomen, and just trying to sit straight up." Jones added, "Yoga and meditation stuff, just trying to get students to relax." Cynthia simply stated, "I would like some yoga." Marie confirmed what others reported:

> If I could do anything in the classroom, I would do some yoga. That is something I would feel comfortable leading. Yoga is culturally interesting, people do yoga, yoga is normal and ok, so I feel like [the students] would do that and I could certainly do a fast-paced yoga that would be more cardiovascular and strength building.

Students and Yoga

One student stated, "I think yoga would be good because it is relaxing and would help people to calm down." Another student added, "I would say yoga because it is more like stretching and stuff." One student simply stated, "I would like to do yoga," and another student added, "Yoga would be good."

Classroom Physical Activity Value

Both teachers and students were asked if they believe the implementation of classroom PA is important. It became evident after review of the transcripts that both teachers and students felt that classroom PA is important to implement.

Teachers Value Classroom PA

When asked how important he believes the implementation of classroom PA is, Roger stated,

> I think it is one of the most important things you can do, I think we are doing our students a disservice if we are not bringing some sort of activity to their class, it's a long day and to ask them to sit in a chair all day long and even just one class period long, that's a lot to ask for anybody.

Joan added,

> Oh yes, I think they are a necessity, I think that it is huge, I just finished reading Spark, which is, oh my gosh, it is so awesome, and it really does reset their brains and makes them be able to learn more.

Jones said, "I think it could be very beneficial." Jessica added, "I think it could be a valuable teaching tool."

Students Value Classroom Physical Activity

Students were asked, "On a scale of 1 to 10 with 10 being extremely important, how important do you view the integration of classroom PA?" A student stated, "I think probably an 8 because here at our school we don't really do any, or some students don't have a gym class and its very good for someone to be having some kind of PA throughout the day." Another student mentioned, "I would say about a 9 because our teachers get frustrated with us to wake up or something and they get frustrated because we are bored, and this would help." Another student stated, "I would say a 7 or 8 because we get tired and it will help us focus."

Discussion

Classroom Physical Activity Duration

There were conflicting findings from teachers and students in regard to their preference for the duration of the classroom movement. Teachers preferred movement breaks to be 5 min or less, whereas students preferred the time to be longer than 5 min. The literature that has reported on the effectiveness of a 5-min break has found it to have very little value. It has been discovered that a 5-min activity intervention does not enhance cognition or improve student on-task behavior (Kubesch et al., 2009). Similar research discovered that students did not show any cognitive improvements after a 5-min break and that changes in math scores were statistically higher after a more extended PA break compared to breaks of 5 min or less (Howie et al., 2015). Research has found that from the student's perspective a 5-min PA break is too short and holds very little value and students do not feel like anything significant occurs during a 5-min break (Howie, Newman-Norlund, & Pate, 2014). The

conflicting results from these studies in regard to the length of time suggest that further inspection within this topic area could help find an adequate duration of time for PA.

Activity Selection

Yoga is an activity that teachers believe is feasible to implement regularly. Yoga is a holistic system of practices that includes multiple techniques, including physical exercises, breathing exercises, and deep relaxation techniques (Khalsa & Butzer, 2016). The therapeutic application of yoga is a viable activity among adolescents in improving both physical health and mental health (Birdee et al., 2009). This finding matches literature about the implementation of yoga in schools. Yoga is perceived by many to be feasible, practical, and cost-effective intervention in schools and can cater to the needs of a variety of students (Khalsa & Butzer, 2016). This activity should be considered in future development of PA resources to teachers at the secondary level.

Preference of When Activity Should be Implemented

The teachers and students had conflicting findings in regard to when they preferred to implement/participate in classroom PA. Currently, few studies have measured the impact of classroom PA on students when implemented at the end of a class period. However, research has explored the effects of classroom PA during the halfway point of class. Howie, Beets, and Pate (2014) found that after a 10-min intervention was implemented halfway through a class, student on-task behavior increased by 10%. Similary, Carlson et al. (2015) found that the implementation of a PA break at the halfway mark had a positive effect on student on-task behavior. Results from these studies indicate that the midway point may act as the most effective time to implement movement. However, in regard to stakeholder buy-in (especially students) preferring PA at the end of class, research focusing on classroom PA integration should start exploring the effects of movement at the end of the class.

Value of Classroom Physical Activity

Results from this study align with the findings in literature that students and teachers value classroom PA. Even though teachers in this study had limited experience implementing classroom PA, it

was evident they valued the idea of having their students engage in classroom PA. The positive value of integrating classroom PA, as the teachers and students in this study reported, aligns with the positive perceptions of implementing classroom PA at the elementary level, as students and teachers in other studies reported (Dinkel et al., 2017; Goh et al., 2016; Mullins et al., 2019). Due to the possible impact of classroom PA, and due to the value teachers and students believe it holds, it is important to expand the scope and examine beyond the elementary level and explore the impact and value of classroom PA on secondary teachers and students.

Limitations

Several limitations of this study should be considered. First, the results reflect the perceptions of teachers and students from two schools in one region and, as such, could be difficult to generalize to other contexts. Second, the range of students who participated in the focus groups were mainly upperclassmen (juniors and seniors). Ideally, a broader sample that includes more freshmen and sophomores could be a better representation of high school students' beliefs. Third, the majority of the teacher disciplines were either math or science, therefore creating a viewpoint of teachers who only teach within these topic areas. Future research could include a wide variety of subjects to understand teacher perspectives of classroom PA more broadly and to fully understand teacher perspectives of classroom movement integration. Last, the district wellness coordinator helped with participant recruitment, which could have influenced teacher responses due to the known relationship before the interviews. Future work should recruit randomly to try to eliminate any bias or preconceived notions around classroom PA.

Future Directions

This study examined perceptions of classroom PA from student and teacher perspectives at the secondary level. Future research could build upon this study in multiple ways. First, research could examine more in-depth the specific types of physical activities that secondary students would like to participate in across various secondary schools. Second, research could explore secondary teachers' comfort level with integrating classroom PA. Third, research could integrate a secondary PA curriculum and examine student and teacher en-

joyment and implementation barriers. Last, research could examine creative solutions that help facilitate the integration of PA into the classroom at the secondary level to help ensure teacher comfort in making it a regular teaching practice.

Conclusion

The purpose of this study was to explore secondary teachers' and students' feelings about classroom PA. Currently, there is minimal literature on students' and teachers' feelings about classroom PA at the secondary level. Findings from this study show that students value PA and that teachers and students have conflicting views on the duration of classroom PA and about when PA should be implemented during the class. Additionally, results provide insight into students' and teachers' feelings about classroom PA and could provide further understanding of secondary school stakeholders' perceptions to guide future PA research into the classroom. Results could also influence the criteria that are considered in the development of classroom PA resources at the secondary level. Further investigation needs to confirm these results and more closely examine teachers' and students' feelings about the integration of classroom movement.

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RISK MANAGEMENT

Concussion Knowledge, Attitude, and Risk Management Practices of High School Girls' Soccer Coaches

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Abstract

Concussion rates in soccer are comparable to those found in high-contact and/or collision sports. Evidence has suggested a higher concussion rate among female soccer players compared to their male counterparts. The purpose of this study was to examine (1) concussion knowledge, attitude, and risk management practices of high school girls' soccer coaches and (2) the interrelationships between knowledge, attitude, and risk management practices. One hundred forty high school girls' soccer coaches completed an online survey. Most coaches demonstrated a high level of knowledge regarding key concussion facts and strongly agreed that it is important to create an environment in which athletes are encouraged to report concussions. A positive attitude toward concussions had a strong influence on employment of risk management practices ($F = 4.20$, $p < .001$). Findings from this study may help develop, revise, and promote effective concussion education programs and safety policies in interscholastic and youth soccer.

Traumatic brain injuries (TBI) are a major public health concern, as approximately 3.4 million people visited a U.S. emergency

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department, from 2001 to 2012, due to a sport or recreation–related TBI. During the same period, emergency department visits due to sport and recreation–related TBIs more than doubled (Coronado et al., 2015). An estimated 70% to 90% of all TBIs are mild (mTBI), and these are commonly referred to as concussions (Cassidy et al., 2004). Adolescents (≤ 19 years old), in particular, are more susceptible to concussions and account for approximately 70% of sport or recreation–related TBIs. In high school athletics, an estimated 300,000 concussions are sustained annually (Marar et al., 2012). Moreover, evidence-based research has suggested that adolescents typically take longer to recover from concussions compared to adults, thus requiring more conservative management and care (Grady et al., 2012).

After comparing sports with similar rules, research has suggested female athletes are more vulnerable to concussions than their male counterparts (Gessel et al., 2007). Specifically, studies have found that female high school athletes are more likely to suffer concussions compared to their counterparts (Harmon et al., 2013; Rosenthal et al., 2014). Moreover, compared to male athletes, female athletes experience concussion symptoms that are typically greater with longer recovery times (Baker et al., 2016; Kay et al., 2018). Although more research is warranted, scholars have suggested that body composition and neck strength are primary factors that contribute to a higher concussion risk for females (Gutierrez et al., 2014).

In the United States, soccer is one of the fastest growing sports, with participation rates for high school soccer increasing 4-fold among boys and 35-fold among girls from 1973 to 2014 (National Federation of High School Athletic Associations, 2018). One published report (Marar et al., 2012) suggested the concussion rate in soccer is comparable to those found in traditional high-contact and/or collision sports (e.g., football, ice hockey). Concussions in soccer account for 2% to 4% of all sport-related acute injuries (Gessel et al., 2007), with the highest rate of concussions occurring during games (Comstock et al., 2015; Valovich McLeod, Houston, & Welch, 2015). A competition-based concussion rate among high school girls' soccer was 9.2/10,000 athlete exposures (AEs). This figure was nearly double the rate of concussions for high school boys' soccer, which was 5.3/10,000 AEs (Marar et al., 2012). A more recent investigation

by Comstock et al. (2015) confirmed a higher rate of concussions among female soccer players. They found 627 concussions sustained during 1,393,753 AEs among girls (4.50 concussions/10,000 AEs), which was significantly higher than 442 concussions sustained during 1,592,238 AEs among boys (2.78 concussions/10,000 AEs).

Attempting to reduce and properly manage concussions is an important task for youth sport stakeholders, particularly coaches involved in contact and collision sports. Coaches have a professional and ethical responsibility to (1) be aware of the frequency and severity of concussions, (2) recognize causes and the signs and symptoms of concussions, and (3) properly manage suspected and/or identified concussions (e.g., removing the player from games and practices, adhering to return-to-play guidelines). In recent years, several concussion-related educational initiatives were developed specifically for high school and youth sport coaches. These include, but are not limited to, the CDC's Heads Up (Daugherty et al., 2019), NFHS's Concussion in Sports (National Federation of High School Athletic Associations, 2018), and Brain 101: The Concussion Playbook (Valovich McLeod, Houston, & Welch, 2015). In the majority of states, high school coaches are required to take one or more of these concussion education or training courses. Moreover, between 2009 and 2014, all 50 states and the District of Columbia passed youth sport-related concussion legislation that requires first responders, including coaches and parents, to be educated about prevention and management of concussion (Kim et al., 2017).

The need for concussion education stems from the fact that a concussion diagnosis is not always straightforward, particularly with the absence of a specific diagnostic test or biomarker (Hecimovich & Marais, 2017). In this respect, concussions often go unrecognized, which may lead to underreporting and subsequent catastrophic health consequences, such as second impact syndrome (McLendon et al., 2016). Improving coaches' knowledge regarding concussions is important in the effort to reduce and properly manage concussions, particularly at the high school and youth sport level. A number of studies, however, have suggested that knowledge alone does not typically translate to improved concussion management practices, which warrants the need for assessing attitudes toward concussions as well (Hendricks et al., 2012). Scholars in the scientific community

have theorized that strong knowledge and a positive attitude have potential to help coaches properly recognize and report suspected concussions to appropriate medical personnel (Sefton et al., 2004). In addition to improving knowledge and attitude, coaches have a responsibility to implement proper risk management practices during practices and games in an attempt to reduce concussions. Risk management is a course of action designed to reduce the risk (probability and/or severity) of injuries, lawsuits, and other losses to sport participants and/or organizations (Spengler et al., 2016, p. 42). Given the prevalence of concussions among soccer participants, implementing proper risk management practices aimed at reducing and properly managing concussions is also a soccer coach's ethical and professional responsibility.

Knowledge and attitude have been frequently studied in an effort to explain their relationship with behaviors. The knowledge–attitude–behavior (KAB) model is an important theoretical framework often used to explain behavioral changes affected by knowledge and attitude in the health education context (Schneider & Cheslock, 2003). This model postulates a causal relationship among knowledge, attitude, and behaviors; that is, having strong knowledge on a particular health condition can directly influence attitudinal changes and subsequent improvement in related behaviors. In applying the aforementioned underlying theoretical framework, a strong knowledge and/or positive attitude concerning concussions may lead to improved safety practices (i.e., risk management practices) aimed at reducing and properly managing concussions. In fact, research has suggested that increases in knowledge and attitude regarding concussions are associated with better safety practices, such as concussion reporting and/or related care-seeking behaviors (Setnik & Bazarian, 2007). It is likely that coaches who possess a strong knowledge (i.e., concussion signs and symptoms, return-to-play guidelines) and positive attitude (i.e., perceived importance of athletes reporting concussions, and missing practices and games due to such) are more likely to employ a higher level of concussion-related risk management practices.

Despite the prevalence of concussions among female high school soccer players, no study has specifically examined high school girls' soccer coaches' concussion knowledge, attitude, and risk management practices (KARMP). The purpose of this study was twofold:

(1) to examine concussion knowledge, attitude, and risk management practices of high school girls' soccer coaches and (2) to assess the interrelationships between the knowledge, attitude, and risk management practices. Evaluating coaches on these factors may allow for the development, revision, and promotion of effective concussion educational programs and safety policies and practices at high school and youth levels. Additionally, this study may shed light on the interrelationships between concussion KARMP, which has the potential to influence theoretical and practical implications.

Method

Participants and Procedures

The target population for this study was all 540 high school girls' head soccer coaches in the state of Florida. This population was identified from the Florida High School Athletic Association (FHSAA) directory of member institutions. After conducting an extensive internet search of all 540 schools' websites, we obtained the names and email addresses of 317 head soccer coaches. The remaining 223 schools did not post their soccer coach's email address on their institutional website.

After Institutional Review Board approval from the University of Florida, coaches were emailed a message containing the purpose of the study, a URL to the survey (Qualtrics), and contact information for the primary investigator. A cover letter with informed consent was provided in the front page of the survey and online consent was required for coaches to begin the survey. In an effort to maximize responses, we sent two reminder emails to nonresponders at the 2- and 4-week intervals during the 6-week data collection period. Respondents who successfully completed the survey received a $10 Amazon e-Gift certificate, which was sent to the email address they provided in the survey. A master log of participants who completed the questionnaire was created, which ensured that no individuals completed the survey more than once, as well as helped us to identify nonrespondents. This master log, however, was destroyed after data analysis, preserving respondent anonymity. Forty out of 317 emails sent to head coaches bounced back for unknown reason. Overall, of the 277 emails successfully sent, 140 coaches completed the survey.

Measures

This cross-sectional study utilized a questionnaire that was developed after a comprehensive review of the literature, Florida's concussion statute (Fla. Educ. Code, 2017), and FHSAA's (2017) concussion policy. Additionally, some survey questions were adopted and/or modified from previous studies that examined youth sport coaches' and other relevant stakeholders' (e.g., parents, athletes) concussion knowledge (Gourley et al., 2010; LaRoche et al., 2016; Valovich McLeod, Schwartz, & Bay, 2007), attitude (Kurowski, Pomerantz, Schaiper, Ho, & Gittelman, 2015), and risk management practices (Shenouda et al., 2012). A panel of five experts, including two professors who specialize in sport risk management, two girls' head soccer coaches, and a professor with expertise in survey development and measurement, conducted a test of face and content validity. After the panel members reviewed the survey items for relevance, representativeness, and clarity, we made minor modifications. The survey contained four sections: (1) demographics/professional background (13 multiple-choice items), (2) concussion knowledge (10 Likert-scale items from 1 *definitely false* to 5 *definitely true*), (3) concussion attitude (12 Likert-scale items from 1 *strongly agree* to 7 *strongly disagree*), and (4) risk management practices aimed at reducing and properly managing concussions in soccer (14 Likert-scale items from 1 *never* to 5 *always*).

Statistical Analyses

The data were analyzed via SPSS 21.0. Descriptive statistics (frequency, means, percentages, and standard deviations) were calculated for respondents' demographics/professional background and concussion KARMP. Measures of central tendency were used in evaluating response patterns. Hierarchical regression analyses were performed in examining the interrelationship(s) between concussion KARMP. The aggregate measures of respondents' concussion KARMP were obtained through the addition of coded individual responses (i.e., true/false questions, Likert-scale questions). Statistical significance (α) was defined as $p < .05$ for all statistical tests.

Results

Demographics

Among the survey respondents, 90 (64.3%) were male, with the majority (97.1%) holding a paid coaching position. Slightly more than half (51.4%) of the respondents held a bachelor's degree, whereas 32.9% reported having a master's degree as their highest academic degree. Respondents represented all FHSAA classifications, which are based on the overall number of students enrolled (i.e., 1A, 2A, 3A, 4A, and 5A), with the highest number of respondents employed at 3A institutions (22.9%). Over three quarters (75.7%) of the coaches were employed in public schools (Table 1).

Table 1
Demographics and Professional Background of Respondents (n = 140)

Variable	*n*	(%)
Gender		
Male	90	(64.3)
Female	50	(35.7)
Employment status		
Paid	136	(97.1)
Volunteer	4	(2.9)
Age		
< 29	29	(20.7)
30–39	32	(22.9)
40–49	37	(26.4)
50+	42	(30.0)
Coaching experience (years)		
1–5	70	(50.0)
6–10	25	(17.9)
11–15	21	(15.0)
16+	24	(17.1)

Table 1 (cont.)

Variable	*n*	(%)
Highest degree earned		
High school diploma	6	(4.3)
Associate's degree	12	(8.6)
Bachelor's degree	72	(51.4)
Master's degree	46	(32.9)
Doctorate	4	(2.9)
Classification of school		
Class 1A	18	(12.9)
Class 2A	29	(20.7)
Class 3A	32	(22.9)
Class 4A	26	(18.6)
Class 5A	31	(22.1)
Class Independent	4	(2.9)
School type		
Public	106	(75.7)
Private	34	(24.3)

Knowledge Regarding Concussions

Among the respondents, the majority agreed that a concussion is a type of TBI (4.93 ± .26). The significant majority also correctly identified that losing consciousness is not required for a person to sustain a concussion (4.94 ± .31). Most respondents were also aware that an athlete with a suspected concussion cannot return to play on the same day of injury (4.89 ± .60). However, respondents' knowledge was limited on the causes of a concussion (3.78 ± 1.46) and the methods of diagnosis (2.99 ± 1.47). Furthermore, respondents' knowledge regarding high school–aged students' rate of recovery versus adults' was also deficient (2.89 ± 1.21). See Table 2.

Table 2
Coaches Knowledge Regarding Concussions (A scale of 5)

Key facts about concussions (1 = *definitely false*, 5 = *definitely true*)	***M***	***SD***
A concussion is a type of traumatic brain injury (TBI).	4.93	(.26)
A concussion only occurs when an athlete loses consciousness.[a]	4.94	(.31)
A concussion may be caused by a blow to the neck or elsewhere in the body.	3.7	(1.46)
A suspected concussion requires immediate removal from a game or practice.	4.94	(.38)
A concussion can be detected with CAT scan or MRI.[a]	2.99	(1.47)
An athlete who has a suspected concussion can return to play the same day.[a]	4.89	(.60)
High school–aged students typically take longer to heal from a concussion than older athletes.	2.89	(1.21)
A repeat concussion that occurs before full recovery from the first concussion can slow recovery and increase the chance for long-term problems.	4.80	(.65)
Concussed high school athletes could be allowed to return to play in a slow step-by-step method only if symptom-free.	4.47	(1.14)

[a]Reverse scale (1 = *definitely true* to 5 = *definitely false*).

As Table 3 shows, the most identified typical signs and symptoms were dizziness or balance problems (100%), headache (97.1%), confusion (97.1%), blurred or double vision (96.4%), nausea (95%), sensitivity to light or noise (95%), and concentration or memory problems (94.3%). Items with moderate to high correct responses were feeling sluggish (83.6%), feeling foggy or groggy (82.9%), moving clumsily (77.9%), and behavioral or personality changes (73.6%). Difficulty falling asleep was only selected by 50.7% of the respondents. The most commonly identified distractors included numbness or tingling in upper extremity (19.3%), followed by abnormal sense of smell (15%), and sharp burning pain in the neck (14.3%).

Table 3
Respondents' Concussion Knowledge: Signs and Symptoms

Signs and symptoms	*n*	(%)
Correct signs and symptoms		
Dizziness or balance problems	140	(100)
Confusion	136	(97.1)
Headache	136	(97.1)
Blurred or double vision	135	(96.4)
Sensitivity to light or noise	133	(95.0)
Nausea	133	(95.0)
Concentration or memory problems	132	(94.3)
Feeling sluggish	117	(83.6)
Feeling foggy or groggy	116	(82.9)
Moving clumsily	109	(77.9)
Behavioral and personality changes	103	(73.6)
Difficulty falling asleep	71	(50.7)
Red herrings		
Numbness or tingling in upper extremity	27	(19.3)
Abnormal sense of smell	21	(15.0)
Sharp burning pain in the neck	20	(14.3)
Abnormal sense of taste	19	(13.6)
Shortness of breath	14	(10.0)
Back pain	10	(7.1)
Hearing voices	7	(5.0)
High fever	2	(1.4)
Chest pain	1	(.07)

Attitude Regarding Concussions

The majority of respondents agreed that any suspected concussion must be taken seriously (6.81 ± .68). Additionally, the greater percentage of respondents indicated that the coach plays a critical role in the health and safety of their team (6.83 ± .46). There was also very strong agreement among coaches that creating an environment in which athletes feel comfortable reporting concussion is important

(6.85 ± .41). The majority of coaches also felt that it is important to let their athletes know they take concussions seriously (6.88 ± .39). There was moderate agreement that it is inappropriate to refer to a concussion as a "ding" or "bell ringer" (5.79 ± 1.59) and that recent emphasis on sport-related concussions is overly sensationalized (5.33 ± 1.67; reverse-scale item). Meanwhile, a notable number of respondents disagreed that U.S. Soccer's recent policy on heading restriction for younger participants has improved concussion safety overall (4.28 ± 1.98). Respondents' attitude toward Florida's concussion legislation was also less positive, as a notable percentage of respondents did not agree that such legislation has changed their attitude about managing concussions (4.46 ± 1.68). Table 4 shows the results of the assessed attitude items.

Risk Management Practices

The most commonly employed risk management practices during practice sessions were instructing players to report suspected concussions (4.91 ± .43) and instructing players on proper heading technique (4.61 ± .65). The majority of coaches also ensured proper inflation pressure of soccer balls (4.59 ± .66). Meanwhile, wearing headgear, such as soft helmets or headbands, was uncommon (1.44 ± .76). Similarly, goal posts were not commonly padded (1.45 ± 1.12). Furthermore, most coaches indicated that players were not banned (1.45 ± .79) or discouraged (2.04 ± 1.14) from heading the ball for safety concerns.

Similar results were also reported during games. While most coaches indicated they instructed players to report suspected concussions (4.86 ± .55), players were not banned (1.28 ± .60) or discouraged (1.59 ± .94) from heading the ball during games. Additionally, headgear was not commonly worn during games (1.54 ± .82). Table 5 shows the complete results of risk management practices employed during practices and games.

Interrelationships Between Concussion KARMP

After controlling for demographic variables, aggregate knowledge accounted for 0.4% variance in aggregate attitude variable and 1.1% variance in aggregate risk management practices variable. However, only aggregate knowledge predicted aggregate risk management practices ($F = .252$, $p = .019$). Aggregate attitude accounted

Table 4
Coaches' Attitude Regarding Concussions (A Scale of 1–7)

Attitude items (1 = *strongly disagree*, 7 = *strongly agree*)	***M***	**(*SD*)**
Concussions are a "critical issues" in sports.	6.51	(.91)
Any suspected concussion must be taken seriously.	6.81	(.68)
It is inappropriate to refer to a concussion as a "ding" or "bell ringer."	5.79	(1.59)
The recent emphasis on sport-related concussions has been overly sensationalized.[a]	5.33	(1.67)
Concussions in high school sports are a concern.	6.46	(.84)
The coach plays a critical role in the health and safety of their team.	6.83	(.46)
It is the coach's responsibility to educate athletes about concussions.	6.17	(1.02)
It is important to create an environment in which athletes feel comfortable reporting concussion symptoms.	6.85	(.41)
It is important that my athletes know I take concussions seriously.	6.88	(.39)
My athletes would tell me if they think that they had a concussion.	6.24	(1.11)
I feel that US Soccer's recent policy on heading restriction (for pre-high school soccer participants) has improved concussion safety.	4.28	(1.98)
Florida's concussion legislation changed my attitude/ perception about managing concussions.	4.46	(1.68)

[a]Reverse scale (1 = strongly agree to 7 = strongly disagree).

for a 8.9% variance in aggregate risk management practices after controlling for demographic variables, which was found to be a unique predictor of aggregate risk management practices ($F = 4.20$, $p < .001$). Within the demographic sets, age ($\beta = .288$, $p = .005$) and highest degree earned ($\beta = .183$, $p = .045$) emerged as significant predictors of aggregate risk management practices (Table 6) for both aggregate knowledge and attitude.

Table 5
Risk Management Practices Employed (A Scale of 1–5)

Risk management item (1 = *never*, 5 = *always*)	***M***	**(*SD*)**
Risk management during practices		
Players wear headgear (i.e., soft helmet, headband)	1.44	(.76)
Goal posts are padded on the field	1.45	(1.12)
Players are encouraged to perform neck-strengthening exercises at, or after, practices	2.50	(1.26)
Players are instructed on proper heading technique	4.61	(.65)
Players are discouraged from heading the ball for safety concerns	2.04	(1.14)
Players are banned from heading the ball for safety concern	1.45	(.79)
Players are instructed to report suspected concussions	4.91	(.43)
Proper inflation pressure of the soccer ball is ensured	4.59	(.66)
Players limit physical contact with other players	2.59	(1.18)
Risk management during games		
Players wear headgear (i.e., soft helmet, headband)	1.54	(.82)
Players are discouraged from heading the ball for safety concerns	1.59	(.94)
Players are banned from heading the ball for safety concern	1.28	(.60)
Players are instructed to report suspected concussions	4.86	(.55)
Proper inflation pressure of the soccer ball is ensured	4.70	(.67)

Discussion

The primary aims of this study were to examine concussion KARMP of high school girls' soccer coaches and to assess the interrelationships between the KARMP. Regarding the first aim, the results of the study suggest that high school girls' soccer coaches have strong, overall, foundational knowledge regarding concussions. This finding is consistent with studies that examined high school and

Table 6
Hierarchical Regression Analysis of the Interrelationships Between Concussion Knowledge, Attitude, and Risk Management Practices (KARMP)

Outcome variable and predictor variable	β	R^2	ΔR^2	F
Attitude (aggregate)				
Step 1: Demographics		.047		1.00
Gender	.034			
School type	-.131			
Classification of school	-.061			
Age	.145			
Highest degree earned	.123			
Years of coaching experience	-.118			
Step 2: Knowledge (aggregate)[a]	.066	.051	.004	.930
Risk management (aggregate)[b]				
Step 1: Demographics		.108		2.44*
Gender	.033			
School type	-.097			
Classification of school	-.090			
Age	.288*			
Highest degree earned	.183*			
Years of coaching experience	-.041			
Step 2: Knowledge (aggregate)[a]	-.146	.128	.011	2.52*
Risk Management (aggregate)[b]				
Step 1: Demographics		.108		2.44*
Gender	.033			
School type	-.097			
Classification of school	-.090			
Age	.288*			
Highest degree earned	.183*			
Years of coaching experience	-.041			
Step 2: Attitude (aggregate)	.306**	.197	.089	4.20**

[a]Aggregate scores of concussion facts and signs and symptoms. [b]Aggregate scores of risk management practices during practices and games.
*$p < .05$. **$p < .001$.

youth sport coaches' knowledge on concussions (Chrisman et al., 2014; Esquivel et al., 2013; Mrazik et al., 2011; Naftel et al., 2014).

However, it was concerning that many respondents did not know that high school–aged athletes typically take longer to recover from concussions than adults. Similar to the current findings, a previous study (O'Donoghue et al., 2009) also noted that 43% of coaches surveyed did not know an athlete's age was often a factor in recovering from a concussion. Another knowledge deficit for the respondents was regarding the procedures utilized in detecting and/or diagnosing concussions. The methods used for properly diagnosing concussions are commonly misunderstood. A study involving school speech-language pathologists found that close to 73% either did not know or were unsure about the ineffectiveness of CAT scans or MRIs in detecting concussions (Duff & Stuck, 2015). Whereas concussed athletes and their parents may expect an MRI or a CAT scan after a head injury, these types of neuroimaging mechanisms typically do not show abnormal brain activities following a concussive incident (Jagoda et al., 2002). Furthermore, respondents' knowledge regarding the potential causes of concussion was deficient as well. Our finding was not as positive as that in other studies (Chrisman et al, 2014; Mrazik et al., 2011) in which over 80% of youth sport coaches correctly identified that a concussion can stem from contact sustained from body parts other than the head. Understanding the mechanisms of concussions is pivotal for coaches because they are often responsible, particularly in the absence of athletic trainers and/or other medical personnel, for removing an athlete with a suspected concussion from play.

In regard to the signs and symptoms associated with concussions, we found that many coaches did not properly identify sleep problems, behavioral/personality changes, and clumsy movements as possible signs and symptoms of a concussion. In fact, a notable number of respondents (i.e., athletes, coaches, and parents) in other studies also did not realize emotional and sleep-related problems were also signs or symptoms of a concussion (Cournoyer & Tripp, 2014; Kurowski, Pomerantz, Schaiper, & Gittelman, 2014; Mannings et al., 2014). This suggests that youth sport stakeholders are not fully aware of the cognitive, emotional, and sleep-related issues associated with concussions. These findings stress the need for an added

emphasis on the subtle and/or less distinct signs and symptoms in future educational initiatives.

Overall, the respondents demonstrated positive and/or favorable attitudes regarding concussions. Such promising results may have been spurred by recent media attention, knowledge translation, and legislative efforts, all of which may have helped create positive social norms about the importance of prudent concussion management. Notably, the overwhelming majority of coaches agreed that creating an environment in which athletes feel comfortable reporting concussions is important. This is imperative for coaches given that many athletes are unwilling to report concussions primarily due to fear of being removed from play and/or the cultural norms in sports, such as not wanting to let teammates down (McCrea et al., 2004). Moreover, a larger percentage of coaches felt confident that their athletes would tell them if they had a potential concussion, which provides optimism, because previous studies (Guilmette et al., 2007; Hossler et al., 2013) reported a less positive attitude of coaches regarding their athletes' willingness to report concussions. Specifically, Guilmette et al. (2007) found only 41% of coaches believed their players would report a suspected concussion. Similarly, Hossler et al. (2013) noted that close to 50% of athletes were unlikely to report a suspected concussion to their coach. Although more research regarding a coach's influence on their athletes' reporting behaviors is warranted, coaches should nevertheless create a culture whereby athletes are strongly encouraged and feel comfortable reporting suspected concussions. Furthermore, the perceived social norm can be an important predictor for increased injury reporting among athletes (Kroshus et al., 2014). Taylor and Sanner (2017) suggested that high school athletes were less likely to report potential concussions if the school had negative subjective norms about reporting. Therefore, all coaches involved in high school and youth sports have a social and ethical responsibility to shift the attitude of "winning at all costs" to one that stresses the athletes' health and safety above all.

Recently, in an attempt to reduce the frequency and severity of head impacts, U.S. Soccer implemented a policy that restricts heading for pre–high school soccer players. Respondents in this study, however, had mixed attitudes regarding whether this policy has improved concussion safety. Negative attitudes toward this heading

restriction policy may have been spurred by several research studies that did not associate heading with an increased concussion risk (Koutures & Gregory, 2010; Pickett et al., 2005; Putukian, 2004). Some studies have suggested factors other than heading as the primary causes of concussions in soccer, including collisions with other players and falling to the ground (Andersen et al., 2004; Comstock et al., 2015). In fact, banning heading during a young athlete's development may put them at a greater risk of sustaining concussions later in their athletic career. The lack of instruction and/or experience on proper heading technique may lead athletes to react tentatively to a ball in the air when they are going for a header. The scientific community should continue to investigate the concussive injury risk from heading and collaborate with U.S. Soccer to establish the most effective heading policies for younger participants.

The selected risk management practices in this study were not largely employed by high school girls' soccer coaches. Such findings are not surprising, as a similar study conducted by Shenouda et al. (2012) also revealed a low level of risk management practices in the community youth soccer setting, including a lack of utilizing headgear, instructing neck-strengthening exercises, and limiting heading. The less extensive risk management practices employed in this study are also understandable given the inconclusive evidence on the effectiveness of soccer-related practices in preventing or reducing concussions. For instance, there is an ongoing debate regarding the use of headgear in the soccer community. Research suggests that headgear is not always effective in reducing head impact from purposeful heading, but it has been shown to reduce head trauma that occurred from head-to-head collisions (Delaney et al., 2008). Furthermore, banning heading during high school girls' soccer practices was not common. It has been suggested that most soccer-related concussions occur from player-to-player contact (Yard et al., 2008), and therefore, scholars postulate that banning heading may not have a significant effect in preventing concussions unless such a ban would reduce player-to-player contact (Comstock et al., 2015). Additional research in this area is warranted, including an examination of the relationship between cumulative heading and increased concussion risk.

To our knowledge, this study is the first to examine the associations between concussion KARMP. However, given the exploratory nature of this study, interrelationships between these variables should be interpreted with caution. The overall results suggest partial relationships between these three variables. First, respondents' knowledge did not significantly predict their attitudes, which was not surprising as scholars have noted that knowledge can be a positive, but weak, predictor of attitudinal and/or behavioral changes (Koerber et al., 2006; Singh, 2009). However, both knowledge and attitude were associated with the employment of risk management practices. Attitudes regarding concussion, in particular, were strongly associated with risk management practices. Based on this relationship, it is recommended that coaches' concussion educational materials be developed from a theoretical basis, which may help create a more positive attitude and subsequently promote behavioral changes (Caron et al., 2018).

This study is not without limitations. First, participants were limited to girls' high school soccer coaches in Florida, and therefore, generalization of the findings to local, regional, and national levels should be made with some degree of caution. Second, the use of self-reported data also limited our study, since surveys do not typically allow for the verification of participants' responses. Third, our study may have been limited by participation bias in which coaches with an interest and/or greater familiarity with concussions may have been more likely to respond to the survey request. Finally, the lower response rate may limit the generalizability of this study.

Conclusion

The results of this study suggest that high school girls' soccer coaches, overall, have a solid foundation of concussion knowledge and a positive attitude regarding concussions. Despite the promising findings, gaps in knowledge exist in the areas of the causes, diagnosis, less-distinct signs and symptoms (i.e., sleep problems, behavioral or personality changes), and conservative management for young athletes with a concussion. Future educational interventions should address these knowledge gaps among high school soccer coaches. Although the coaches' overall attitude toward concussions

was positive, such as their role in managing concussions, a significant majority of respondents did not believe that U.S. Soccer's heading restriction policy had a positive impact on reducing concussions. Policy makers should consider these findings in an attempt to better address future concussion-related policy in the interscholastic and youth soccer context. The low level of soccer-related risk management practices found in this study is not surprising given the inconclusive evidence on the effectiveness of such. More research in this area is warranted, which may assist coaches in adopting practices that are known to reduce concussions and can help them properly manage concussions in soccer. Finally, although this study supported a salient relationship between attitude regarding concussions and the employment of risk management practices, the relationship between knowledge and risk management practices was less strong. Coaches' knowledge, however, was not significantly associated with their attitude. Future research should further examine the interrelationships between these variables.

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SPORT MANAGEMENT

"Students Are the Reason Most of Us Have Jobs": Sport Management Faculty Members' Perceptions of and Attitudes Toward Students

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Abstract

Sport management is one of the fastest growing disciplines on college campuses nationwide. Its multifaceted nature suggests that it has a unique blend of students with broad ranging interests. To ensure student success, it is important to understand faculty attitudes toward students. There are two predominant attitudes toward students that occur along a spectrum: conservative-autocratic and liberal-democratic. The conservative-autocratic attitude is characterized by traditional classroom authority, class discipline, and placing little emphasis in the encouragement of autonomy within their students. Liberal-democratic attitudes are characterized by the belief that students should be treated as individuals and can be self-directed in their learning. Liberal-democratic attitudes have been positively correlated with the academic success of students. Utilizing Ng's (2002) Teachers' Attitudes Toward Students scale (TATS) scale and informed

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by McGregor's (1960) X and Y managerial models of motivation, this study explored sport management faculty attitudes toward students. This study used a mixed methods approach, and 166 sport management faculty members participated in this study. Although the results indicate that the participants prefer adopting liberal-democratic approach in their teaching, older faculty members and tenure-track faculty members were significantly more likely to exhibit conservative-autocratic attitudes toward students. As such, faculty members need to be aware that some circumstances may impact teaching effectiveness and directly influence student outcomes.

Sport management is one of the fastest growing disciplines in American universities. The necessity for specialized education in sport management was recognized as early as 1966 when Ohio University established the first sport management program. In 2003, 166 institutions recognized by the North American Society for Sport Management (NASSM) housed sport management programs (Jones et al., 2008). By 2012, NASSM indicated there were over 300 sport management degree programs (Schwab et al., 2013). As of September 2020, NASSM (n.d.) lists over 700 graduate and undergraduate sport management programs at over 530 institutions of higher learning in the United States.

Sport management espouses health, socialization, socioeconomic development, and identity in ways that are unique to the field while having positive public outcomes (Chalip, 2006). To establish the legitimacy of sport management as its own field, it is necessary to find relevancy in existing theories from other disciplines, including psychology and, more specifically, pedagogy (Chalip, 2006). One element of pedagogy that deserves greater exploration is the attitudes and perceptions that faculty hold about students. Relationships between faculty and students are paramount to the success of students in many disciplines across universities and time (Baker & Griffin, 2010; Bordes-Edgar et al., 2011; Kuh & Hu, 2001). However, sport management faculty attitudes toward students have not been specifically assessed. Due to the unique multifaceted nature of sport management, these attitudes may manifest differently in this field of study than in others. Sport management faculty attitudes toward students must be better understood, as such perceptions can directly influence learning outcomes (Ng, 2002).

As Ng (2002) proposed, attitudes toward students occur on a spectrum. This spectrum ranges from conservative-autocratic to liberal-democratic. Faculty with conservative-autocratic attitudes toward students believe that students are expected to respect authority and that those who do not cooperate should be disciplined (Heyder & Kessels, 2015; Ng, 2002; Smith, 2017). Research demonstrates that students taught by conservative-autocratic instructors exhibit lower confidence, have a lower sense of self-worth, and have low rapport with their faculty (Ng, 2002; Webb & Barrett, 2014). Faculty with liberal-democratic attitudes toward students believe students to be capable of independence and self-direction in their learning. They may use a more personal approach in interactions with students (Kauts, 2016; Ng, 2002). Students taught by faculty with liberal-democratic attitudes have been shown to be more creative and independent and enjoy being challenged (Ng, 2002; Reeve et al., 2018).

On a deeper level, these attitudes are rooted in the faculty-held beliefs regarding the motivations of students. Conservative-autocratic attitudes are predicted by the conscious or subconscious belief in McGregor's Theory X, which states that students are unmotivated to learn and require extrinsic incentives to complete coursework. Alternatively, a liberal-democratic attitude is predicted by a similar belief in Theory Y, which states that students are self-directed and intrinsically motivated in their learning. By measuring the attitude dyad, researchers have identified not only the attitude and resulting teaching style but also the underlying perceptions of student motivations (Ng, 2002; Rao, 2016).

Within the field of sport management, research has examined the academic preparation of sport management faculty (e.g., Dittmore et al., 2007; Mahony et al., 2006), mentoring relationships (Baker et al., 2019), experiential learning (Sattler, 2018), and work motivation and job satisfaction (Stokowski et al., 2018). However, a paucity of research exists regarding sport management faculty attitudes toward students, which have tremendous impacts on learning outcomes. Informed by the conservative-autocratic/liberal-democratic dyad as developed by Ng (2002) and its basis in McGregor's (1960) Theory X and Y, this study examined sport management faculty

attitudes toward students. Specifically, this study strived to answer the following research questions:

- **RQ1:** To what extent do sport management faculty exhibit conservative-autocratic or liberal-democratic attitudes toward students?
- **RQ2:** Which factors predict the degree to which sport management faculty exhibit conservative-autocratic or liberal-democratic attitudes toward students?

Importance of Student–Faculty Relationships

Student success must be an essential factor in all institutional work and decision-making (Drake, 2011). In academia, faculty are the experts who possess both skills and content knowledge that students need to be successful. Faculty can form conceptual frameworks and facilitate learning of new content to their students (Coil et al., 2010). Students gain their information primarily through interactions with faculty who determine if students are appropriately conquering that knowledge (Murray et al., 2008). As Bain et al. (2011) identified, student success is linked to "(a) department culture, (b) student–faculty relationships, (c) financial support, (d) student involvement and (e) program satisfaction" (p. 3). The focus of this study is the second tenet of this theory. Student–faculty interactions can moderate self-confidence, retention, and ultimately academic success (Komarraju et al., 2010).

Self-Confidence

Student–faculty interactions are mediated by respect and approachability (Micari & Pazos, 2012). Respect and approachability are developed through investment. Respect is a key component in developing self-confidence in students (Scott, 2017). Self-confidence and subsequently respect can be fostered through healthy and positive student student–faculty interactions. Faculty who voice care and concern for students, as if they have an investment in them not only as students but also as human beings, contribute positively to the construction of respect between faculty and student. This investment demonstrates to the student that professors want the student to succeed and will do everything possible to help in that success (Bain et al., 2011). Further, Zepke and Leach (2010) reported that students will be committed to working harder, be more willing to express

their opinions, and benefit more from sessions if they perceive faculty to be approachable and respectful. Investment through respect and approachability is foundational in the creation of mutually beneficial student–faculty interactions and is positively associated with academic success. Student–faculty interactions take many forms, and the context of the interaction is key to the construction of approachability and respect.

Student–faculty interactions are generally considered to be either formal or informal. Formal interactions include email, course lectures, syllabi, and instructions. Informal interactions include conversations with students during office hours, before class, or after class and social media interactions. Positive formal relationships between students and faculty increase reports of ethnic minorities feeling more comfortable in their educational program (Meeuwisse et al., 2010). However, formal contact is not the only type of interaction that is important for students. According to Micari and Pazos (2012), there was a significant relationship between persistence in college and informal contact with faculty in first-year students. Thus, both types of interactions between faculty and students are critical in developing and exhibiting respect and approachability, which may ultimately culminate in a greater sense of self-confidence for the student. Faculty, then, should seriously consider the context of each interaction when engaging with students to foster student success.

Retention

According to Fowler and Boylan (2010), student retention and engagement are positively associated with the successful student's relationship with faculty members. Zepke and Leach (2010) believe students will be more likely to engage with faculty who create appealing learning environments, challenge their students, and demand high standards, all while making themselves available to discuss academic progress. Komarraju et al (2010) addressed similar findings in that faculty who initiated relationships with their students increased the engagement and retention of such students. The degree to which faculty interact with their students also plays a key role in the level of engagement. Greater frequency of student–faculty interaction has been positively correlated with a more engaged student body (Micari & Pazos, 2012). Cooperative learning environments in which faculty have greater quality of interactions have also been positively

associated with retention and persistence in college (Meeuwisse et al., 2010; Micari & Pazos, 2012). Komarraju et al. (2010) suggests that even without such learning environments, students are more likely to feel more satisfied and remain enrolled if they are successful in having a close relationship with at least one faculty member.

Academic Success

Finally, student academic success in higher education as it is measured via course grades, test performance, and GPA is positively associated with greater positive student–faculty interaction (Al-Hussami et al., 2011; Cung et al., 2018; Kim & Sax, 2009). Not only the general study body benefits greatly from positive student–faculty interactions, but also the subpopulations within it, including students who have been marginalized historically (Schreiner et al., 2011). First-year students who felt their academic pursuits were supported by faculty were significantly more likely to show an improvement in academic performance than students who did not have such support (Zepke & Leach, 2010). While good interactions with faculty have positive downstream consequences, negative interactions with faculty predictably have the opposite impact.

Negative interactions with faculty deleteriously affect students' decisions to seek further assistance (Murray et al., 2008). Students may also feel alienated and distant from faculty members as a result of poor or unpleasant interactions. Students who perceive faculty to not care for them or their learning report feelings of discouragement and apathy as well (Komarraju et al., 2010). It is then critical for the academic success of college students that student–faculty interactions be on average positive experiences for the student.

What, then, determines the nature of a student–faculty interaction? Ng (2002) proposed that the worldview of faculty, including how faculty perceive student motivation, plays a key role. Perception includes sensory information obtained through experiential observation. Perception data and other factors combine to form a person's attitude toward students generally and attitudes have real-world impacts on the quality of the student–faculty interaction (Hor & Ng, 2005; Ng, 2002).

Faculty Attitudes Toward Students

An attitude is a psychological tendency toward an evaluative response, generally liking or disliking of an object or a person (Eagly & Chaiken, 1993). Attitudes can be formed in many different ways. They can form as a result of a summative process—constructed from feelings about the elements of an object. They can be formed from social learning—other people tell a person what to like or dislike. They can be formed via classical conditioning—positive or negative association with an object that becomes paired enough times to create an attitude, or it can be genetic. The attitudes that faculty develop toward students are equally as complex and can be formed in as many ways.

As Ng (2002) found, age, mentor, and experiences have an impact on faculty attitudes toward students. Examples of common attitudes toward students include the attitudes that student athletes are not strong students (Baucom & Lantz, 2001; Engstrom et al., 1995), that international graduate students are good students (Trice, 2003), and that female sport management students as more suited for positions in a women's professional basketball league compared to their male counterparts (Grappendorf & Burton, 2016). Ng noted that these attitudes can be categorized into two separate but broad categories: conservative-autocratic and liberal-democratic.

Faculty attitudes toward students can be viewed on a continuum from the belief that students can be self-directed and motivated in their learning (liberal-democratic) to the belief that students need structure and extrinsic reward to complete their work (conservative-autocratic; Amoura et al., 2015; Ng, 2002). These attitudes are critical, yet few faculty understand their bias in reference to these attitudes (Markwell, 2004). Faculty attitudes toward students are correlated not only with their teaching style but also their perceptions of students generally. Rooted within their attitudes exist their beliefs about the motivational states of students and thus characteristics of students generally. The conservative-autocratic/liberal-democratic attitude dyad rests upon the perceptions of students and McGregor's Theory X and Y, which is a theory not only of management but also of human nature generally.

Liberal-democratic attitudes are associated with adopting students' perspectives, welcoming students' thoughts, and supporting autonomous self-regulation (Reeve, 2009). Faculty who follow Theory Y may be more likely to exhibit liberal-democratic attitudes toward students and treat students as unique individuals (Ng, 2002). Ng (2002) purported that teachers can in fact meet those three needs in accordance with Theory Y via supporting personal autonomy, become interpersonally involved with students, and providing challenging tasks for students.

Demonstrations of the liberal-democratic attitude may include nurturing inner motivations, providing rationale to answers, using noncontrolling informative speech, and displaying patience (Reeve, 2009). Faculty with liberal-democratic attitudes may exert less control in the classroom and may even have a less regimented course schedule, allowing for discussion and dialogue (Markwell, 2004). Students of instructors who hold a liberal-democratic attitude report being more curious, more independent in their learning, and more committed to learning objectives (Ng, 2002). The liberal-democratic attitude is more often associated with positive academic outcomes such as increased academic performance and motivation to learn (Markwell, 2004; Rao, 2016).

Alternatively, faculty who believe students are lazy, unmotivated, and lack work ethic are more likely to have a conservative-autocratic attitude toward students (Heyder & Kessels, 2015; Ng, 2002; Smith, 2017). Those who share the conservative-autocratic view often feel that hard work and meeting the goals outlined by the instructor are vital to learning (Heyder & Kessels, 2015; Ng, 2002; Smith, 2017). Conservative-autocratic attitude is operationalized through relying on extrinsic sources of motivation, neglecting rationales, using pressuring speech, and displaying impatience for students to produce the right answer (Reeve, 2009). Students subject to a conservative-autocratic attitude report feeling less connected to teachers, lower confidence in own their abilities, and decreased ambition in further educational pursuits (Ng, 2002).

Again, these attitudes exist on a spectrum and faculty can vary to the degree by which they hold such attitudes. Students are perceptive and can identify which attitude a faculty member may hold (Grolnick & Ryan, 1989). It is unlikely that faculty hold both attitudes at the

same time, however. Amoura et al. (2015) and Rao (2016) found independence of the two attitudes in higher education. The degree to which a faculty member holds a certain attitude is directly related to their perception of students. These perceptions, in this context, are rooted in the believed motivational states of students. For the purposes of this study in replication of Ng's (2002) methodology, McGregor's (1960) Theory X and Y serve as the perceptions (sensory information) upon which the conservative-autocratic/liberal-democratic attitudes are formed.

McGregor's Theory X and Y

McGregor's (1960) Theory X and Y are polarized views of motivational states. The theories jointly hold that professors and instructors act as managers in the classroom and guide students to learning objectives of the course (McGregor, 1960). However, to act in a certain way and hold either a conservative-autocratic attitude or a liberal-democratic attitude, faculty must first perceive students to be a certain way.

Theory X assumes that the average student does not like work, lacks drive, and requires extrinsic incentive to motivate action (McGregor, 1960). Faculty beholden consciously or subconsciously to Theory X are typically more traditional, older, tenured, or mentored by faculty who held such views. Theory X believers may be considered to hold conservative-autocratic attitudes toward students. Theory X posits that grades serve as the extrinsic reason for students to complete work. Theory X also suggests that those who misbehave are punished or embarrassed and thus seen as an undesirable model for classroom learning (Noland, 2014).

Theory Y assumes that the average student enjoys work and that students are capable of exercising self-direction and self-control in relation to learning objectives (McGregor, 1960). Students of those who utilize Theory Y report being more curious, more independent in their learning, and more committed to learning objectives (Ng, 2002). McGregor's Theory Y encourages faculty to meet the three basic psychological needs of students as suggested by self-determination theory (Deci & Ryan, 2008): autonomy, competence, and relatedness. While Theory X uses grades as the extrinsic reason for student action in the classroom, Theory Y assumes that the intrinsic motivation behind student action is the joy of learning.

Several studies have examined these perceptions directly and as Theory X and Y closely overlap with the attitudes of concern in this study, the results of such studies are telling. In a study of 260 faculty, Rao (2016) found that most faculty either consciously or subconsciously hold a Theory Y perception to a general degree (54%) or to an extreme degree (24%), whereas only roughly 20% of faculty have a Theory X perception. Similarly, Markwell (2004) also found that more faculty perceived students to be self-directed and motivated but acknowledged that the degree to which they were Theory X or Y varied and had an impact on their classroom practices. Faculty who are more Theory X oriented are more likely to be controlling in the classroom and have a more regimented syllabus, have less interactive classes, and prefer a traditional lecture format (Markwell, 2004). Theory Y faculty on the other hand usually use less structure in their classes and are more open to a two-way dialogue while using discussion as a key element to academic success in the classroom (Markwell, 2004). Theory Y generally has a more positive outcome for students in terms of academic success, retention, and satisfaction (Hor & Ng, 2005; Ng, 2002; Rao, 2016).

Previous Research Using TATS

The Teachers' Attitude Toward Students (TATS) scale assesses the degree to which a faculty member views students through the Theory X lens or the Theory Y lens with the assumption that those who see students as lazy or unmotivated (Theory X) and need discipline are conservative-autocratic in their attitudes toward students. The TATS scale was developed to measure teachers' attitudes toward students on the continuum from conservative-autocratic to liberal-democratic based on McGregor's Theory X and Y (Ng, 2002). TATS has been used for this purpose in two studies (Hor & Ng, 2005; Ng, 2002). Ng (2002) initiated this dyadic interaction in primary and secondary school teachers and found that the more experienced a teacher is, the more conservative-autocratic they are. In replication of this, Hor and Ng (2005) assessed the attitudes of primary school teachers and found that most primary school teachers were liberal-democratic in their approach. Unfortunately, there has been very little utilization of this scale in higher education, presumably because of the lack of distinction between perceptions (McGregor's Theory X and Y) and attitudes (conservative-autocratic/liberal-democratic).

This study intentionally clarifies that distinction and allows for a greater understanding of the attitudes to be developed via a mixed methodology.

Sport Management Faculty

This contribution along with the dearth of research on sport management faculty attitudes toward students will provide greater understanding of the relationships between them so that ideal student outcomes may be more precisely aimed at. Little research exists on sport management faculty perceptions of sport management students. However, the research that does exist on sport management faculty indicates that autonomy is key in maintaining motivation and job satisfaction of faculty, perhaps insinuating that a liberal-democratic attitude toward faculty may be most beneficial (Stokowski et al., 2018). Many sport management faculty implement experiential learning in their classrooms as well, again indicating some demonstration of the liberal-democratic attitude in sport management faculty (Sattler, 2018). This evidence indicates that similar to the findings of Hor and Ng (2005) and Ng (2002), the findings in this study might show that sport management faculty have a liberal-democratic attitude toward students.

Method

Data Collection and Sample

One of the aims of this study was to examine sport management faculty members' perceptions of and attitudes toward teaching. In order to study the target population, NASSM's list of global sport management programs were used. Researchers visited program websites and obtained email addresses of sport management faculty. A total of 1200 email addresses were obtained. An invitational email containing an online survey link was sent out by researchers for inviting faculty members to participate in this study. In order to increase the response rate, a following email was also sent two weeks after the first invitational email.

A total of 193 sport management faculty members participated this study, with a response rate of 16%. After 27 responses were discarded due to excessive missing values, 166 valid questionnaires were obtained and analyzed. The mean age of participating faculty

in this study was 46.58 years, 66.9% of the respondents were male, and the majority of the participants worked at public institutions (65.7%). Of the respondents, 63.9% worked at teaching institutions and 80.7% were White.

Measurement

To answer the research question, we utilized the TATS scale, which consists of two subscales (Ng, 2002). The first subscale measures the conservative-autocratic teaching style, and the second subscale measures the liberal-democratic attitude of teachers. Each subscale consists of eight items, which were answered on a 5-point Likert scale from 1 (*strongly agree*) to 5 (*strongly disagree*). Both subscales have adequate reliabilities from .65 to .76. For more in-depth thoughts about faculty perceptions, an open-ended question about the overall experience of faculty in teaching was also included in the distributed survey.

Data Analysis

The data analysis was conducted via SPSS 22.0. First, a series of independent *t* tests was conducted for examining whether there were differences among sport management faculty TATS scores in terms of their gender, age groups, types of funding of institutions (private/public), and types of institutions (teaching/research). Second, to measure whether tenure status impacted faculty TATS scores, we also conducted a one-way analysis of variance (ANOVA). Content analysis was used for analyzing the open-ended question pertaining to each respondent's teaching experience. Open coding was utilized (Merriam, 2009) and Sarah Stokowski, Bo Li, and N. Shelby Hutchens analyzed the participant responses.

Results

Quantitative Data

We measured the extent to which sport management faculty members were conservative-autocratic in their attitudes toward students and the means of this section of the scale ($M = 2.69$, $SD = .81$) indicated that they were in the middle. The faculty were asked whether their teaching style was more liberal-democratic and the results show that all participating faculty prefer adopting liberal-democratic approach in their teaching (see Table 1).

Table 1
Results of TATS Scale

Item		*M*	*SD*
Conservative-autocratic		2.69	.81
1.	Teachers should have absolute authority in class; students should obey the teacher without fail.	2.91	1.15
2.	A revival of the teacher's authority is needed, otherwise students will lose respect for teachers.	2.87	1.14
3.	The traditional moral standards of society should be ingrained in students without fail, otherwise they will go astray.	2.78	1.10
4.	Teachers should ensure [that] students understand their proper place, i.e. I'm the teacher, you're the student, you must obey what I say.	2.58	1.10
5.	Training students to behave properly is more important than developing their creativity.	2.22	1.05
6.	In teaching students, the most critical task is to instill the right discipline in them.	2.48	1.11
7.	Students shouldn't be entrusted with too much freedom, as they'll climb over the teacher's head.	2.21	1.06
8.	Students should maintain a proper distance from their teachers, e.g., they should address him/her in a respectful manner.	3.46	1.11
Liberal-democratic		3.32	.56
1.	Teachers should adopt an open and democratic attitude in class; students should be able to challenge what he/she says.	3.95	.70
2.	Teachers should reason with misbehaving students, instead of punishing them.	3.11	.99
3.	Teachers should "open negotiation" with students, e.g., on how much work he/she can give them.	2.40	1.02
4.	What is needed is a sensitive teacher who can develop good rapport with his/her students.	3.59	.93
5.	In teaching students, the most important thing is to nurture their creativity and individual talents.	3.68	.97
6.	Teachers should reduce their personal distance with students by sharing intimate details, e.g., birthday, favorite pop star, etc.	2.86	1.00
7.	The traditional moral standards of society should not just be accepted by students; they should learn to critique it.	3.60	.89
8.	Teachers should not use threats and punishments to control the behavior of students.	3.35	1.01

Results of the independent *t* tests indicated that age was a significant factor, as faculty whose ages were above that of the mean ($n = 69, M = 2.19, SD = .092$) were more likely to exhibit conservative-autocratic attitudes toward students, $t\ (164) = 7.955$, $p < 0.01$, compared to younger faculty members ($n = 97, M = 3.04, SD = .063$; see Table 2).

Table 2
Results of Differences in TATS Between Different Age Groups

Attitude and age	*n*	*M*	*SD*	*t*	*df*	*p*
Conservative-autocratic				7.955*	164	< .001
Younger	67	3.04	.063			
Older	99	2.19	.092			
Liberal-democratic				.275	164	.784
Younger	67					
Older	99					

There was a significant difference in conservative-autocratic in terms of faculty tenure status, $F(2, 163) = 7.81$, $p = 0.01$ (see Table 3). Post hoc analyses were conducted given the statistically significant omnibus ANOVA *F* test. Specifically, Tukey HSD tests were conducted on all possible pairwise comparisons. The following pairs of groups were found to be significant different ($p < .05$). The conservative-autocractic mean of tenure-track faculty ($n = 49$, $M = 3.05$, $SD = .72$) was significantly higher than that of tenured faculty ($n = 71, M = 2.48, SD = .73$) and non-tenure-track faculty ($n = 46$, $M = 2.63$, $SD = .89$). There were not significant differences between tenure-track, tenured, and non-tenure-track faculty in reference to their liberal-democratic attitudes toward students, $F(2, 163) = .734$, $p = .482$).

However, results of independent *t* tests revealed no significant difference between male faculty and female faculty in terms of their conservative-autocratic behaviors and their liberal-democratic behaviors. Also, no significant difference was found between faculty in public institutions and faculty in private institutions in their attitudes in teaching. Faculty working in research institutions and teaching institutions were also not different in their attitudes.

Table 3
Results of SMF Differences in TATS Between Tenure Statuses

Attitude and tenure status	*n*	*M*	*SD*	*F*	*df*	*p*
Conservative-autocratic				7.81	2, 163	.001
Tenured	71	2.48	.73			
Tenure-track	49	3.05	.72			
Non-tenure-track	46	2.63	.89			
Liberal-democratic				.734	2, 163	.482
Tenured	71	3.37	.62			
Tenure-track	49	3.25	.49			
Non-tenure-track	46	3.29	.54			

Qualitative Data

Three main themes appeared in the content analysis of the open-ended question pertaining to faculty teaching experience: respect, authority, and caring.

Many participants (34%) valued the importance of respect in developing the relationship between a faculty member and a student. Participant 5 mentioned that respecting students could enhance the mutual trust between two parties: "I have learned to trust those who are trustworthy. Sometimes students are influenced by who is around them and discipline is instilled early in the learning process, so creativity can blossom when knowledge is gained." However, multiple faculty cited an ever-increasing lack of respect in the classroom. Participant 43 explained, "I am not a tyrant, but I do demand a certain modicum of respect. With that I also nurture creativity. I do not think they are mutually exclusive." Participant 24 also noted that students' behavior has changed nowadays, as "more and more students behave like a customer."

Caring is another theme that was often mentioned by participating sport management faculty. Participant 32 believes that increasing students' satisfaction is crucial in higher education. The participant noted, "Academics need to recognize that the students are the reason most of us have jobs." Caring for students was mentioned as an effective approach to developing the relationship. Participant 60 explained, "When positive connections are made, and caring exists,

teacher-to-student and student-to-student relationships help the educational processes during class. By caring for students, they will care about their learning and understand the professor is 'there for them.'"

Some participants mentioned that establishing authority in the classroom is also critical in teaching. Participant 13 stated that students have their right to voice their opinions in classroom, but "there MUST be a certain level of respect in that the student recognizes the authority of the professor." Participant 50 also supported this opinion, mentioning that authority matters to a professor in the classroom, but the authority should be established through their base of knowledge rather than their role of being a teacher.

Discussion

As predicted by previous studies, older faculty were more likely to exhibit conservative-autocratic attitudes toward students than were younger faculty (Ng, 2002). One reason for this, as proposed by Participant 24, is that the model of higher education is changing and modern students behave much like customers. A customer service model has taken over many institutions, and as Participant 32 pointed out, students are the reasons that many academics remain employed (Tomlinson, 2017). These results are emblematic of a real-world dilemma that higher education more generally faces: Traditionalists in higher education cling to the educational model where professors professed and students absorbed as much as they could while younger professors have adjusted their attitudes to the new business model and attempt to appease the customers (Tomlinson, 2017).

Tenure-track faculty were also more likely to exhibit a conservative-autocratic style than both already tenured faculty and non-tenure-track faculty. Mentorship may play a key role in the attitude formation of tenure-track faculty (Davis et al., 2011). The requirements and expectations of departments may also affect the attitude formation of tenure-track faculty. Michel et al. (2018) found that tenure-track faculty in the social sciences such as sport management expect more out of their students, as such disciplines focus more on broad general knowledge and student development than factual memorization.

Contextual factors such as institution type, public or private, and gender did not have a statistical impact on faculty attitudes toward students. However, it appears that the differentiation among attitudes is much more dependent on the classroom environment and subject matter than on any binary category (Michel et al., 2018). Other contextual factors were addressed in response to the open-ended question at the end of the survey, where three themes emerged: respect, authority, and caring. Two such themes, respect and caring, are strongly associated with the liberal-democratic teaching style, whereas authority is associated with the conservative-autocratic model and traditional classroom atmosphere as Ng (2002) originally suggested.

Theory Y and the liberal-democratic style is supported by self-determination theory (Deci & Ryan, 1985), which promotes autonomy, competence, and relatedness as the three needs of students that must be met by faculty if students are to engage in class. Respect and caring are deeply intertwined with the psychological needs of autonomy, competence, and relatedness. Need-supportive teaching leads to higher GPA and higher levels of autonomous motivation (Wallace et al., 2014). Faculty who support autonomy, competence, and relatedness may be more successful in motivating their students to productivity (Lyness et al., 2013). Research on self-determination theory indicates that students who are provided more avenues of autonomy report having positive relationships with instructors and peers alike (Ruzek et al., 2016).

As several participants mentioned, developing and requiring respect is key. Respect for the instructor is generated when the instructor provides opportunities for students to act autonomously (Wallace et al., 2014). Autonomy is supported when the instructor eliminates any sense of coercion in the classroom and provides students with choice (Niemiec & Ryan, 2009). Several participants indicated that it is important for students to feel that professors care about them. By making students feel that the faculty member cares about them, the faculty member establishes relationships and becomes more approachable. Developing relationships with students and investing in them nourishes feelings of relatedness as posited by self-determination theory (Ng, 2002). Faculty may also be able to provide emotional support through these relationships, which

further strengthens students' sense of relatedness to the professor (Ruzek et al., 2016). Caring and respect as part of the liberal-democratic teaching style fulfill the psychological needs of students better and may be more effective in the classroom.

Authority is generally considered deleterious to the development and motivation of students (Cheong et al., 2016). However, as Participant 50 indicated, authority should be established based on knowledge, not just classroom hierarchy. Assumption of authority based solely on the relationship between professor and student has a negative effect on the classroom environment and may also have a negative impact on the psychological needs of students (Cheong et al., 2016).

Realistically, students may be more responsive to each theory at various points in the semester (Noland, 2014). Extrinsic incentive may be required for some individuals and not for others in any particular context. The more frequently a professor can attempt to meet the psychological needs of their students, the more motivated their students may be, but exclusively utilizing one teaching style over another is not realistic, which is perhaps evident in the data, considering the mean scores for each scale was within a few deviations of each scales midpoint. Future research needs to determine if this is a unique trend in sport management faculty and social science faculty, or if, in fact, this is a trend in every college department. Mentorship may also be a reason that tenure-track faculty identified with conservative-autocratic attitudes toward students; however, further research is needed on the topic. Future research should also investigate the relationship between autonomy and respect. It is apparent that autonomy is the most important psychological need of students; however, its relationship with generating and maintaining respect is unclear.

Practical Implications

This study replicated the results of Ng (2002) in higher education and more specifically within sport management faculty. Older faculty and tenure-track faculty were more likely to hold conservative-autocratic attitudes toward students, thus assuming that students need extrinsic motivation to complete tasks in the classroom. As also predicted, younger faculty exhibited liberal-democratic attitudes toward students; this is great, as such attitudes are correlated

positively with student success including retention, test scores, and GPA (Markwell, 2004; Rao, 2016). This is a potential problem, as conservative-autocratic attitudes are negatively correlated with student success, and if higher education is to promote student success, administrators should work with faculty to ensure they retain the liberal-democratic attitude they appear to start with. Educators should do their best to be cognizant of this change in attitude and not allow external pressures to impact teaching.

Future Research

Future studies should investigate why and how attitudes toward students change over the course of a faculty member's career. Is the nature of higher education and the publish-or-perish mindset having a deleterious impact on faculty attitudes toward students? It is unclear and requires further investigation. Future research should also identify the most effective way of sustaining the beneficial liberal-democratic attitude toward students over the course of a faculty member's career. More research is also needed as to the ability of faculty to identify their own attitudinal shifts over time to determine if it is even possible for faculty to be aware of their own changing attitudes. Further, tenure-track faculty members in sport management should be of interest to future researchers. It is important that tenure-track faculty receive classroom support to help develop these individuals into effective teachers.

Limitations

This study is limited by the sample size (N = 166) and response rate (16%). Another limitation of this study is the lack of previous literature supporting the use of the TATS measure. However, we believe this scale to be useful in categorizing faculty attitudes toward students broadly, but future studies should include other measures of attitude scales for comparison. Further, response rate on the nonforced response open-ended question on teaching resulted in a low response rate, resulting in few overlapping thematic categories for analysis.

Conclusion

Faculty members play large roles in the academic performance and retention of students (Baker & Griffin, 2010). Two particular

attitudes toward students—liberal-democratic and conservative-autocratic—have different impacts in the classroom. Tenure-track faculty are statistically more likely to identify with conservative-autocratic attitudes than are non-tenure-track and tenured faculty. All three faculty groups identify with the liberal-democratic attitude more so than the conservative-autocratic. Liberal-democratic attitudes are more apt to meet the psychological needs of students, which faculty in this study identified as important.

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YOU AND THE LAW

Law Review: The Perception of CrossFit in the Fitness Marketplace

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Prior to Court

In November 2013, researchers published an article in the *Journal of Strength and Conditioning Research* (*JSCR*), the official research journal of the National Strength and Conditioning Association (NSCA), titled "CrossFit-Based High-Intensity Power Training Improves Maximal Aerobic Fitness and Body Composition." The purpose of this study was to examine the effects of a CrossFit-based high-intensity power training (HIPT) program called "The Challenge." CrossFit training programs consist of high-intensity, functional movements that are tailored to the individual. The organization began increasing in popularity in 2000 and generates revenue by credentialing and certifying trainers and licensing the CrossFit trademark to affiliate gyms. The NSCA is a nonprofit professional organization dedicated to elevating strength and conditioning profession by disseminating research-based knowledge and its practical application (NSCA, 2020).

In this case, the plaintiff (CrossFit) instituted legal proceedings against defendant (NSCA) on the element of falsity of two passages and the underlying data presented in the CrossFit study published by the NSCA. The first passage stated,

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> Out of the original 54 participants, a total of 43 (23 men, 20 women) fully completed the training program and returned for follow-up testing. Of the 11 subjects who dropped out of the training program, 2 cited time concerns with the remaining 9 subjects (16% of total recruited subjects) citing overuse or injury for failing to complete the program and finish follow-up testing. (Smith et al., 2013, p. 3168).

It was further specified,

> A unique concern with any high-intensity training program such as HIPT or other similar programs is the risk of overuse injury. Despite a deliberate periodization and supervision of our CrossFit-based training program by certified fitness professionals, a notable percentage of our subjects (16%) did not complete the training program and return for follow-up testing. (Smith et al., 2013, p. 3171).

CrossFit claimed that the publication seriously damaged its reputation and caused the organization to lose customers. CrossFit subsequently identified the participants who purportedly did not complete the study due to "overuse or injury" and many of these individuals provided declarations explaining the reason for which they did not complete the study. The NSCA did not dispute that the individuals identified were those who cited injury or overuse for failing to complete the program. Of the 11 subjects who dropped out of the training program, 10 provided their reasons for not finishing the study. Only two individuals mentioned injury (sustained outside of The Challenge) and health conditions (preexisting) as the primary reason preventing them from completing follow-up testing.

Smith et al. (2013) contest that they received the injury data from the owner of the gym where The Challenge was conducted. However, the owner denies making the statement that individuals were not able to complete the study as a result of overtraining or injury. The initial manuscript did not include the injury data. This information was added after the *JSCR* editors and peer reviewers requested additional information about why 11 participants dropped out of the training program. A message from the *JSCR* managing editor indicated that the study needed to address the risk of injury

and that the reviewers wanted to provide the coauthors with the opportunity to revise the paper with these factors and concerns in mind. CrossFit contended that the editorial staff's request for the inclusion of these data is evidence that the NSCA had intent to disparage CrossFit training as unsafe. On January 30, 2015, CrossFit moved for summary judgment on the element of falsity. The Court denied CrossFit's motion for summary judgment to allow the NSCA the opportunity to determine (1) whether CrossFit correctly identified the participants in the study and (2) whether those individuals dropped out due to overuse or injury. Upon determining that only two participants provided that injury or health conditions were the primary cause for dropout in the study, the *JSCR* published an erratum that stated injury rate should not be considered a factor in this publication.

CrossFit made a motion for summary judgment that the injury data in the study were false. The plaintiff filed a five-count amended complaint alleging (1) false advertising in violation of the Lanham Act; (2) false advertising in violation of California Business and Professions Code § 17500, (3) unfair competition in violation of California Business and Professions Code § 17200, (4) declatory relief, and (5) trade libel. The defendant filed with the court a cross-motion for summary judgment that the manuscript is not commercial speech and therefore is protected under the First Amendment. The NSCA also made a motion for summary judgment with respect to CrossFit's trade libel claim, stating that CrossFit cannot prove special damages occurred as a result of the publication.

Court Action

The U.S. District Court for the Southern District of California granted in part and denied in part the NSCA's motion for summary judgment and granted CrossFit's motion for summary judgment. The court concluded that the NSCA had an economic motive for publishing the injury data as it relates to maintaining its market share in the fitness industry and decreasing the rising popularity of CrossFit. Because there was evidence that those behind the injury data knew the data were false and the publication of this information served to disparage a competitor's product, the court concluded that the passages relating to injury were commercial speech. Commercial speech

that is false or misleading is not protected by the First Amendment. As a result, the court denied the NSCA's motion for summary judgment on this point.

The NSCA also argued that it is entitled to summary judgment in its favor with regard to CrossFit's trade libel claim. Trade libel is the publication of a false statement of fact that is an intentional disparagement of the name and quality of an organization's goods or services that results in pecuniary damage to the plaintiff (*Erlich v. Etner*, 1964). The court rejected the NSCA's argument that CrossFit lacked sufficient evidence to prove special damages. CrossFit provided evidence that the study received much attention in social media outlets and news media, exposing approximately 4 million potential customers to the injury data. CrossFit also provided the court with testimonies from consumers who had seen the publication and estimates that the organization lost $4 million to $8 million from revenues relating to consumer fees at CrossFit affiliate gyms. The evidence before the court demonstrated that potential customers who were made aware of the injury rate reported in the study were less likely to inquire about CrossFit services. Therefore, the court denied the NSCA's motion for summary judgment with regard to CrossFit's trade libel claim.

The NSCA next urged the court to dismiss CrossFit's declaratory judgment claim because it was superfluous to other causes of action. CrossFit was seeking relief through a declaration that the reported injury data were false. The court concluded that by ruling on CrossFit's motion for summary judgment, the court is already providing such a statement. Therefore, CrossFit's declaratory judgment cause of action was unnecessary and the NSCA's motion for summary judgment on this point was granted.

CrossFit argued that it is entitled to summary judgment in its favor that the injury data in the *JSCR* publication were false. The court concluded that the declarations from the participants who did not complete the study indicate the data were false. The NSCA did not provide evidence to the contrary. Additionally, the erratum published by the NSCA indicated that the authors of the study no longer stood behind the injury data. The court granted summary judgment in favor of CrossFit on the element of falsity as it relates to each of the organization's causes of action.

Discussion

The results of this decision were filed in September 2016 by the U.S. District Court for the Southern District of California, and the article has been retracted from the JSCR. The purpose of the study was to examine the effects of a CrossFit-based training program on aerobic endurance and body composition. The overall conclusion of the article was that CrossFit-based HIPT training significantly improves VO2 max and body composition in in men and women across all levels of initial fitness. Although the manuscript specified the positive outcomes of this training methodology, the facts of the case show that consumers exposed to the injury data were more likely to rate CrossFit training as dangerous and less likely to purchase a trial membership. This case has serious implications for the production and use of purported science in the health and fitness industry. The fitness marketplace is flooded with a multitude of different training methodologies and ideologies. Therefore, it is important that fitness professionals and consumers are aware of the potential risks and benefits associated with each style of training and are provided decent and truthful information.

Implications of this case could have decision-altering effects for students and clients who have the goal of improving fitness and pursuing physical activity safely and appropriately. With the rising popularity of fitness and the multitude of different trends in the industry, it is important for physical education and health professionals to understand the rationale for why clients may choose one fitness regimen over another. Completing a thorough review of literature will provide the most comprehensive understanding of the risks and benefits associated with popular strength and conditioning programs. This study contributed to the societal notion that CrossFit is unsafe or dangerous. The outcome of this case is significant to health and physical education professionals because it provides no reason to call into question the risk-to-benefit ratio for CrossFit training as a result of this publication in the JSCR. Ethical decision-making in academic research is important for maintaining research integrity and providing the maximum benefits to the participants and consumers. The public has a desire to improve fitness in a safe manner. Reporting research results with the use of honest and verifiable

methods is integral to improving the field of health sciences and providing participants with safe and effective exercise regimens.

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