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The association between competence and first-year employment in physical education

Yu Chun Chen and Lorraine Ann Jacques
Ruston, Louisiana, the United States of America

Abstract

Introduction: There are two primary routes to become a physical education (PE) teacher in the United States of America: Through a traditional physical education teacher education (PETE) program and through an alternative teacher preparation program. Both require pre-service teachers (PTs) to pass state-specific and/or national examinations before a desired licensure can take place. Once completed the degree program and met examination requirements, PTs are eligible to apply for any PE positions at K-12 schools in the state (s). According to SHAPE America (2017), PTs should be able to demonstrate competence in six standards by the time they graduate from the PETE program. Previous research has indicated the use of content knowledge, pedagogical content knowledge, and fitness and skill proficiency to assess PTs' competence. However, limited research has been conducted to explore first-year employment after graduation or the relationship between PTs' competence and their job attainment in PE. This study intended to examine the association between PTs' competence and their first-year job attainment in PE. **Methods:** Participants were 31 PTs who completed their undergraduate degrees in the PETE program at a regional university in the southeastern USA between the 2015-16 and 2018-19 academic years. The participants' content knowledge in Kinesiology subdisciplines and health-related areas, content knowledge in sports/physical activities and skill proficiency, and pedagogical content knowledge were collected through the calculation of grade point average (GPA) in respective courses. The participants' fitness proficiency was evaluated using five testing items from Cooper Institute's Fitnessgram® and then categorized as "excellent", "acceptable" or "unacceptable" based on the number of passing scores. The participants' first-year employment was collected by asking whether or not they took a full-time PE teaching position in K-12 school settings via emails and phone calls. The three continuous and one categorical data, as independent variables, were analyzed to identify any significant relationship with the dependent variable (1 = employed in PE, 0 = not employed in PE) using a multiple logistic regression and Fisher's exact test. **Results:** The participants had the highest GPA in pedagogical content knowledge (3.55), followed by content knowledge in sports/physical activities and skill proficiency (3.53) and content knowledge in Kinesiology courses (3.11). There was an overall passing rate of 71% for the participants who demonstrated "excellent" and "acceptable" fitness proficiency. More than half of the participants (58.1%) became full-time PE teachers at K-12 school settings. Lastly, the participants' content knowledge, pedagogical content knowledge, and their fitness and skill proficiency had no significant effect on their first-year job

通訊作者：YuChun Chen, Ph.D. Louisiana Tech University
P.O. Box, 3176 Ruston, LA 71272, USA
TEL: (318) 257-5463
E-mail: ychen@latech.edu

attainment in PE. **Conclusion:** This study was limited to the small sample size, the use of Fitnessgram® as the assessment battery, and the title of the position defined. Future research could (a) collect a larger sample size with more than one PETE program across the USA or internationally, (b) administer a fitness test that has national criterion-referenced standards for college students, (c) define the position in a broader term such as "physical educator," and (d) collect qualitative data to discover the various reasons whether or not and how they became physical educators. Such attempts may yield different results and produce a more appropriate representation of the target population in this line of research.

Key words: competence, content knowledge, pedagogical content knowledge, fitness proficiency, skill proficiency, first-year employment, job attainment in physical education

Introduction

Physical education (PE) gives children and youth an opportunity to develop the skills and knowledge necessary to live a healthy and physically active lifestyle. PE teachers in the United States of America (USA) are state-certified educators who are responsible for instructing students in the physical, cognitive and social domains within a structure K-12 school setting. The two primary routes of becoming a PE teacher in the USA are through a traditional physical education teacher education (PETE) program and through an alternative teacher preparation program. The former is typically a four-year undergraduate degree program that includes intensive coursework (e.g., Kinesiology discipline-specific knowledge, K-12 PE content and pedagogical knowledge, materials and methods in teaching K-12 PE) and a culminating student-teaching experience, and the latter is either a master's degree or a certificate program that emphasizes the teaching methodology and practical components for individuals who have already earned their bachelor's degrees in a Kinesiology-related field. Regardless of the chosen route, pre-service teachers (PTs) must take and pass state-specific and/or national examinations (e.g., Texas Examinations of Educator Standards, Florida Teacher Certification Examinations, Praxis II Health and Physical Education: Content Knowledge, Praxis II Physical Education: Content and Design) before the desired licensure/certification can take place. Those who have completed the degree program and examination requirements are eligible to apply for any PE positions at K-12 schools in the state (s). The selection process was simply based on applications and face-to-face interviews. Unlike how it has been conducted in Taiwan, a teaching demonstration is completely omitted in teacher-selection process in the USA.

Factors influencing PE graduates' job attainment are out of PETE faculty's control, but what the faculty can do is to make sure their students receive quality training that meets field standards and prepares them for real-life workplace. According to SHAPE America (2017), PTs should be able to demonstrate competence in *Standard 1: Content and foundational knowledge*,

Standard 2: Skillfulness and health-related fitness, *Standard 3: Planning and implementation*, *Standard 4: Instructional delivery and management*, *Standard 5: Assessment of student learning*, and *Standard 6: Professional responsibility* by the time they graduate from the program. PETE faculty can deliver all the materials and methods that align with the national standards and best practices, but it is up to the PTs whether or not they want to fully invest in themselves during undergraduate studies. Many PTs, PETE faculty and scholars may wonder if hard work would really pay off at the end. This curiosity leads to the question: Do PTs who are more competent have a greater chance to secure employment as PE teachers upon graduation?

Review of literature

According to Weinert (2001), competence referred to "the positive combination of knowledge, ability and willingness in the availability of the individual to cope successfully and responsibly with changing situations" (p. 45). A competent PE teacher should possess (a) content knowledge in a variety of Kinesiology subdisciplines (e.g., anatomy, biomechanics and physiology) and PE-related areas, (b) pedagogical content knowledge in planning and implementing developmentally appropriate PE classes, (c) disposition that shows responsible and committed attitude to build a well-rounded learning environment for all students, and (d) professionalism that demonstrates positive interaction with students and fellow teachers in order to lead everyone toward the healthy and physically active lifestyle (Francesco, Coco, Frattini, Vago, & Andrea, 2019). PTs should be trained and acquire the competence to plan and deliver high-quality PE lessons and help their future students become physically literate individuals defined by SHAPE America's (2013) national standards (Askar, 2008; D'Elia, 2019; D'Isanto, 2016, 2019; Francesco et al., 2019; Gaetano, 2012). Such competence will contribute not only to the short-term motor and skill development of children and youth during elementary and early secondary school years, but also to the long-term life choices of adolescents and adults during high school and many years after that (Ennis, 2014; Lindsay, 2014; Metzler, 2014; Rink & Hall, 2008; Solmon & Garn, 2014).

Previous research has indicated the use of content knowledge, pedagogical content knowledge, and fitness and skill proficiency to assess PTs' competence. For content knowledge, Ayers (2001) developed a seven-test battery entitled *Assessment of Subdisciplinary Knowledge in Physical Education* (ASK-PE). In average, PTs scored the best on the motor development and exercise physiology tests (76-87%) and the worst on the historical perspectives test (59-68%)(Ayers, 2002). No recent research was conducted using ASK-PE or similar tests to measure PTs' subdisciplinary knowledge in the selected databases (i.e., ERIC, PsycINFO and SPORTDiscus). However, there were several empirical studies that examined PTs' content knowledge in PE-related areas. It was evident that the majority of the PTs scored between 54.8% and 70% on the health-related fitness knowledge with a small group of them scored at the acceptable level of 80-82.06% (Barnett & Merriman, 1994; Disch, Santiago, & Morales, 2012; Losch & Strand, 2004; Miller & Housner, 1998; Petersen, Byrne, & Cruz, 2003; Santiago, Morales, Disch, & Morrow, 2016). As for the knowledge of sports/physical activities, the PTs in Santiago and colleagues' (2016) study scored 50.8% in the physical activity portion of

the test, and those in Tsuda and colleagues' (2019) study failed to pass the content knowledge tests in all four sports (i.e., volleyball, basketball, badminton and tennis) with the exception of basketball, which they received a D based on the typical university grading scale (i.e., A = 90% and higher, B = 80-89%, C = 70-79%, D = 60-69%, and F = 59% and lower).

To assess PTs' pedagogical content knowledge, most studies have used qualitative data sources such as content presentations or instructional tasks from lesson plans, interviews, or direct observation (Chen, 2004; McCaughtry & Rovegno, 2003; Rovegno, 1992, 1994, 1995; Sebren, 1995; Sutherland, Stuhr, & Ayvazo, 2016). In Rovegno's (1992) earlier work, it was evident that PTs possessed inadequate pedagogical content knowledge to lead quality PE in terms of task presentation/variation based on individual needs in the learning environment. While learning the skill theme approach, the four PTs in Chen's (2004) study demonstrated understanding in the relationships between movement concepts and students' skill levels and attempted to present and refine a variety of movement tasks; however, they had difficulty in providing timely and effective feedback to students' incorrect performance. More recently, Sutherland and colleagues (2016) found that, although it was difficult for the PTs to show proficiency in every teaching aspect during the five-week field experience, they showed some growth in knowledge of the students and demonstrated the ability to adjust instructional tasks in response to their students' skill levels in three seven-day adventure-based learning units.

In addition to PTs' acquisition of content knowledge and pedagogical content knowledge, their fitness and skill proficiency has been another emerging topic of evaluating their competence. While most PETE program coordinators believed the importance of PTs' proficiency in different sport-based skills, only 46% of the surveyed programs had implemented any type of skills tests (Baghurst, Richard, Mwavita, & Ramos, 2015). Besides, 80% of the PETE programs that reported having skills tests did not have clear standards or passing requirements, which indicated that it was possible for PTs to graduate without demonstrating proficiency in skill techniques. Compared to the percentage of programs that had skills tests in place, there were slightly more programs (i.e., 59%) that required their PTs to take fitness tests (Baghurst & Mwavita, 2014). It is difficult to conclude PTs' fitness levels because the assessment tools used in the previous research consisted of different fitness criteria and standards (Blackshear, Barton, & Moxley, 2019; Chen, Holmes, Wood, Ryuh, & Kulinna, 2020; Kamla, Snyder, Tanner, & Wash, 2012; Petersen et al., 2003; Webster et al., 2014). For instance, pulling testing items from four creditable sources (i.e., Jackson-Pollock's three-site skinfold test, Cooper's 12-minute run/walk, ACSM's push-up and curl-up tests, and YMCA's sit and reach test), Blackshear and colleagues (2019) discovered an overall passing rate of 36.8% for male and 50.8% for female Kinesiology majors (i.e., exercise science and PE). Petersen and colleagues (2003), however, revealed an 82% passing rate on all five Fitnessgram testing items (i.e., 1-mile run, BMI, sit and reach, curl-ups, and push-ups) among the 76 PTs in the study.

To date, limited research has been conducted to explore first-year employment after graduation or the relationship between PTs' competence and their job attainment in PE. Wright and Grenier (2019) surveyed 118 PETE graduates and

discovered 72 of them (61%) secured full-time, part-time, or long-term substitute PE positions the year after leaving university campus. As for the factors influencing job attainment, academic merit, physical description, and the combination of the two were found to be important attributes in the hiring process. Specifically, overweight candidates were at a disadvantage in the teacher selection process (Jenkins, Caputo, & Farley, 2005; Melville & Cardinal, 1997). A high academic ranking did not offset the disadvantage associated with unfavorable weight description (Jenkins et al., 2005). However, having good physical description/appearance was not necessarily an advantage if a candidate did not retain an average GPA (Jenkins et al., 2005). To continue this line of research, the purpose of the present study was to examine the association between PTs' competence and their first-year job attainment in PE.

Methods

Participants

Following the approval from the institutional review board (IRB) at a regional university in the southeastern USA, 53 PTs who completed their undergraduate degrees in the PETE program between the 2015-16 and 2018-19 academic years were invited to participate in this study. Thirty-one PTs (10 female and 21 male) consented to take part in the study in congruence with the IRB policy on human subjects. The sample consisted of 29 Caucasians, one African American, and one Asian. The average age when they graduated was 23.68 years (*s.d.* = 4.45, *max.* = 40, *min.* = 21).

Data collection

Instead of Ayers' (2001) ASK-PE, the participants' content knowledge in Kinesiology subdisciplines and health-related areas was evaluated by their grade point average (GPA) in nine Kinesiology content area courses such as biomechanics, exercise physiology, and preventive health and wellness. Ayers' (2001) ASK-PE was not used for three reasons. First, the assessment was outdated. New concepts were consistently evolved to replace old theories and ideas. For an assessment that was developed almost two decades ago, the questions were most unlikely to align with the up-to-date knowledge. Additionally, taking a big exam like ASK-PE in one setting could be intimidating and, as a result, the outcomes might be less reliable to represent an individual's competence than taking three or four classes and earning final grades over the course of an academic term (i.e., quarter or semester)(Knight, 2010). Lastly, the requirements for a class included more authentic learning experience with hands-on activities than the memorization of everything in a discipline, which did not help an individual comprehend the knowledge or give him/her the opportunity to apply theory to practice.

The participants' content knowledge in sports/physical activities and their sport-related skill proficiency were evaluated by their GPA in three teacher-education activity classes (i.e., individual sports and physical activities, aerobic/strength conditioning and aquatics, and team sports and group activities). In these classes, students were tested on their knowledge in the history, rules of play, techniques and etiquettes in the five major game categories: target (e.g., bocce and disc golf), net/wall (e.g., racquetball and volleyball), invasion (e.g., basketball and soccer),

striking/fielding (e.g., softball and baseball), and event sports (e.g., swimming and track and field). The tests were updated at every academic term that the classes were offered to make sure that the content was aligned with the most recent information. Students were also tested on the skills of bowling, disc golf, badminton, pickle ball, volleyball, basketball, soccer and softball. Specific descriptions and analytic rubrics were gone over in class and used to assess students' performance.

The participants' pedagogical content knowledge was evaluated by their GPA in seven methods courses (e.g., fundamentals of movement and instruction, teaching health education in K-12 schools, and materials and methods in teaching secondary PE) and student-teaching. Students in the methods courses were required to write unit and lesson plans, team-teach small groups of children or youth, and reflect on their teaching performance based on faculty and peer evaluation sheets and teaching videos. Student-teachers were expected to do the same with the exception that they were in charge of the entire class (es) under the direct supervision of their mentor teachers. What was required of the students in the methods courses and student-teaching was in congruence with the qualitative data sources that the scholars used to conduct research projects (Chen, 2004; McCaughtry & Rovegno, 2003; Rovegno, 1992, 1994, 1995; Sebren, 1995; Sutherland et al., 2016).

The participants' fitness proficiency was evaluated by their performance of a health-related fitness assessment battery. Cooper Institute's Fitnessgram® (Meredith & Welk, 2007) was selected to be the assessment battery as it has been the most commonly used fitness test administered on more than 10 million students in over 20,000 USA schools (The Cooper Institute, n.d.). Because of its prevalence across the country, the PETE faculty at this particular program believed that using the Fitnessgram® would better prepare their students when they obtain an employment as PE teachers. Five testing items were selected to evaluate the five health-related fitness components of the participants. Aerobic capacity was measured using the progressive aerobic cardiovascular endurance run (PACER). Each participant's number of complete laps was recorded and then converted to the estimate VO_2max using one of Mahar, Guerieri, Hanna, and Kemble's (2011) proposed equations.

$$VO_2\text{max} = 41.77 + .49\ (\text{laps}) - 0.0029\ (\text{laps})^2 - 0.62\ (\text{BMI}) + 0.35\ (\text{gender} \times \text{age}),$$

where BMI = body mass index; gender = 0 for females and 1 for males.

This equation appeared to have the highest correlation coefficients between the measured and estimated VO_2max among other proposed equations (Boiarskaia, Boscolo, Zhu, & Mahar, 2011). Body composition was determined by calculating the body mass index (BMI) from height and weight. The height was recorded to the nearest half inch, and the weight was recorded/rounded to one decimal place. Each participant's BMI was then calculated and rounded to two decimals using the formula illustrated.

$$\text{Body mass index (BMI)} = \frac{Weight(kg)}{Height^2(m^2)}$$

Flexibility was evaluated using the back-saver sit and reach test. Each participant' snumber of inches on each leg was recorded to the nearest half inch reached. Muscular strength and endurance were quantified by the curl-up (abdominal strength and endurance) and 90° push-up (upper body strength and endurance)

tests. Each participant's numbers of complete curl-ups and 90° push-ups were recorded. The tests were administered by the course instructor in a 400-level assessment class that all majors had to take. On the test day, the participants started with the curl-up test, followed by the 90° push-up test, the PACER, the back-saver sit and reach test, and lastly the height and weight measurements.

The participants' first-year employment after graduation was collected via emails and phone calls. On the first Wednesday in September after each cohort graduated from the PETE program, each participant was contacted via the personal email address he or she provided on the exit survey. The email simply asked whether or not they took a full-time PE teaching position in K-12 school settings as their first-year employment. For the non-responders, another email with the same message was sent out two weeks later. If the participants still did not respond to the email, a phone call (cell phone numbers were also provided by the participants on their exit surveys) was made to request the same information two weeks after the second email. All 31 participants were able to provide such information within the three attempts.

Data analysis

Each participant's GPAs for the respective variables (i.e., content knowledge in Kinesiology subdisciplines and health-related areas, content knowledge in sports/physical activities and skill proficiency, and pedagogical content knowledge) were calculated by dividing the total amount of grade points earned (i.e., A = 4.0, B = 3.0, C = 2.0, D = 1.0, and F = 0.0) by the total amount of credit hours attempted. The participants' fitness proficiency was determined by the number of "passing" fitness measures. The six fitness test scores (i.e., VO_2max , BMI, inch reached on the left leg, inch reached on the right leg, number of curl-ups, and number of 90° push-ups) were compared to the Fitnessgram standards for individuals who are 17 years and older (Meredith & Welk, 2007). Test scores that fell within the healthy fitness zone (HFZ) or higher than the upper end of the HFZ for VO_2max, curl-up and 90° push-up were considered passing. The participants who passed five or all measures were categorized under the "excellent" fitness level. Those who passed three or four measures were placed under the "acceptable" fitness level. Those who passed zero to two measures were grouped under the "unacceptable" fitness level. Lastly, whether or not obtaining a PE teaching position the year after graduation was marked as "yes" or "no."

The continuous and categorical data were entered and analyzed using SPSS 26. A multiple logistic regression was used to determine the influence of the continuous variables (i.e., content knowledge in Kinesiology sub-disciplines and health-related areas, content knowledge in sports/physical activities and skill proficiency, and pedagogical content knowledge) on obtaining a PE teaching position the year after graduation. Because half of the cells had counts below five, the Freeman-Halton extension of Fisher's exact test (Ruxton & Neuhäuser, 2010) was used to examine whether there was a significant relationship between the two categorical variables (i.e., did the participants' fitness proficiency relate to the fact that they obtained a PE teaching position after graduation?).

Results

Descriptive statistics revealed that the participants on average earned a 3.11 GPA on the

content knowledge in Kinesiology subdisciplines and health-related areas (*s.d.* = 0.35, *max.* = 3.74, *min.* = 2.41), a 3.53 GPA on the content knowledge in sports/physical activities and skill proficiency (*s.d.* = 0.53, *max.* = 4.00, *min.* = 2.33), and a 3.55 GPA on the pedagogical content knowledge (*s.d.* = 0.36, *max.* = 4.00, *min.* = 2.67). Out of the 31 participants, three (9.7%) demonstrated "excellent" fitness proficiency while 19 (61.3%) and nine (29.0%) attained "acceptable" and "unacceptable" fitness levels, respectively. As for their first-year employment after graduation, 18 (58.1%) participants became full-time PE teachers while the other 13 (41.9%) either taught other subjects in a K-12 school setting, pursued their graduate degrees, or entered another career path outside of education.

Although the sample size was small (n = 31), a multiple logistic regression was calculated to determine if content knowledge in Kinesiology sub-disciplines and health-related areas, content knowledge in sports/physical activities and skill proficiency, and pedagogical content knowledge influenced participants' first-year job attainment in PE (1 = employed in PE, 0 = not employed in PE). None of the variables showed statistical significance in the resulting model: content knowledge in Kinesiology (Wald = .282, p = .595), content knowledge in sports/physical activities and skill proficiency (Wald = .609, p = .435), and pedagogical content knowledge (Wald = .114, p = .736).

To determine if there was a relationship between participants' fitness levels and first-year employment in PE, the Freeman-Halton extension of the Fisher's exact test (Ruxton & Neuhäuser, 2010) was conducted on a 2x3 table. This test was chosen because half of the cells had counts lower than five (see table 1). The results were non-significant (p = .749); this study found no evidence that first-year employment in PE related to participants' fitness levels in different proportions.

Table 1

Fitness level and 1st year employment

	fitness level		
First-year PE employment	unacceptable	acceptable	excellent
yes	1	7	5
no	2	12	4

Conclusion, limitations, and future research

The purpose of the study was to examine the association between the participants' competence and their first-year job attainment in PE. The participants' competence was evaluated by their (a) content knowledge in Kinesiology subdisciplines and health-related areas (measured by GPA in nine Kinesiology courses), (b) content knowledge in sports/physical activities and sport-related skill proficiency (measured by GPA in three teacher-education activity classes), (c) pedagogical content knowledge (measured by GPA in seven methods courses and student-teaching), and (d) fitness proficiency (categorized as "excellent", "acceptable" or "unacceptable" based on the number of "passing" Fitnessgram testing items). The three continuous and one categorical data, as independent variables, were analyzed to identify any significant effect on and/or relationship with the dependent variable (i.e., whether or not the participants obtained a PE teaching position the year after graduation) using a multiple logistic regression (confirmed with an independent t-test) and the Freeman-Halton extension of the Fisher's exact test (Ruxton & Neuhäuser, 2010).

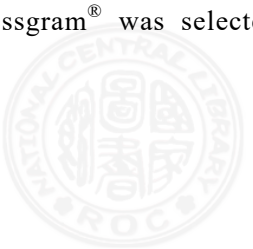
The results indicated that, as a group, the participants had the highest GPA in pedagogical content knowledge (3.55), which was closely followed by content knowledge in sports/physical activities and skill proficiency (3.53). Their content knowledge in Kinesiology courses appeared to be the lowest of the three (3.11). It was difficult to compare the participants' competence to the previous work because some content areas were combined in this study while they were evaluated individually in the past (Ayers, 2002; Barnett & Merriman, 1994; Disch et al., 2012; Losch & Strand, 2004; Miller & Housner, 1998; Petersen et al., 2003; Santiago et al., 2016; Tsuda et al., 2019) and the research method (quantitative versus qualitative) was different (Chen, 2004; McCaughtry & Rovegno, 2003; Rovegno, 1992, 1994, 1995; Sebren, 1995; Sutherland et al., 2016).

Compared to Blackshear and colleagues' (2019) passing rate of 36.8% for male and 50.8% for female students and Petersen and colleagues' (2003) 82% overall passing rate, the participants' fitness proficiency in this study was somewhere in between. The finding indicated that the number of participants who demonstrated "excellent" and "acceptable" fitness proficiency (n = 22) showed a 71% passing rate, which left some room for improvement. As for their first-year employment after graduation, the percentage of participants who became full-time PE teachers (58.1%) was slightly lowered than what Wright and Grenier (2019) found in their study (61%). Lastly, according to the analyses from the multiple logistic regression and the Freeman-Halton extension of the Fisher's exact test (Ruxton & Neuhäuser, 2010), the participants' content knowledge, pedagogical content knowledge, and their fitness and skill proficiency evidently had no significant effect on their first-year job attainment in PE, which contradicts what Jenkins and colleagues (2005) and Melville and Cardinal (1997) concluded in their studies.

Since the study was conducted in the USA, where the teacher selection process was somewhat different from how it has been done in Taiwan, the findings must not be generalized outside of USA. As mentioned earlier, the teacher selection process in the USA was simply based on applications and face-to-face interviews. Although a teaching demonstration is omitted in the teacher-selection process, PTs in the USA are still trained in such demonstration in their methods courses at the elementary and secondary levels. Because of the different requirements, PTs in Taiwan should not only acquire adequate content knowledge and pedagogical content knowledge and reflect such knowledge on the teacher examination, but also obtain the ability to physically demonstrate a well-prepared lesson in front of school-aged children and/or youth.

This study was limited by its small sample size. This particular PETE program averaged five PE freshmen every year. After counting major changes and transfer students, the program was able to keep around 10 sophomores. The number might fluctuate throughout the years but would rarely exceed 15 graduates in the spring. Additionally, faculty in this PETE program came and left, which resulted in lost data before the 2015-16 academic year. Having a larger sample size with more than one PETE program across the USA, or even internationally, may yield different results and produce a more appropriate representation of the target population.

Another limitation of the current study was the assessment battery used to collect the fitness data. Fitnessgram® was selected because of its



prevalence across the country. The PETE faculty believed that using the Fitnessgram® to measure their majors' fitness levels would better prepare them when they became PE teachers in the future. Besides, field methods were more feasible to administer in a PE setting than laboratory methods even though the latter has more validity than the former. BMI, for example, was not the best body composition measurement in athletes (Kraemer et al., 2005; Nevill, Stewart, Olds, & Holder, 2006; Ode, Pivarnik, Reeves, & Knous, 2007; Witt & Bush, 2005), and there were several participants who were student-athletes during the course of the study. Future research could look into fitness testing that has national criterion-referenced standards created for the age group of college students who may or may not be athletes at the time.

One last limitation came from when the participants took the PE job and the title of the position. During data collection, the participants were simply asked whether or not they obtained a PE teaching position. No further information was followed up. Some might take a PE teaching position and later resign during the school year while others might take one halfway through the year. In addition, the participants were asked if they obtained a "full-time PE teaching position" in K-12 school settings; however, some might be teaching an academic subject in the classroom and coaching a sport at the same time while others might be a substitute PE teacher while waiting for a permanent position to come along. In a follow-up study, if the position was defined differently such as "PE teacher" or "physical educator", it might yield a different result. Moreover, future studies could collect qualitative data to discover the various reasons whether or not and how they became "physical educators," which should not be limited to teaching PE in K-12 school settings.

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準教師的能力與應屆獲得體育教師職務之關聯性

陳芋君、洛林 杰克斯
美國 路易斯安納州 洛斯頓 路易斯安那理工大學人體運動學系

摘 要

緒論：在美國有兩種成爲體育教師的途徑：就讀有師培與體育系的大學或是相關學系畢業後再修教育學分。兩種途徑皆規定師培生通過教師檢定以獲得教師證，準教師即可申請該州的教師職缺。美國健康與體育協會推導準教師應具備六種能力。先前的研究使用專業科目知識、教學內容知識、以及體適能與術科程度衡量準教師的能力，卻沒有著重在畢業後的就業狀況或能力與成爲體育教師之關聯性。本研究主旨在於分析準教師的能力與應屆獲得體育教師職務之關聯性。**方法：**受試者爲 31 位在 2015-16 與 2018-19 學年畢業的準教師。學業成績平均值用來反應受試者的專業科目知識、術科知識與程度、與教學內容知識。體適能是以庫柏協會的 Fitnessgram® 五個項目進行測量，然後對照常模分爲優等、平均、與待加強。是否應屆成爲體育教師則是以電子郵件與電話來收集資料。成績平均值與體適能程度是否與應屆成爲體育教師有關聯是以多類邏輯迴歸與費雪精確檢驗來分析。**結果：**受試者的教學內容知識最高、術科知識與程度其次、體育專業科目知識最低。七成受試者的體適能達到平均以上的程度。一半以上的受試者成爲體育教師。然而，受試者的能力與應屆獲得體育教師職務沒有顯著的關聯性。**結論：**此研究局限於小樣本、體適能測驗的選擇、與體育教師的職位定義。未來可收集更多國內外樣本、使用適合大學生的體適能測驗項目與常模、用不同的術語來定義職位、或收集定性資料來解釋是否成爲體育教師的原因。這類的研究方向應會得到較有意義且具代表性的結果。

關鍵詞：能力、專業科目知識、教學內容知識、體適能程度、術科程度、獲得體育教師