Research on the Teaching Reform of Integrating Vocational Physical Literacy into University Cheerleading Public Courses

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Abstract: *As higher education continues to deepen its support for the comprehensive development of students, the potential value of public physical education courses in supporting students' long-term career development—beyond merely enhancing their general physical fitness—is receiving increasing attention. This study focuses on Vocational Physical Literacy, a comprehensive attribute oriented toward future occupational physical competency, and explores pathways for integrating it into university cheerleading public courses through teaching reform. The study first clarifies the theoretical connotations of Vocational Physical Literacy across the dimensions of physiological function, movement efficiency, and neuromuscular control, demonstrating its inherent connection with cheerleading courses in cultivating foundational physical literacy. Subsequently, it proposes core instructional pathways, including the restructuring of skills based on occupational movement patterns, the integration of modular content oriented toward literacy development, and the creation of progressive teaching scenarios. Finally, the study constructs an overall course optimization plan comprising a literacy-based evaluation system, adaptive resource allocation, and a data-driven feedback mechanism. This provides a systematic theoretical reference and an operational framework for expanding the function of university cheerleading courses from the transmission of sports skills to the cultivation of vocational physical literacy.*

Keywords: *Vocational Physical Literacy; cheerleading; teaching reform; course integration; university physical education*

Introduction

Against the backdrop of contemporary higher education's emphasis on the holistic development of students and the cultivation of their future adaptability, the function of university public physical education courses is undergoing a paradigm shift—evolving from short-term physical health intervention to the long-term cultivation of comprehensive literacy. Cheerleading, as a widely popular public physical education course, has gained general recognition for its inherent values in teamwork, expressiveness, and physical coordination training. However, its instructional potential remains underutilized, revealing a significant gap in systematically addressing the physical competencies required for students' future career development. The introduction of the concept of Vocational Physical Literacy provides a crucial theoretical lens for re-examining and expanding the teaching objectives and content system of cheerleading courses. Exploring the intrinsic compatibility between Vocational Physical Literacy and cheerleading courses, and designing feasible integration pathways and support systems, will not only enhance the academic depth and contemporary relevance of the course itself but also represents an inevitable choice for responding to students' needs for sustainable development and for elevating the long-term value of public physical education. The significance and necessity of this study lie in its attempt to construct a bridge connecting current physical education learning with future occupational competency. Through systematic instructional reform design, it aims to transform universal physical education courses like cheerleading into implicit vehicles for fostering vocational physical literacy, thereby contributing new perspectives to the substantive development of university physical education curricula.

1. The Theoretical Connotation of Vocational Physical Literacy and Its Intrinsic Connection with Cheerleading Courses

1.1 The Core Components and Multidimensional Representations of Vocational Physical Literacy

Vocational Physical Literacy transcends the traditional concept of physical fitness centered on sports performance. It refers to the comprehensive physical competency traits that an individual possesses and can effectively mobilize to meet the physical ability requirements of specific occupational activities. Its core structure constitutes a multidimensional system, encompassing three key dimensions: physiological function, movement efficiency, and neuromuscular control. The physiological function dimension focuses on foundational metabolic and work capacities such as cardiorespiratory endurance, muscular strength, and endurance, which serve as the biological basis for bearing loads and maintaining efficiency in occupational activities. The dimensions of movement efficiency and neuromuscular control involve dynamic stability, multi-joint coordination, movement economy, and precise control under conditions of fatigue. These elements directly determine the safety, accuracy, and sustainability of occupational physical operations[1].

The multidimensional representation of this literacy is reflected in its deep integration with specific occupational contexts. Different professional fields impose varying demands on bodily posture control, repetitive movement patterns, sudden reactive responses, or sustained static maintenance. Vocational Physical Literacy precisely embodies the internalization of these requirements into an individual's physical capability structure. Consequently, its assessment relies not only on universal physical fitness test indicators but also necessitates incorporating occupational motion analysis to examine the economy, adaptability, and fatigue resistance with which an individual utilizes their physical reserves to complete tasks in simulated or real occupational scenarios. This orientation toward adaptability and functionality within specific occupational environments constitutes the core characteristic that distinguishes Vocational Physical Literacy from general sports-related physical fitness.

1.2 The Foundational Role of Cheerleading Courses in Bearing Physical and Movement Literacy

The university cheerleading public course, as a physical education activity integrating elements of dance, gymnastics, and technical skills, possesses inherent attributes that naturally endow it with the potential to foster and develop general physical fitness and movement literacy. At the physical fitness level, the routine exercises within the course can effectively enhance students' cardiovascular function, while technical elements such as lifts and jumps explicitly demand and consequently train lower-body explosive power, core muscle strength, and static supporting endurance. This training effect does not exist in isolation; rather, it is accomplished through its integration into continuous movement combinations and team collaboration, thereby providing a practical context for physical development.

At the level of movement literacy, cheerleading instruction holds significant value. The diverse locomotor steps, body waves, turns, and spatial posture control exercises covered in the course essentially constitute a systematic process for developing students' bodily coordination, sense of rhythm, balance, and proprioception. Particularly, the emphasis on movement standardization and team synchronization requires practitioners to possess precise neuromuscular control and the ability to imitate and correct movements. These foundational movement abilities and bodily awareness, enhanced through cheerleading training, form the underlying support system for learning and transferring more complex occupational motor skills. They provide the necessary physical preparation and movement vocabulary for transitioning from general physical activity capacity to meeting specific vocational physical demands[2].

1.3 The Alignment Mechanism Between Vocational Physical Demands and Cheerleading Instructional Objectives

The alignment between vocational physical demands and the instructional objectives of cheerleading courses is rooted in a common underlying logic of physical capacity development. This alignment mechanism is first manifested in the complementarity of goal orientation. Traditional cheerleading course objectives are typically oriented towards skill acquisition, physical enhancement, and the cultivation of teamwork spirit. However, by introducing the perspective of Vocational Physical Literacy, the instructional objectives can be expanded to include prospective concern for students' future occupational physical competency. Course design can thus consider how to establish connections between the physical training elements of cheerleading and the endurance types, strength forms, or

coordination patterns required by specific occupational groups, thereby endowing the instructional objectives with both universality and foresight.

The deeper alignment mechanism lies in the transferability of instructional content and methods. The posture control, dynamic stability, rhythmic force application, and maintenance of movement accuracy under elevated heart rate conditions emphasized in cheerleading training share physiological and neural control isomorphism with the mental focus, operational stability, and efficiency maintenance during repetitive tasks required in many professional scenarios. Teaching reform can deconstruct and reconstruct existing cheerleading instructional content to extract and reinforce training elements that resonate with common vocational physical demands—such as postural adjustments during prolonged standing, precise control of low-intensity repetitive movements, and quick responses to unexpected situations. This approach allows for the implicit development of students' potential adaptive capacity to meet future occupational physical challenges while achieving the original instructional objectives. This alignment is not a direct correspondence but rather indirectly strengthens the foundational adaptability of an individual's vocational physical fitness through the comprehensive enhancement of fundamental physical literacy.

2. Teaching Pathway Design for Integrating Vocational Physical Literacy into Cheerleading Courses

2.1 Cheerleading Skill Restructuring Strategy Based on Occupational Movement Patterns

The core of restructuring cheerleading skills based on occupational movement patterns lies in the functional deconstruction and analysis of universal cheerleading technical elements to identify their common characteristics with typical occupational movement patterns at the biomechanical and neural control levels. This strategy does not aim to directly simulate specific occupational labor; rather, it focuses on extracting high-frequency movement paradigms prevalent in occupational activities. These paradigms include sustained low-load posture maintenance, anti-rotation and stability control of the torso in multiple planes, and precise repetitive movements of the shoulder girdle and hip joints. By analyzing these foundational patterns, instructors can retrospectively examine the technical units within the cheerleading curriculum, such as body alignment and control in static formations, dynamic stability following jump landings, and force transmission and balance adjustment during lift collaborations.

The restructuring process manifests as a shift and deepening of the emphasis in the original skill instruction. During teaching, instructors will move beyond solely pursuing the external form and rhythm of movements, and instead emphasize the activation sequence of deep stabilizing muscle groups during movement execution, the coordination between breathing and force application, and the body's perceptual capacity to maintain movement standards under conditions of mild fatigue. For instance, when teaching cheerleading jump landing techniques, the instructional focus can partially shift from pursuing height during the aerial phase to analyzing and training the co-axial alignment of lower-limb joints during landing absorption, the rigid support of core muscle groups, and the resulting impact force dissipation pattern. This pattern shares homogenous characteristics with the demands in many occupational scenarios for managing physical impact and maintaining operational stability. Through such restructuring, cheerleading skill acquisition takes on the latent function of developing occupationally adaptive movement patterns[3].

2.2 Modular Integration of Course Content Oriented by Physical Literacy

The modular integration of course content oriented by physical literacy aims to break away from the traditional linear course organization, which relies solely on technical movements as the singular main thread, and instead constructs a networked instructional content structure governed by key dimensions of vocational physical literacy. This integration method decomposes the overall course objectives into several relatively independent yet interconnected literacy modules. Examples include the "Dynamic Stability and Posture Control Module", the "Rhythmic Work and Recovery Module", and the "Coordinated Force Application and Power Transfer Module". Each module becomes a comprehensive unit that integrates specific cheerleading techniques, specialized physical conditioning exercises, and targeted bodily awareness training.

The content design within each module follows the coherent logic of "literacy objective, assessment method, instructional content." Taking the "Dynamic Stability and Posture Control Module" as an example, its literacy objective could be set as the ability to maintain a neutral trunk position during

unstable states or complex movements. To achieve this objective, the instructional content will no longer be limited to isolated balance exercises. Instead, balance control elements will be embedded within cheerleading routines, such as immediately holding a single-leg pose after completing a turning movement or introducing surface instability (e.g., using balance pads) during basic locomotor steps. Simultaneously, this will be supplemented by neuromuscular activation training targeting the stabilizing muscles of the core region. This modular integration ensures that, while imparting cheerleading skills, the course content purposefully and systematically integrates and reinforces the physiological and neuromuscular adaptations relevant to vocational physical literacy.

2.3 Creation of Teaching Scenarios and Gradual Integration of Vocational Body Awareness

The creation of teaching scenarios aims to simulate or evoke states of bodily cognition and problem-solving within the cheerleading classroom environment that are analogous to vocational physical demands, thereby facilitating learning transfer. This creation does not involve concrete occupational role-playing. Instead, it abstracts the characteristic features of challenging situations in vocational environments that relate to physical capability, such as task persistence, operation under divided attention, responding to unexpected disruptions, or the need for physical communication within teamwork. By consciously introducing these characteristic variables into routine cheerleading practice, the psychophysiological context in which students execute movements can be altered.

Gradual integration is reflected in the stepwise escalation of scenario complexity. In the initial phase, a single variable can be incorporated into relatively simple technical practice. For example, students may be required to perform a simple cognitive task (such as mental arithmetic) while executing a fixed routine to simulate a situation requiring allocation of attentional resources. In the advanced phase, exercises can be designed where small group members must collectively change movement direction or formation in response to random signals (simulating environmental changes) using non-verbal communication, thereby cultivating bodily response and collaborative adaptability under uncertainty. Higher-phase scenarios might involve maintaining required movement precision and stability under conditions of mild physiological fatigue, such as after completing a certain load of physical conditioning training. Through this series of progressive contextualized teaching designs, students unconsciously experience and adapt to various complex body-cognitive challenges during their acquisition of cheerleading skills. This process subtly shapes their bodily-cognitive framework and strategic repertoire for responding to similar demands in future occupational activities[4].

3. Optimization of the Cheerleading Course System Under the Integration of Vocational Physical Literacy

3.1 Construction and Implementation Key Points of a Literacy-Based Evaluation System

Traditional cheerleading course evaluations predominantly focus on summative performance metrics such as the completeness of technical movements and routine proficiency. In contrast, a literacy-based evaluation system shifts its focus towards the continuous monitoring and multidimensional assessment of the developmental state of vocational physical literacy during the learning process. The core of constructing this system lies in establishing clusters of evaluation indicators framed around key literacy dimensions. These indicators encompass not only quantifiable physiological metrics such as strength and endurance but also qualitative observation dimensions, including movement economy, control precision under fatigue, and adaptive adjustments of body posture. The evaluation content expands from mere technical replication to the efficiency of applying physical capabilities to solve problems within simulated task scenarios, thereby steering instruction towards the deeper development of bodily cognition and adaptability.

The key to implementing this evaluation system lies in the diversification of assessment methods and the embedded integration of the process. Quantitative tests, such as isometric endurance tests for specific muscle groups and balance ability assessments, can be combined with qualitative evaluations, like movement pattern analysis and behavioral observation within situational tasks. Evaluation activities should be seamlessly embedded throughout the modular teaching process. For example, within the "Coordinated Force Application Module," the evaluation focus might shift to the fluidity of force transmission and the stability of center-of-gravity control during partner-assisted lifts, rather than solely on the height of the formation. Simultaneously, introducing student self-assessment and peer assessment can guide learners to pay attention to their own perceptions and strategic adjustments when

completing complex or sustained physical tasks. This approach transforms the evaluation process itself into a metacognitive learning experience, fostering students' capacity for self-monitoring and reflection on their vocational physical literacy[5].

3.2 Adaptive Configuration of Teaching Resources and Learning Environment

The adaptive configuration of teaching resources aims to provide the necessary material and informational support for literacy-oriented instruction. This includes developing specialized learning material libraries corresponding to each literacy module. The content may encompass biomechanical characteristic analyses of target occupational groups, targeted warm-up and recovery training protocols, as well as video tutorial resources that integrate foundational cheerleading movements with functional training. The selection of physical teaching aids should also extend beyond conventional equipment. For instance, introducing balance pads, resistance bands, and suspension training devices can create unstable conditions or increase movement resistance. This superimposes more refined demands for neuromuscular control and stability onto cheerleading training, thereby simulating physical challenges present in occupational environments.

The configuration of the learning environment emphasizes the supportive role of the overall atmosphere for literacy development. The design of the physical space should facilitate group collaboration, scenario simulation, and the free transition between various modes of physical activity. More crucially, it involves fostering a classroom culture that values exploration, problem-solving, and bodily awareness. Through verbal guidance, instructors should redirect students' focus from "whether the movement looks aesthetically pleasing" to "how the body operates effectively." For instance, during practice, instructors might pose questions such as, "How do you maintain core engagement during movement to reduce lumbar load?" or "In team coordination, how can you optimize collective balance through subtle adjustments to your own posture?" Such an environment shifts the learning focus from external performance to an understanding of the internal mechanisms of bodily operation, thereby transforming the learning environment itself into a hidden curriculum for cultivating vocational bodily cognition and adaptability.

3.3 Design of a Feedback Loop Mechanism for Continuous Course Improvement

The effectiveness of continuous course improvement relies on a structured feedback loop mechanism that aggregates information from multiple sources. The foundation of this mechanism is the establishment of routine data collection channels. These data sources should extend beyond traditional end-of-term assessment scores to systematically incorporate multidimensional results from literacy-based evaluations, student reflective journals on module learning, classroom observation records, and analysis reports on the efficacy of teaching resource utilization. Together, these data form an evidence chain that reflects the dynamic relationship among course objectives, the teaching process, and the outcomes of literacy development, thereby providing an objective basis for accurately identifying the course's strengths and areas requiring optimization[6].

The core of the feedback loop lies in establishing a closed-loop pathway from data analysis to instructional decision-making. Establishing a regular curriculum review meeting involving the course teaching team is a key link in realizing this closed loop. Based on multi-source feedback data, the review meeting analyzes the degree of achievement of the set literacy objectives and diagnoses potential disconnects or bottlenecks within the instructional pathways and resource allocation. Based on the diagnostic results, the meeting does not make vague adjustments but rather makes iterative decisions targeting specific elements such as the teaching strategies of particular modules, the complexity of scenario creation, or the sensitivity of evaluation tools. For example, data might reveal that students generally underperform in the dimension of "movement control under fatigue." Following review, a decision could be made to add specialized exercises with progressive fatigue loads to the relevant module or to adjust the difficulty sequence of situational tasks. This evidence-based, iterative mechanism focused on specific instructional elements ensures that the course system can dynamically respond to genuine feedback from the teaching process, achieving self-evolution and continuous refinement oriented towards the cultivation of vocational physical literacy.

Conclusion

This study systematically analyzes the theoretical core of Vocational Physical Literacy, clarifying its

deep isomorphism with university cheerleading courses in areas such as movement patterns, neuromuscular control, and situational adaptability. Building upon this, the research constructs a comprehensive reform framework that progresses from theoretical correlation analysis to instructional pathway design, ultimately culminating in the optimization of the course system. The core contribution of this framework lies in its approach: it does not treat Vocational Physical Literacy as an external burden. Instead, through strategies like skill restructuring, modular integration, and situational infiltration, it organically dissolves this literacy into the fabric of existing cheerleading instruction, achieving a natural extension and sublimation of the course's intrinsic functions. Simultaneously, the proposed literacy-based evaluation and feedback loop mechanisms provide institutional safeguards to ensure the operability and sustainability of the reform. Future research directions may focus on longitudinal empirical tracking of the effects of specific instructional interventions under this framework. Furthermore, they could explore differentiated application strategies for this model across various types of universities and student populations, as well as the universal principles for its integration with other public physical education course projects. This will serve to continuously deepen and refine the theoretical system of university physical education instruction oriented towards Vocational Physical Literacy.

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