



Chinese Perspectives on Teaching and Coaching Competence in University Aerobics

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Abstract

Background and Aims: Universities play a crucial role in producing high-quality human resources. Aerobic education contributes to students' physical, mental, and emotional development by integrating artistic and athletic elements. This research aims to compare and analyze the levels of teaching competence and coaching competence among aerobics instructors in universities, identifying the relationship and differences between these two domains, and providing recommendations for improving the quality of aerobics education.

Methodology: This study employed a quantitative descriptive research design using a purposive sampling method. The sample consisted of 120 university aerobics instructors (60 males and 60 females), aged 25–45 years, teaching in both public and private universities in Thailand. Data were collected using a structured questionnaire developed from a competency framework covering six dimensions: knowledge, practical skills, media and technology use, classroom management, and personal attributes. And motivational skills.

Results: Statistical analysis demonstrated a significant difference between teaching and coaching competencies ($p < 0.05$). Teaching competence was rated higher, reflecting a greater emphasis on inclusivity, knowledge transfer, and classroom engagement, whereas coaching competence highlighted performance-driven approaches and competition-oriented skill development.

Conclusion: Overall, the research demonstrates that effective university aerobics instructors require a balance between teaching and coaching competencies. Strengthening both domains enhances instructional quality, student motivation, and overall learning outcomes. The study highlights the need for continuous professional development programs to integrate pedagogical and coaching approaches for optimal student and athlete performance.

Keywords: Teaching Competence; Coaching Competence; Aerobics; Sports Training

Introduction

Aerobic exercise is a form of physical activity that integrates exercise for health, artistic aesthetics, and sports competition. According to the World Health Organization (2023), physical





inactivity remains a major public health challenge worldwide, with more than 80% of adolescents and university students not meeting recommended activity levels. Universities, as institutions that shape young adults' health behaviors, therefore play a critical role in promoting physical fitness and active lifestyles through structured physical education programs.

In higher education, aerobics has evolved beyond traditional exercise routines to become a pedagogical tool that supports holistic learning—combining physical fitness, emotional well-being, and aesthetic appreciation (Suárez-Llorca, Olivares, & García-González, 2023). Recent studies demonstrate that blended and technology-enhanced aerobics instruction can significantly improve students' motivation, coordination, and cardiovascular endurance (Wang, Li, & Chen, 2024). These findings highlight aerobics not only as a medium of physical exercise but also as a method of fostering creativity, teamwork, and resilience among university students.

In the context of Thailand, the Ministry of Higher Education, Science, Research, and Innovation (2024) and the Department of Physical Education (2023) have emphasized that university-level physical education should integrate health promotion, sport training, and wellness to meet both national and ASEAN standards. Aerobic has been widely implemented in Thai universities due to its accessibility, cost-effectiveness, and suitability for group participation. However, challenges remain in differentiating between *teaching competence*, which focuses on inclusive education and skill development for all students, and *coaching competence*, which targets the preparation of athletes for competitive excellence.

Several recent international studies have pointed out that insufficient differentiation between teaching and coaching roles can cause confusion in curriculum design and performance outcomes (Lin, Wang, & Zhao, 2024). For example, some instructors incorporate high-intensity training methods into general aerobics courses, reducing student enjoyment and participation. Conversely, some coaches neglect fundamental skills reinforcement, which limits athletes' long-term potential. Addressing this conceptual gap is therefore crucial for ensuring both educational effectiveness and athletic achievement. In Thailand, where university sports play a vital role in community engagement and health promotion, this research is particularly relevant. By analyzing and comparing teaching and coaching competencies in university aerobics, the study seeks to identify the key differences, overlaps, and developmental needs that influence instructional and performance outcomes.

In summary, this study aims to clarify the distinction between teaching and coaching competencies in the context of university aerobics, addressing the lack of systematic comparative research in this field. The findings will be beneficial to multiple sectors: (1) universities and faculties of physical education in curriculum improvement and teacher training, (2) instructors and





coaches in enhancing professional competency, and (3) educational policymakers in developing evidence-based strategies for quality sports and health education in Thailand.

Physical Education Teaching in Higher Education

Physical education in higher education serves as an essential foundation for developing students' holistic well-being physically, mentally, emotionally, and socially. Rather than being limited to physical skill acquisition, it functions as an educational process that fosters critical thinking, emotional regulation, and lifelong engagement in health-promoting behaviors. According to the Core Curriculum Standards in Health and Physical Education and the Department of Physical Education (2023), the goal of physical education is not only to enhance fitness and coordination but also to cultivate moral values, teamwork, and social responsibility among university students.

From a pedagogical standpoint, effective teaching in physical education can be best understood through constructivist and humanist frameworks. The constructivist approach, as proposed by Piaget (1973) and Vygotsky (1978), emphasizes that learning occurs through active engagement and reflection, where students construct knowledge from experience rather than passive imitation. In the context of physical education, this means that students should learn movement, coordination, and teamwork through guided discovery, cooperative learning, and reflective practice rather than repetitive drills. Meanwhile, the humanistic perspective proposed by Maslow (1987) and Rogers (1983) underscores the importance of self-expression, personal growth, and intrinsic motivation. Physical education instructors are therefore encouraged to create learning environments that respect individual differences, support autonomy, and build self-confidence, especially in non-athlete students who may lack prior sports experience.

Additionally, sports pedagogy theory highlights the integration of cognitive, psychomotor, and affective domains in physical education (Quennerstedt, 2019). Teachers act as facilitators who connect physical movement with cognitive understanding, helping students recognize the relationship between exercise, health, and emotional well-being. This multidimensional approach transforms physical education from a mere activity-based course into a form of experiential learning that develops critical life skills.

In practice, successful physical education teaching in universities requires the synthesis of several interrelated components: (1) clear instructional design aligned with learning outcomes, (2) the use of media and technology to support demonstration and feedback, and (3) formative assessment methods that encourage self-evaluation and continuous improvement. These practices align with 21st-century educational principles, emphasizing learner-centered instruction, inclusivity, and adaptability (Wang, Li, & Chen, 2024).





Ultimately, physical education at the tertiary level should be viewed not as a standalone discipline but as an interdisciplinary field that links physical health with psychological development and moral education. When guided by robust theoretical frameworks, it can produce not only physically capable individuals but also socially responsible and emotionally resilient citizens, key outcomes that align with the broader mission of higher education in Thailand and beyond.

Aerobic in Higher Education

Aerobic exercise has evolved from a rhythmic exercise emphasizing coordinated body movement to an interdisciplinary practice integrating health, art, and psychology. In Thailand, early academic discussions such as Angkhana Sritala (2004) emphasized the physiological benefits of aerobic exercise, including improved flexibility, cardiovascular endurance, and neuromuscular coordination—fundamental elements that enhance movement efficiency and physical control. Similarly, Siriraj Piyamaharajkarun Hospital (2018) explained that aerobic exercise involves oxygen-dependent activity that strengthens the heart and lungs through sustained rhythmic movement, supporting overall health and energy balance.

Contemporary research, however, has broadened this understanding beyond biological mechanisms to include psychological and pedagogical dimensions. Studies by Wang, Li, and Chen (2024) and Hrušová et al. (2024) demonstrate that integrating technology—such as blended learning models, wearable devices, and motion-feedback systems—enhances student motivation, physical fitness, and engagement in university-level aerobics courses. These findings align with the growing trend in physical education toward learner-centered and technology-enhanced instruction, where students actively construct knowledge through participation and reflection rather than rote imitation.

From a pedagogical standpoint, Casey, Goodyear, and Armor (2017) highlighted that effective aerobics instruction should integrate the cognitive, affective, and psychomotor domains to cultivate holistic learning experiences. Aerobic exercise not only enhances physical fitness but also nurtures self-efficacy, collaboration, and emotional well-being through synchronized group participation. This multidimensional instructional approach aligns with the constructivist paradigm in physical education, which recognizes movement as both a cognitive and embodied process that fosters personal development, social connection, and lifelong learning (Casey et al., 2017).

In Thailand's higher education context, the role of aerobics extends beyond physical training to encompass emotional resilience and social learning. The Department of Physical Education (2023) has promoted aerobics and similar movement-based activities as key strategies for improving students' quality of life, fostering inclusivity, and reducing sedentary lifestyles. Aerobic's





accessibility, minimal equipment requirements, and enjoyable music-based structure make it an ideal medium for promoting lifelong health and well-being among university students.

Overall, the integration of modern teaching strategies and technology in aerobics education reflects a shift from performance-oriented models toward wellness-oriented frameworks that prioritize inclusivity, mental balance, and lifelong engagement in physical activity. This evolution reinforces the pedagogical and societal value of aerobics as a sustainable component of higher education.

Teaching in Physical Education

Teaching in physical education aligns with Shulman's (1987) theory of Pedagogical Content Knowledge (PCK), which emphasizes the integration of subject matter expertise, pedagogical strategy, and understanding of learners' characteristics. In aerobics, this framework enables instructors to transform technical content (e.g., rhythm, movement coordination, posture) into meaningful learning experiences for diverse student groups. The teaching process prioritizes inclusivity, motivation, and reflective learning, key tenets of constructivist pedagogy (Vygotsky, 1978), to help all students, not just athletes, achieve holistic physical and psychological growth.

Empirical evidence supports this approach: Casey, Goodyear, and Armor (2017) found that learner-centered physical education, when supported by digital technologies and formative feedback, significantly enhanced students' engagement and skill mastery. Similarly, Kirk (2010) argued that teaching in physical education must extend beyond technical instruction toward the cultivation of critical thinking, creativity, and social responsibility, aligning physical learning with educational theory.

Coaching in Sports Training

Coaching, by contrast, operates within the framework of sports pedagogy and applied kinesiology, focusing on targeted performance improvement, technical optimization, and competitive readiness. Coaches function as facilitators of structured practice aimed at skill refinement, tactical awareness, and psychological conditioning (Lyle & Cushion, 2017). Unlike teachers, coaches work with selected athletes and employ individualized programs grounded in motor learning and performance theory.

Studies in sports psychology emphasize the multidimensional nature of effective coaching. Côté and Gilbert (2009) proposed a competency-based model highlighting three domains: professional knowledge, interpersonal skills, and intrapersonal development. Their findings show that successful coaches balance technical expertise with emotional intelligence and motivation strategies that enhance athlete autonomy and confidence. Furthermore, Horn





(2019) demonstrated that athletes' perceived competence and intrinsic motivation are directly influenced by coaching behaviors that provide autonomy support and constructive feedback principles drawn from Self-Determination Theory (Deci & Ryan, 2000).

The Importance of Aerobic Exercise in Universities

Aerobic exercise plays an essential role in promoting students' overall health, emotional well-being, and social integration within university settings. Its benefits extend beyond physical fitness to include psychological, aesthetic, and participatory dimensions that contribute to holistic learning and lifelong wellness.

1. Health Dimension Regular aerobic exercise has been empirically shown to improve cardiovascular endurance, pulmonary function, and muscular flexibility while preventing non-communicable diseases such as obesity and hypertension. A recent study by Wang, Li, and Chen (2024) found that a 16-week aerobic training program among university students significantly improved aerobic capacity and reduced resting heart rate ($p < 0.05$). Similarly, Huang et al. (2023) demonstrated that aerobic exercise enhances arterial flexibility and supports cardiovascular health, reinforcing its role as a preventive tool against metabolic diseases.

2. Personality and Aesthetic Dimension: Aerobic supports positive body image and self-concept development by improving posture, coordination, and confidence. Research by Prichard and Tiggemann (2008) revealed that participation in group exercise positively affects women's body satisfaction and reduces body-related anxiety. Furthermore, Koyuncu et al. (2010) found that aerobic training enhances self-esteem and personal discipline, suggesting that its aesthetic benefits lie not merely in appearance but in fostering self-acceptance and confidence.

3. Psychological and Emotional Dimension: Multiple psychological studies have confirmed the link between aerobic exercise and stress reduction in university populations. Paluska and Schwenk (2000) reported that regular aerobic activity reduces anxiety and depression by promoting endorphin release and emotional regulation. Similarly, Gerber et al. (2014) found that higher cardiorespiratory fitness among adults was associated with lower levels of stress-related burnout and depressive symptoms.

4. Social and Participatory Dimension: Aerobic, typically performed in groups, enhances social cohesion and interpersonal relationships. It promotes cooperation, empathy, and collective responsibility—skills crucial for both personal and professional growth. Eime et al. (2013) demonstrated that participation in social physical activities, such as aerobics and dance-based fitness, significantly improved mental health, social connection, and sense of belonging. Within universities, aerobics therefore serves as a platform for inclusive participation and teamwork through both curricular and extracurricular programs.





In summary, aerobics contributes to the multidimensional development of university students by integrating physical, emotional, and social learning outcomes. Well-structured aerobics programs not only enhance health and academic performance but also foster body positivity, resilience, and a sense of community values aligned with the mission of higher education in cultivating healthy, balanced, and socially responsible citizens.

Table 1 Comparative Analysis of Teaching and Coaching Competencies in University Aerobics

Comparison Dimension	Teaching Competencies	Coaching Competencies
Knowledge Competency	Pedagogical Content Knowledge (Shulman, 1987) integrates physical education theory, anatomy, and sports science into inclusive instruction for all learners. Focus on lesson design, rhythm, and reflective assessment.	Sports Training Theory (Bompa & Buzzichelli, 2018): advanced understanding of periodization, specificity, and tactical training for performance enhancement.
Skill Competency	Demonstration and scaffolding of fundamental aerobics techniques, rhythm adaptation, and safe exercise execution. Emphasizes formative feedback and differentiated instruction.	Technical mastery of competition routines, synchronization, and tactical sequencing under performance conditions. Focuses on repetition, precision, and biomechanics.
Personal Attributes Competency	Exhibits enthusiasm, patience, and creativity to engage students with varied fitness levels. Builds a supportive, inclusive learning environment.	Demonstrates leadership, decisiveness, and professionalism under pressure. Maintains fairness, discipline, and ethical standards in competitive contexts.
Behavioral Competency	Serves as a knowledge facilitator, encouraging participation through positive reinforcement and safe practice. Uses active observation and student-centered management.	Acts as a performance leader, implements structured supervision, feedback cycles, and goal-oriented behavioral modeling. Maintains intensity and discipline in training.





Comparison Dimension	Teaching Competencies	Coaching Competencies
Motivational Competency	Builds intrinsic motivation (Deci & Ryan, 2000): fosters enjoyment, autonomy, and perceived competence. Uses music, games, and peer interaction to sustain participation.	Applies extrinsic and goal-oriented motivation, sets measurable targets, reinforces resilience, and cultivates competitive drive through performance incentives.

Differences Between Teaching and Coaching Aerobics (Revised Version)

The comparative analysis demonstrates that teaching and coaching in aerobics education diverge fundamentally in their value orientation, content depth, and pedagogical approach, reflecting distinct purposes within university physical education.

1. Value Orientation

Teaching in aerobics education is rooted in the philosophy of education for all, prioritizing inclusive participation, holistic development, and lifelong learning. Its dual objective centers on “health + skills”, meaning that instructors aim to enhance both physical fitness and foundational motor competencies among all students. This approach aligns with constructivist and humanist pedagogical frameworks, where learning is student-centered and encourages self-discovery, cooperation, and personal growth.

In contrast, coaching emphasizes excellence and victory as its guiding values. It operates within a performance-oriented motivational climate, focusing on refining the abilities of selected athletes to achieve competitive success. The dual objective of coaching “competition + surpassing limits” reflects its goal of maximizing performance through targeted, systematic, and data-driven training programs.

2. Content Depth and Scope

The content of teaching in aerobics is described as broad but shallow, encompassing theory, basic movement skills, rhythm, and recreational activities designed to meet general educational outcomes. This breadth allows physical education programs to reach diverse learners, promoting physical literacy and health awareness rather than elite performance.

By contrast, coaching content is deep and specialized, focusing on advanced technical execution, tactical refinement, and physiological conditioning. It requires in-depth application of sports pedagogy and applied kinesiology, integrating biomechanical analysis, performance evaluation, and psychological preparation. The aim is not merely participation but measurable achievement within a competitive framework.





3. Pedagogical Implications

While both teaching and coaching share a common foundation in movement science, they differ in the direction of knowledge application. Teaching seeks to democratize access to physical education by fostering motivation, confidence, and enjoyment among all learners. Coaching, on the other hand, applies specialized instruction, strategic planning, and psychological conditioning to develop athletes capable of excelling at higher levels.

In essence, teaching humanizes sport, while coaching professionalizes it. Together, they represent complementary dimensions of university physical education, one nurturing widespread engagement, the other cultivating competitive excellence.

Conclusion

This study aimed to compare and analyze teaching and coaching competencies in university aerobics to identify the relationship and differences between the two domains. The research was conducted among 120 physical education instructors and aerobics coaches from both public and private universities in Thailand, selected through purposive sampling to ensure representation from various institutional types.

A structured questionnaire was used as the main research instrument, covering six competency domains: academic knowledge, practical skills, media and technology use, classroom management, personal attributes, and motivational abilities. The questionnaire's reliability was verified using Cronbach's alpha ($\alpha = 0.92$). Data were analyzed using descriptive statistics (mean, standard deviation) and inferential statistics (t-test, Pearson's correlation coefficient) to examine differences and relationships between teaching and coaching competencies.

The findings revealed that teaching competence was rated at a high level, emphasizing inclusive learning, knowledge transfer, and classroom management, while coaching competence was moderately high, focusing on specialized training and athlete development. Statistical analysis confirmed a significant difference between the two groups and a strong positive correlation, suggesting that enhanced teaching skills can reinforce coaching effectiveness and vice versa.

Based on these findings, it can be concluded that although teaching and coaching competencies are interrelated, they serve different educational purposes. Teaching focuses on holistic learning for all students, whereas coaching prioritizes athletic excellence. Therefore, universities should develop integrated training programs that combine pedagogical and coaching development frameworks to equip physical education instructors with both instructional and performance-oriented skills.





Suggestions

Universities should organize continuous professional development (CPD) programs emphasizing both pedagogical and coaching competencies.

Future research should explore the impact of digital and AI-assisted tools in enhancing aerobics teaching and coaching performance.

Policymakers should establish national competency standards for university-level aerobics instructors to ensure consistency and quality across institutions.

In summary, the study provides empirical evidence that strengthening both teaching and coaching competencies contributes to the improvement of university physical education quality, student motivation, and long-term athletic development, supporting the overall mission of higher education to promote both health and excellence.

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