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TASK DESIGN AND MOTOR SKILL LEARNING IN UNIVERSITY TENNIS COURSES IN CHINA: A NARRATIVE REVIEW

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Abstract: Technical tests are useful in teaching tennis at university level; however, conditions of their use affect what can be demonstrated by a score. Predictable feeding does not fully test a student's response to changes in ball flight and opponent position. This narrative review considers the relation of classroom technical tests to rally performance in general physical education electives and specialist tennis courses for physical education majors in Chinese universities. Articles published since 2016 are considered in terms of task design, feedback, and assessment. University-level research has reported improvements in some technical, tactical, motivational and retention outcomes, although the outcomes assessed differ. One comparison found similar short-term technical performance but better tactical performance with Teaching Games for Understanding. In junior tennis research, introduction of game-like characteristics has been found to change serve strategy without consistent advantage in technical outcomes. Taken together, these results warn against the use of one score in evaluating the impact of teaching. It is suggested that testing stroke technique, rally performance, delayed retention, and transfer to novel situations should be included. Lesson logs should describe the information provided and the amount of practice completed. Different course types require separate consideration due to different aims of education, but core tests can provide a basis for comparison. The problem is interpretation of evidence of learning. The studies reviewed do not establish the size of the gap between technical test and rally performance in Chinese university students.
Keywords: University physical education; Tennis teaching; Motor learning; Situated practice; Representative learning design; Task constraints

1 INTRODUCTION

What does a classroom technical test tell us about a player's tennis? A successful forehand indicates control of the racket face and ball direction during the test. During a rally, however, this particular shot will be performed after judging the incoming ball trajectory, moving towards the ball, and selecting the target. The feed is fixed in the test; therefore, the test assesses just one part of the whole process.

The teaching literature covers more than stroke technique. The systematic review conducted by Nieblas and Molina, analyzing 87 sources, covered skill progressions, feedback, psychological factors, and practice games at various ages and competitive levels [1]. While this is a helpful context, it does not establish a teaching method for courses at Chinese universities. These classes have other purposes too. General physical education (PE) electives often provide an introduction to tennis with an emphasis on engagement.

Differences in course aims should not be taken as evidence of differences in student ability. Training, practice outside the classroom, courts, and teaching resources should all be recorded. For example, the sample of PE majors studied by Liu and Lipowski could not represent the general elective students without additional evidence [2]. In both course types, the teaching challenge would be to keep practice manageable while retaining the information needed during play. The assessment challenge would be to differentiate between immediate success and lasting learning. This is why the organization of the task, feedback, and assessment will be addressed here.

2 LITERATURE SCOPE AND APPROACH

Articles published from 2016 onward were identified and checked using journal websites, PubMed, open-access full texts, and reference lists. The search terms used included “tennis teaching,” “university students,” “motor learning,” “representative learning design,” “constraints-led approach,” and “feedback.” References concerning university courses, tennis practice, or learning assessment were followed. Articles whose participants, tasks, results, and journal source could be checked were prioritized.

This review is a narrative one which involved no comprehensive database search or independent screening by two reviewers. No risk-of-bias assessment was specified in advance. Screening counts and pooled effect sizes are not reported. The discussion distinguishes between conceptual models and empirical interventions and also looks at the applicability of younger samples and international research to Chinese universities.

The comparison is based on how the task matches what the students are exposed to and what the test calls for. Ball delivery, court configuration, rules, feedback, and equipment make up the conditions of the task. Students use the available information to choose shots and adjust their movements. Immediate tests, actual play, and retention after a

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period without targeted practice are considered separately. This way, different studies using the same teaching label may be differentiated.

3 PERCEPTION AND ACTION IN CONTEXT

Ecological dynamics emphasizes the role of the learner interacting with the task and environment in learning skills. The implications of ecological dynamics for practice design, especially the information that links perception and action, are explained by Woods et al. [3]. Qiu and Qiu look into learning through the interconnections between body, brain, environment, and task [4]. The theoretical approaches provide different ways of analyzing a lesson; neither of them makes any comparison between tennis interventions.

In relation to tennis, this approach would mean that attention should be focused on the aspects of the task that need to be preserved. The ball's speed and spin guide stroke adjustment; an opponent's positioning and available open areas on the court indicate where to hit the ball, while recovery requires appropriate timing. A coach can limit the size of the court but still allow the possibility to hit away from an opponent. The difficulty and effects of this task would still need to be tested.

Labeling teaching methods tells us little about these choices. Gamification can use scoring, competition or cooperation without reproducing the demands of tennis play. The Teaching Games for Understanding (TGfU) approach tends to start with tactical issues. A constraints-led approach involves altering task, environment or personal factors to allow exploration of functional movement. Li and Li's situated game teaching model uses set plays to structure technique, tactics, opponents and court space [5]. This is a model of lesson design, without reported intervention effects.

Krause et al.'s comparison of common practice and matches shows how such demands can be studied [6]. In their research on 10 elite juniors, there were differences in terms of shot location, percentage of winning shots, and movement in the practice activities as compared with those during the match. The values obtained cannot be directly applied to beginners at university level. However, the comparison is a valuable one since the presence of a net and an opponent alone does not establish representativeness.

4 TEACHING EVIDENCE FROM UNIVERSITY TENNIS COURSES

4.1 Task Progressions and Manageable Difficulty

Immediate performance is the main outcome seen in much of the equipment scaling research. While many of the studies in the Buszard et al. review on children's sports showed performance gains, relatively few explored learning [7]. The results of the scoping review by Piquer-Piquer et al. of 35 articles on beginning tennis players indicated that the modifications mostly occurred in relation to balls, rackets, and courts [8]. In children's tennis, such modifications can affect opportunities to hit and shot success rates.

The difference is crucial in setting up progressions. Increasing movement distance, adding a target choice, and making ball delivery less predictable affect various aspects of the exercise. Changing all three simultaneously makes it difficult to explain success or difficulty. A practice sequence intended for study should have a description of its various stages and criteria for moving between them. These planning considerations are not a tested university curriculum.

4.2 Gamification, TGfU, and Problem Solving

The comparison conducted by Wang and Josue among 180 students enrolled at three different Chinese universities is especially relevant to the choice of outcome [9]. Short-term technical performance was similar in the TGfU and conventional teaching groups. However, the TGfU group performed better in tactical decision-making and retention one month later. Only considering the technical test result would have overlooked the difference observed above.

University results do not provide answers to the exact same question. Liu and Lipowski found an association between playing sports games and motivation and forehand and backhand technique improvements in 150 students of a sports-oriented Chinese university [2]. Hussein et al. conducted a comparison between problem-solving and explanation-based learning among 28 female students in a college of physical education [10]. Problem-solving learners showed more progress in the fundamental skills test than their counterparts did. This information refers to particular tests and motivation; a forehand test score cannot show how the stroke is used to sustain a rally. Differences in courses and samples prevent a general ranking of situated and explanation-based teaching.

There is one more interpretative issue associated with the gamification results. The authors mention different group sizes in the methodology and results sections [2]; therefore, the effect sizes estimated by the researchers are uncertain inputs for the design of future studies. Another issue is the introduction of competition, cooperation, and extra practice opportunities as a single package. Even with consistent reporting, the positive effect in this situation would not allow for identification of the role of each factor.

4.3 Representative Practice and Skill Transfer

The inclusion of match information does not necessarily lead to a gradual improvement in technical skills. According to Krause et al., 33 junior tennis players were divided into three groups performing serves alone, serves against a returner, or serves followed by another shot [11]. After six weeks, adding more match features did not produce a consistent

advantage across serve outcomes. Instead, the groups used different combinations of serve speed and placement during matches.

Thus there are two issues in regard to a university serve lesson: how effectively the player performs the serve, and how the player chooses the serve in relation to the returner. Stable conditions and clear feedback may help with initial execution. The second depends on information about the opponent. Testing consistency and accuracy under standard conditions alongside serve choices would allow improvements in either area to be reported. A player might show improvement in one but not in the other.

5 FEEDBACK, STUDENT PARTICIPATION, AND TEACHING PRACTICE

van der Meer et al. matched the timing and frequency of feedback, with only one group allowed to request it [12]. The 23 intermediate-level adult participants practiced serve-and-volley tactics for three weeks. The group that could request feedback improved more tactically at both the post-test and the one-week retention test. Matching exposure helps to differentiate the impact of learner choice from greater amounts of feedback received, making the comparison more specific.

What the learners will be looking at is another aspect of the lesson itself. Nie's micro-platform teaching proposal uses video comparisons with a focus on prior skills and individual differences [13]. It presents a lesson plan without measured learning outcomes. In its application inside the classroom, the comparison between successive attempts by the same learner can serve a different purpose than the comparison of a particular aspect against a chosen model. The teacher must first define the nature of the comparison as well as check whether students use it on their next attempt.

A future classroom comparison may be conducted with differences in the amount of control over viewing but the same access to the feedback. It will be necessary to have records of viewing time, requests, and the number of ball contacts because viewing consumes practice time.

There is also the issue of the distinction between labeling an instructional strategy and providing that strategy. In interviews conducted by Anderson et al. among 10 high-performance tennis coaches, it was revealed that although some match constraints were introduced into repetitive practice, personal experience and training culture strongly influenced practice design [14]. Among Chinese physical education teachers, factors such as lesson time, class size, court space, and equipment were identified as influences on teaching arrangements [15]. This sample covered various educational levels from primary school to universities.

6 ASSESSING MOTOR SKILL LEARNING

Accuracy with fixed ball feeds can also be standardized. Accuracy under fixed feeding conditions does not show how students respond to changes in ball flight or opponent position, or sustain longer rallies. Results of studies conducted by Krause et al. support reporting skill-test results and performance during play separately [11]. Retention tests in studies conducted by van der Meer et al. and Wang and Josue address whether post-test gains remain after one week or one month [9, 12].

Four areas of outcomes emerge from the differences:

1. Stroke performance: successful serving, target accuracy, or successful forehands after movement, with test conditions stated.
2. Performance during play: sustained rallies, shot choices, recovery movement, and error types.
3. Retention and transfer: the ability to perform after a time period without practicing the skills directly and in conditions that were not practiced.
4. Participation and experience: motivation, engagement in class, and intention to play again.

Accuracy is not an adequate substitute for either of the latter two. The intention to continue playing does not establish skill development; in the same way, a tactical improvement cannot be defined as a technical one. It is essential to report the outcomes separately.

Assessors should be unaware of each student's teaching group where feasible, and agreement between raters should be reported. Comparisons of whole classes need to account for similarities among students within each class. Previous experience, teacher identity, lesson duration, facilities, equipment, and practice outside class should be documented as potential confounding factors. Basic tests can be shared across course types, while specialist tennis courses for PE majors may include technique analysis and teaching skills and general electives may track continued participation.

The limitations associated with the selected research evidence are presented in Table 1 below.

Table 1 Evidence Selected and Its Use in Chinese University Tennis Classes

Study and participants	Main finding	Limits when applied to Chinese university courses
Liu and Lipowski [2]: PE majors	Gamification was associated with improvement in some motivation and skill measures.	Group sizes were reported inconsistently; the sample does not represent general PE electives.
Wang and Josue [9]: Chinese university students	TGfU was reported to benefit tactical performance and retention.	Teaching delivery and measurement quality need further examination.

Study and participants	Main finding	Limits when applied to Chinese university courses
Krause et al. [6, 11]: junior players, including an elite sample	Common practice tasks differed from matches; adding representative features led to different playing strategies.	Participants differed from university beginners in age and skill.
van der Meer et al. [12]: intermediate adult players	Self-controlled video feedback supported retention of tactical skills.	The study did not examine teaching in large classes.

7 IMPLICATIONS FOR RESEARCH IN CHINESE UNIVERSITIES

The issue that needs to be researched in Chinese universities regarding teaching tennis is whether skills practiced under manageable conditions remain usable as rallies change. The suggested sequence starts with predictable feeds for forehand and backhand practice, and then incorporates movement and choice of placement, followed by rallies in a restricted area where students must respond to the opponent. Records of available information, shot choices, and feedback would describe the differences between these steps.

The comparison with current teaching would assess delayed retention and rally performance under equal teaching time. Prior tennis experience and course content need to be recorded, and general electives and specialist courses should be treated separately. Prior experience and equipment conditions can be considered as potential factors affecting the outcome of the teaching process. This will include noting the handles and overgrips of the rackets.

8 LIMITATIONS AND CONCLUSIONS

University studies provide limited direct evidence and use different technical, tactical, and participation measures. Research on junior players assists in revealing practice needs and evaluation techniques; it does not demonstrate the impact of those activities in universities. There is no common estimate of the technical-test-to-rally gap based on this literature.

The argument is that teaching outcomes need to be interpreted in relation to the demands of the assessment. The different technical and tactical findings of Wang and Josue, together with Krause et al.'s serve strategies, show why this distinction matters [9, 11]. Progression of tasks, match information, and feedback requested by students deserve investigation within Chinese universities, with course types considered separately. Connecting tasks used during lessons and practice exposure to immediate results, delayed retention, and rally performance would enable more precise conclusions regarding learning. There is a role for technical testing even when not all of tennis performance is involved.

COMPETING INTERESTS

The authors have no relevant financial or non-financial interests to disclose.

REFERENCES

[1] Nieblas J, Molina P. Revisión sistemática de la investigación sobre la enseñanza del tenis. Cuadernos de Psicología del Deporte, 2016, 16(2): 111-124. https://revistas.um.es/cpd/article/view/264481.

[2] Liu T, Lipowski M. Sports gamification: Evaluation of its impact on learning motivation and performance in higher education. International Journal of Environmental Research and Public Health, 2021, 18(3): 1267. DOI: 10.3390/ijerph18031267.

[3] Woods C T, McKeown I, Rothwell M, et al. Sport practitioners as sport ecology designers: How ecological dynamics has progressively changed perceptions of skill 'acquisition' in the sporting habitat. Frontiers in Psychology, 2020, 11: 654. DOI: 10.3389/fpsyg.2020.00654.

[4] Qiu S, Qiu N. Body and learning: A new theoretical perspective on motor skill acquisition. Journal of Physical Education, 2022, 29(5): 8-15. https://tyxk.scnu.edu.cn/editer/doc/20229291052121209.pdf.

[5] Li B, Li W. Developing students' game competence: Situated game teaching through set plays. Strategies: A Journal for Physical and Sport Educators, 2023, 36(1): 31-39. DOI: 10.1080/08924562.2022.2146962.

[6] Krause L, Farrow D, Buszard T, et al. Application of representative learning design for assessment of common practice tasks in tennis. Psychology of Sport and Exercise, 2019, 41: 36-45. DOI: 10.1016/j.psychsport.2018.11.008.

[7] Buszard T, Reid M, Masters R, et al. Scaling the equipment and play area in children's sport to improve motor skill acquisition: A systematic review. Sports Medicine, 2016, 46(6): 829-843. DOI: 10.1007/s40279-015-0452-2.

[8] Piquer-Piquer A, Crespo M, Ramón-Llin J, et al. Exploring the impact of equipment modifications on novice tennis players: A scoping review. Frontiers in Psychology, 2025, 16: 1536427. DOI: 10.3389/fpsyg.2025.1536427.

[9] Wang S, Josue F. A comparative study on TGFU and traditional teaching methods for enhancing tennis skills among Chinese university students. International Journal of Academic Research in Progressive Education and Development, 2025, 14(3): 333-346. DOI: 10.6007/ijarped/v14-i3/24723.

[10] Hussein A, Majed S, Hasan U. Effect of employing the knowledge economy using the problem-solving strategy on the learning of basic tennis skills. SPORT TK-EuroAmerican Journal of Sport Sciences, 2023, 12: 3. DOI: 10.6018/sportk.545921.

[11] Krause L, Farrow D, Pinder R, et al. Enhancing skill transfer in tennis using representative learning design. Journal of Sports Sciences, 2019, 37(22): 2560-2568. DOI: 10.1080/02640414.2019.1647739.
[12] van der Meer B R, van den Hoven M A C, van der Kamp J, et al. Self-controlled video feedback facilitates the learning of tactical skills in tennis. Research Quarterly for Exercise and Sport, 2024, 95(2): 537-545. DOI: 10.1080/02701367.2023.2275801.
[13] Nie D. A study of the application of the comparative teaching method in tennis technique teaching under the micro-platform. Journal of Physical Education, 2019, 26(2): 118-121. https://tyxk.scnu.edu.cn/editer/doc/20194316563059185.pdf.
[14] Anderson E, Stone J A, Dunn M, et al. Coach approaches to practice design in performance tennis. International Journal of Sports Science & Coaching, 2021, 16(6): 1281-1292. DOI: 10.1177/17479541211027294.
[15] Liu B, Ke Y. Empowering teachers to equip the next generation with specialised sport education: Physical education teachers, tennis pedagogy, and SDG 4. European Journal of Education, 2026, 61(2): e70653. DOI: 10.1111/ejed.70653.