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ARTICLE

High School Physical Education Teachers' Fundamental Psychological Needs for the Fitness Testing in School-Based Physical Education Programs in China

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Purpose: Guided by self-determination theory, this qualitative study explored Chinese high school physical education teachers' three basic psychological needs of autonomy, competence, and relatedness for health-related fitness testing in school-based physical education programs. ***Method:*** Semistructured interviews were conducted with high school physical education teachers ($n = 13$, 11 males and two females) who are responsible for conducting health-related fitness testing in their schools. Data were analyzed using a constant comparison method and triangulated with multiple data resources. ***Results:*** Three themes were discovered: (a) professional identity and practice challenged by mandatory policy, (b) a misalignment of competence: the capable organizer versus the failed educator, and (c) local cohesion amid external isolation. ***Conclusion:*** Findings highlight tensions between policy expectations and teachers' professional agency, revealing how basic psychological needs are partially supported but also constrained.

Keywords: high school teachers, health-related fitness testing, self-determination theory

Physical education (PE) plays a significant role in health promotion, given that one of the teaching standards has always been linked to health-related fitness (HRF; SHAPE America, 2024). Evidence revealed that PE is a suitable setting to promote healthy lifestyles among students (Hassan et al., 2024). Consequently, policymakers are giving more attention to PE's role in resolving public health problems (Hills et al., 2015). This focus has led to the widespread implementation of HRF monitoring within PE programs, primarily through the utilization of fitness testing to collect fitness-related data (Krochmal et al., 2021). As a result, for more than half a century, HRF testing (HRFT) has been an essential part of school-based PE programs worldwide (Keating et al., 2020; Yang, Hamilton, et al., 2025). While the use of HRFT has been critiqued for its performative nature (Harris et al., 2021), its function as an officially approved tool for health surveillance has become normalized (Cale et al., 2014). In the same vein, China has increased the scores of PE in the entrance exam's total scores for secondary schools (Yang, Bartle, et al., 2025; Zou, 2020). As such, it is foreseeable that such a policy decision will reignite the long-term and often contentious debate surrounding the purpose, value, and pedagogical appropriateness of fitness testing in schools.

It is important to note that HRFT is receiving intense critiques as a contested practice (Cale & Harris, 2009; Hamilton et al., 2025). Supporters base their arguments on a public health and medical framework, suggesting that monitoring the components of HRF is a valid indicator of young people's health (O'Keeffe et al., 2020). From this perspective, HRFT is seen as a marker for overall health (Morrow et al., 2009), and this focus on health responsibility is used to justify its widespread use in schools (Yang, Hamilton, et al., 2025). For example, it has been suggested that HRFT can effectively identify potential health problems, if used appropriately, allowing the results to be used to help students achieve healthy fitness zones (Silverman et al., 2008).

A growing body of critical research questions the validity of these health-promoting claims and points to the limited educational value of HRFT, however (Alfrey, 2024; Cale & Harris, 2009). While there is strong evidence that the testing batteries from various fitness monitoring systems are reliable for assessing and tracking youth fitness levels (Yang, Hamilton, et al., 2025), there is little evidence that such testing actually achieves its goal of promoting health after years of implementing HRFT (Alfrey & Gard, 2014; Cale & Harris, 2009). As a result, the ability of HRFT to improve health is questioned (Alfrey, 2024; Yang, Bartle, et al., 2025). This criticism is further supported by research showing that students often did not understand the purpose of the tests or their importance for learning, and HRFT could be a source of anxiety (Alfrey, 2024). These negative attitudes are often worsened by poor personal experiences, with a study reporting student complaints that describe testing as a boring and unpleasant experience (O'Keeffe et al., 2021). Such practices, often termed improper implementation of HRFT (Silverman et al., 2008), can reduce students' interest in physical activity. The emergence of these critical studies has prompted a profound reevaluation of the value and purpose of HRFT in PE. To date, surprisingly, no empirical research has been available to effectively solve the above problems. Of greater importance, it is unlikely that HRFT practices would be eliminated from school-based PE programs

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given that fitness education has always been part of PE teaching standards and HRFT has been implemented in many countries such as the United States (SHAPE America, 2024), China (Yang, Hamilton, et al., 2025; Yang, Bartle, et al., 2025), Russia (Yang, Hamilton, et al., 2025), Australia (Alfrey, 2024), and European Union (Ruiz et al., 2011) for more than 70 years. Therefore, as suggested by a number of scholars (Castro-Piñero et al., 2010; Hamilton et al., 2025; Liu et al., 2023; Silverman et al., 2008), more research on the topic is needed in the future to promote effective use of HRFT.

The debate surrounding HRFT has particular significance in China, where research indicated a continuous decline in the HRF of Chinese students over several decades (Dong et al., 2019; Zhang et al., 2024). In response, the Chinese government has launched a series of policy initiatives to improve student physical fitness and health, including the "Healthy China" plan (World Health Organization, 2016). To achieve this policy objective and ensure its widespread implementation, China's National Physical Fitness Testing has been implemented in schools since the 1950s (Yang, Hamilton, et al., 2025). This testing practice is applied at all educational levels, covering students from K–12 through the first 2 years of college (Yang, Hamilton, et al., 2025). Within this context, PE teachers are required to administer the HRFT and report student results annually. To the best of our knowledge, there is no research indicating what initial and ongoing training PE teachers in China receive in this regard or how this training aligns with the educational curriculum. However, the high-stakes nature of the program often intensifies tensions between policy requirements and teachers' professional autonomy while also challenging their capacity to meaningfully engage students in HRF and physical activity (Alfrey & Gard, 2019).

To date, however, existing research has primarily examined students' perspectives on HRFT (Alfrey, 2024; O'Keeffe et al., 2021), leaving a notable gap in understanding teachers' experiences with HRFT (Ferguson et al., 2007). Given the pedagogical concerns surrounding HRFT, the teacher's role is crucial (Keating & Silverman, 2004; Mercier et al., 2016). The existing literature reveals that teachers are often ambivalent about using HRFT, leading them to forego the practice when it is not mandated, particularly if they perceive little pedagogical value in it (Keating & Silverman, 2009). Further evidence indicates that teachers' attitudes toward HRFT are only marginally positive (Ferguson et al., 2007; Hamilton et al., 2025), and a follow-up study on preservice PE teachers over a decade later reported similar findings (Liu & Keating, 2021). Furthermore, despite the availability of appropriate practice recommendations in the literature (Stewart et al., 2005), teachers barely follow these suggestions to modify their testing practices (Keating & Silverman, 2009; Mercier et al., 2016; Yang, Hamilton, et al., 2025). This phenomenon suggests that teachers may still lack sufficient content knowledge and pedagogical skills for effective HRFT implementation (Liu et al., 2022). In response, a recent study aimed to teach self-testing strategies to preservice PE teachers and equip them with appropriate testing practices (Liu et al., 2023). Although shifting the research focus to preparing the next generation of educators is beneficial, research on the perspectives of in-service teachers remains surprisingly limited. This area of inquiry is especially scarce at the high school level, where unique educational pressures may significantly shape teachers' views (Jones & Egley, 2004). Therefore, there is a pressing need to capture high school teachers' perspectives on HRFT, especially within the context of high-stakes testing policies.

Connecting Self-Determination Theory to Understanding of PE Teachers' Perspective on HRFT in China's Setting

The self-determination theory (SDT), which is a prominent framework for research on motivation and behavior change (Ryan & Deci, 2020), offers a valuable framework for examining teachers' perspectives on HRFT in school settings. At its core, SDT posits that for individuals to develop self-regulated motivation and the three basic psychological needs must be satisfied: autonomy (i.e., a sense of volition and control), competence (i.e., feeling effective), and relatedness (i.e., connection with others; Ryan & Deci, 2020). When these needs are supported, individuals are more likely to display autonomous motivation: engaging in behaviors out of genuine interest, value, or personal endorsement. Conversely, when these needs are thwarted, motivation tends to become more controlled or even amotivated, leading to disengagement and resistance (Ryan & Deci, 2000).

PE teachers' perspectives on HRFT are deeply intertwined with these motivational dynamics because HRFT can be viewed as either a supportive pedagogical tool or a meaningless controlling evaluative practice, depending on how it is implemented and perceived by teachers (Ferguson et al., 2007; Hamilton et al., 2025; Silverman et al., 2008). In China, where fitness testing has become institutionalized as part of national education policy (Yang, Bartle, et al., 2025), teachers frequently serve as the primary agents of implementation on a yearly basis. As noted earlier, the recent educational reforms have tied students' fitness test results to school evaluations and high school entrance admissions, intensifying the pressure on teachers to ensure student performance (Yang, Hamilton, et al., 2025; Yang, Qiu, et al., 2025). These external expectations may constrain teachers' sense of autonomy, forcing them to focus on compliance rather than pedagogical purpose.

Previous research has demonstrated that when these basic needs are met, teachers report higher levels of professional performance (Spittle et al., 2009). Applied to the present context, satisfying PE teachers' psychological needs may be crucial for their effective implementation of HRFT. Conversely, mandatory, top-down policies can thwart teachers' psychological needs, which in turn may diminish their motivation (Pearson & Moomaw, 2005). Therefore, understanding teachers' perspectives through the SDT framework is crucial for improving the quality and acceptance of school HRFT. At the student level, the application of SDT is equally crucial. It has been shown to promote cognitive, affective learning and foster positive movement experiences (Sun et al., 2017). To achieve these outcomes, PE teachers need to create autonomy-supportive environments to enhance student motivation (White et al., 2021). In contrast, the implementation of high-stakes testing has been reported to significantly diminish student motivation (Dawadi, 2020). This context is detrimental to students acquiring positive learning experiences in PE and developing lifelong engagement in physical activity.

In China, the PE and health curriculum reform has reinforced the "Health First" philosophy, advocating for student-centered approaches, stimulating student interest, and meeting diverse needs (Yang, Qiu, et al., 2025). In this sense, China's PE policy guidelines appear, on the surface, to be consistent with the SDT principles of satisfying student autonomy and providing a need-supportive environment. However, the high-stakes nature of China's PE examinations dominates actual pedagogy, as PE class grades (primarily fitness test components and a few sport skill tests) are used to inform admission decisions for high school and university admissions (Yang, Bartle, et al., 2025).

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This highly controlling, standardized testing not only leads PE teachers to "teach to the test" (Yang, Bartle, et al., 2025) but also creates a severe disconnect between PE teachers' professional development (PD) programs and the philosophy of the new curriculum standards. On the one hand, initial training in PE teacher education (PETE) focuses on developing sport techniques rather than the health-promotion content required by the curriculum standards (Meng et al., 2021). On the other hand, in-service training programs reinforce the test-oriented approach; the training content primarily revolves around how to improve student PE scores on entrance exams, leading to actual teaching practices that completely diverge from the curriculum philosophy (Meng et al., 2021). Studies indicate that China's high-stakes examination system, by imposing assessment pressures and constraints, undermines teachers' intrinsic motivation, causing them to adopt controlling and utilitarian pedagogical practices (Yu et al., 2018). It remains unclear how mandatory PE examination policies (e.g., compulsory fitness testing) impact Chinese PE teachers' intrinsic motivation and basic psychological needs, however. Therefore, applying SDT as a theoretical lens provides a framework to reveal how teachers' perceptions and attitudes are shaped by this mandatory policy, specifically through the extent to which it supports or thwarts their basic psychological needs.

To address the existing gap in exploring high school PE teachers' perspectives, the following research question guided this study: How do Chinese high school PE teachers perceive the national fitness testing framed by SDT? By addressing this question, this study makes three significant contributions. First, it addresses a notable gap in the HRFT literature by amplifying the voices of high school PE teachers. As the implementers of HRFT, their perspectives are crucial to a comprehensive understanding of this practice. Second, by understanding teachers' experiences, this research can inform the development of more pedagogically sound and effective ways to conduct HRFT in the future. Finally, as this practice is situated within a policy context, the study offers policymakers valuable feedback grounded in teachers' lived experiences. The findings can illuminate the challenges teachers face during HRFT implementation and provide an evidence base for future policy revisions and the creation of effective teacher support systems.

Method

Research Design and Conceptual Framework

This study adopts a phenomenological approach, which is appropriate for exploring the lived experiences (i.e., fitness testing) of individuals as they make sense of a particular phenomenon (Creswell & Poth, 2025). In this sense, phenomenology is particularly well-suited to HRFT. The purpose of this study, however, extends beyond a mere description of teachers' experiences to an in-depth understanding of the meaning behind them. Specifically, the interpretive phenomenological approach adopted in this study makes it possible to understand how high school PE teachers interpret and make sense of these experiences within the Chinese educational and policy context. Phenomenological research often requires multiple data sources, such as semistructured interviews, surveys, and documents (Creswell & Poth, 2025). Moreover, SDT serves as a conceptual framework to interpret findings, particularly in relation to how HRFT practices support or constrain teachers' basic psychological needs of autonomy, competence, and relatedness. Overall, a phenomenological design lets us center high school teachers' voices, revealing the meaning and essence of their experiences with HRFT under policy mandates, while SDT provides the lens to interpret motivational dynamics.

Participants

Institutional review board approval was obtained before participant recruitment. Purposeful sampling was used to select PE teachers who were directly responsible for organizing and conducting the HRFT (Patton, 2020). To ensure sample representativeness, the following strategies were employed for participant recruitment. First, to achieve broad geographical coverage, the research team recruited participants from multiple, distinct geographical regions of China (e.g., Eastern, Central, Western, and Southern). Second, we selected the sample to better reflect China's broader socioeconomic landscape; recruitment excluded top-tier "mega-cities" (e.g., Beijing, Shanghai, or Guangzhou) and instead focused on second- to fourth-tier cities. This strategy aimed to capture the implementation of PE and fitness testing in contexts more representative of most regions in China. Finally, to capture a holistic view of the fitness testing phenomenon, the study further employed a purposeful sampling strategy to select schools from these regions with notably high and low fitness test performance of students. After obtaining lists of potential schools from the local educational department, the research team first contacted the PE program leaders (or department heads) at these schools. Upon receiving approval from these leaders, PE teachers were contacted by WeChat, a communication app that is one of the largest communication and social platforms in China, where the purpose and the tasks involved in participation were explained in detail. Interested teachers were followed up with to confirm their willingness to participate via WeChat. For those who explicitly agreed to participate, informed consent was obtained prior to scheduling formal interviews and sending the questionnaire containing participants' demographic information, such as age, years of teaching, students' overall performance on fitness testing, and sex. The final sample consisted of 13 full-time high school PE teachers from the south, north, central, east, and west regions of China (see Table 1). There are 11 males and two females, reflecting the broader demographic distribution of Chinese high school PE teachers, where males constitute most of the high school teacher population.

Participants' teaching experience ranged from 2 to 33 years ($M = 31.69$, $SD = 9.34$), providing a range of perspectives on implementing fitness testing. To contextualize their backgrounds, a presurvey was administered prior to the interviews. Results indicated that all participants had prior experience with fitness testing as students and currently conduct the tests annually in compliance with China's HRFT policy requirements. Participants also represented diverse school contexts, including both urban and suburban settings. To protect confidentiality, each teacher was assigned a pseudonym (e.g., P1, P2, ... P13).

Data Collection

To gain a comprehensive understanding of PE teachers' perceptions of HRFT, this study collected four types of data: (a) a preinterview survey, (b) semistructured interviews, (c) documents (i.e., lesson plans and official school policies on fitness testing), and (d) observation notes obtained through remote observation via WeChat, which is similar to Zoom in the United States. The interview data served as the primary data source, with the other data sets used for

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data triangulation. Employing multiple data collection methods facilitates the identification of key features within participants' lived experiences (Creswell & Poth, 2025). Furthermore, such data sources have been widely utilized in teacher-centered phenomenological research (Liu et al., 2022, 2023).

Preinterview Survey

Upon receiving signed informed consent from all participants, the research team administered a preinterview survey. This survey was designed to gather background information to help guide the subsequent formal interviews and was distributed via the online platform Wenjuanxing, similar to Qualtrics in the United States. The instrument included items on demographic information (e.g., age, gender, and years of teaching experience) and two open-ended questions concerning their HRFT implementation and policies. These questions explored participants' experiences with HRFT and their perceptions of student performance on HRFT.

Semistructured Interview

The primary researchers conducted semistructured interviews with all participants. The interview protocol was guided by the lens of SDT, with questions designed to explore participants' personal experiences with fitness testing, their perceptions of autonomy (e.g., In what ways do you think you can control the implementation of fitness test?), their understanding of competence related to the tests (e.g., What would you consider to be your strengths and weaknesses when implementing fitness tests?), and their sense of relatedness within that context (e.g., What kind of relationships have you built as a result of conducting fitness testing?). To ensure content validity, the protocol was reviewed by a panel of four scholars with expertise in HRFT and SDT.

All interviews were conducted online via the Tencent Meeting platform, similar to Zoom in the United States, which is one of the most widely used communications platforms in China. Each interview lasted between 45 and 60 min, was audio-recorded, and subsequently transcribed verbatim for data analysis.

Documents

Two forms of documents were collected. In line with the approach described by Kwon et al. (2018), these documents were collected to facilitate data triangulation and to help identify corroborating or contradictory evidence across the different data sources.

First, two lesson plans focused on fitness testing were collected. The lesson plans provided information regarding the lesson topics, instructional objectives, and specific teaching content. This was done to understand whether pressure stemming from the high-stakes test altered the teachers' actual instructional practices for fitness testing. Additionally, class schedules and syllabi were also collected. These documents outlined the instructional content and time allocation for the semester, providing detailed weekly arrangements, including the basic content and frequency of fitness instruction and testing. These documents were used to examine the consistency between the teachers' implementation of fitness instruction and testing and their academic year plan. Furthermore, official documents regarding the organization of the fitness test, issued by the schools or district education bureaus, were gathered. It is noteworthy that few schools promulgated formal written documents related to the fitness test; many directives were delivered as verbal notifications via meetings, according to the participants. Specifically, only one document was collected from their district education bureaus. This document clearly described the test requirements and the Ministry of Education's assessment standards for the scores. For example, it stated, "For schools where student fitness scores decline for three consecutive years, the Education Bureau will initiate an 'accountability interview' mechanism ... Schools must strictly adhere to the unified national test items ... Schools are responsible for the authenticity and integrity of the submitted test data" (Policy Document). These descriptions were subsequently analyzed to assess whether the policy statements were controlling or supportive in nature from an SDT perspective.

Observation Notes

To document the administration of the mandatory fitness test in a Chinese high school context, the researchers conducted virtual observations. In coordination with the participants, these observations were scheduled on the official testing days and carried out in real-time using the video call function on the WeChat platform. Two observations were conducted after the semistructured interviews via WeChat, aiming to further validate the consistency between teachers' observed implementation of the fitness test and their interview data. Researchers recorded observation notes during these video-based observations to collect relevant information. The focus of the observations was in line with the SDT conceptual framework and included: (a) autonomy (e.g., whether teachers, under testing pressure, used controlling language to pressure students into pursuing higher scores), (b) competence (e.g., whether teachers provided students with specific, corrective technical feedback rather than mere score-based feedback), and (c) relatedness (e.g., the nature and frequency of the teacher's interactions with students and colleagues).

Data Analysis

Survey data were exported from the online platform (Wenjuanxing) into an Excel file for analysis. Each response was reviewed and tallied by the researchers. Demographic information was analyzed directly in Excel to calculate descriptive statistics, including means and standard deviations of numeric variables such as age and years of teaching. Responses to the open-ended questions were coded to allow for comparison and integration with the interview data.

Interview data were analyzed using a phenomenological approach to identify themes that captured the essence of teachers' lived experiences with HRFT framed by SDT. The coding process was both data-driven and theory-informed, guided by the core constructs of SDT (i.e., autonomy, competence, and relatedness). In essence, the processes involved horizontalization, coding significant statements, clustering meaning units into themes, and synthesizing textural (what was experienced) and structural (how it was experienced) descriptions. Specifically, the following steps were involved in the data analysis. First, the Chinese interview transcripts were translated into English by a bilingual expert fluent in both languages. To ensure semantic equivalence and cultural fidelity, a second researcher, who holds a doctoral degree in kinesiology from a U.S. university and a master's degree in PE pedagogy in China, reviewed and verified the accuracy of the translated transcripts. All transcripts were imported into NVivo 14 software for analysis. Next, the researchers immersed themselves in the data by reading all transcripts multiple times to develop a holistic understanding. This was followed by a process of open coding, where the data were broken down into meaningful units

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and assigned initial codes. During this stage, the research team addressed the screening of raw data with an open mindset, placing a primary focus on the lived experiences of teachers within the HRFT context, specifically highlighting descriptions that reflected their basic psychological needs. Representative examples included organizational efficiency, helplessness regarding outcomes, and identity-related doubts.

In the next stage, these codes were subjected to constant comparative analysis, during which similar codes were grouped into broader, more inclusive categories (Richards et al., 2023). Specifically, the development of subthemes followed a semantic aggregation pattern. For instance, initial codes such as mandated data targets and administrative pressure were clustered to form the subtheme of pressure-driven controlled motivation. To better capture the high-stakes testing environment experienced by the teachers, data sources beyond the interviews were analyzed concurrently. These sources generated structural descriptions of the high-stakes testing environment, providing an indispensable institutional context for interpreting the basic psychological needs of the teachers. Furthermore, this process served to corroborate the authenticity of the pressure and controlled motivation expressed by the teachers during the interviews.

Finally, these categories were refined and integrated to develop major themes that accurately represented the dataset. Specifically, the themes were constructed to reflect the high school PE teachers' perceptions of HRFT and the underlying meanings of their experiences, focusing on the basic psychological needs: autonomy, competence, and relatedness included in SDT. Table 2 shows the coding process and the association of codes with themes related to SDT.

Concurrent with the coding process, the research team held weekly meetings to discuss the emerging codes and themes guided by the SDT. The team collectively agreed that data saturation had been reached when it was mutually confirmed that no new concepts were emerging from the analysis (Patton, 2014). The course syllabi, lesson plans, and fitness test-related policy document provided by the participants were also analyzed. Following the generation of themes from the interview data, all documents were reviewed using the emerging thematic framework. The research team read all documents thoroughly to explore evidence that corroborated or expanded upon these themes. For instance, during the analysis of policy documents related to the fitness testing, a primary focus was on coding whether the mandatory policy discourse aligned with the pressure perceived by the teachers. Furthermore, an open coding approach was maintained throughout this process. If important information relevant to the study emerged from the documents but was not present in the interviews, it was captured as a new code and integrated into the final thematic structure. During this process, codes generated from the documents and observation notes were constantly compared with the interview data to triangulate the interview findings and provide deeper institutional and policy-specific contextual information.

Table 1 Participant Profiles

Number	Age	Sex	Teaching experience
1	25	Male	3
2	25	Female	2
3	26	Male	3
4	27	Female	4
5	27	Male	4
6	28	Male	3
7	28	Male	5
8	29	Male	4
9	30	Male	5
10	31	Male	6
11	32	Male	10
12	49	Male	28
13	55	Male	33

Trustworthiness

Several strategies were employed to enhance the trustworthiness of this study, following the recommendations of Pitney and Parker (2009): data triangulation, member checking, and peer debriefing. First, data triangulation was achieved by drawing upon multiple data sources, including a preinterview survey, semistructured interviews, documents, and observation notes.

During the theme generation process, the credibility of an emerging theme was enhanced when it could be triangulated across multiple data sources, such as being validated by both observation notes and documents. Conversely, when discrepancies emerged between data sources, triangulation offered deeper insights for interpreting more reflective themes. This was crucial for understanding the tension between teachers' personal interpretations, their actual practices, and the mandatory requirements imposed upon them. For instance, while the policy document might state that teachers were required to actively contact parents with test results, interview data consistently revealed that teachers had never been in contact with parents regarding this matter. Furthermore, observation notes were used to triangulate the interview data regarding autonomy, competence, and relatedness in relation to HRFT, as the observation notes described how participants

Table 2 Examples of the Coding Process

Raw data extract	Initial codes	Subtheme	Theme
"Students are losing interest as my lessons become more focused on physical test items. Even with all the extra practice, their results are not showing much improvement." (P12)	1. Curriculum narrowing 2. Student disengagement 3. Lack of efficacy	Emotional dissatisfaction caused by ineffective pedagogy and student resistance	A misalignment of competence: The capable organizer versus the failed educator
"They have specific requirements for excellent and good rates every year. If we don't meet the requirements, they will return the data to us, stating that our excellent and passing rates are insufficient." (P10) Triangulation: "Schools with declining rates … will trigger an interview mechanism." (Policy Document)	1. Mandated data targets 2. Administrative pressure 3. Structural surveillance	Pressure-driven controlled motivation	Professional identity and practice challenged by mandatory policy

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implemented the tests (i.e., autonomy and competence) and the interactions they had with their students and colleagues (i.e., relatedness). In addition, the data analysis was not conducted by a single researcher. The entire research team jointly participated in the coding process and the discussion of generative themes, thereby achieving researcher triangulation. This approach allowed for the integration of the team's diverse perspectives, reducing potential bias in theme generation and enhancing the overall reliability of the analysis (Richards & Hemphill, 2018).

Second, we conducted member checks to ensure the credibility of our interpretations. The researchers shared the emergent themes and observation notes with the participants, inviting them to review and provide feedback on the findings. Finally, peer debriefing was utilized throughout the data analysis process. Two experts in the fields of PETE and HRFT were consulted. The analytical process began with two researchers independently coding the data, followed by meetings to discuss and reach a consensus on the codes. After the full coding process was completed, the final thematic structure was submitted to the two experts who reviewed it to establish the internal consistency and coherence of the analysis.

Researchers' Positionalities

The research team members implemented HRFT in their classes and have previously conducted studies on the topic across various countries, including Australia, China, the European Union, Canada, Russia, and the United States. The composition of the research team included a majority of members with lived experience of undergoing fitness testing within the Chinese educational system. Their Chinese cultural perspective and firsthand experiences brought cultural sensitivity and deep contextual understanding to the data interpretation. Concurrently, other members of the team provided critical perspectives from different cultural backgrounds because they taught and conducted data-based research studies on HRFT in the United States and Australia for 20–30 years. The diversity of the team members helped the team to reflect on potential biases and enhanced the explanatory depth in interpreting themes.

Results

HRFT Practice in Chinese High Schools

The data collected from the presurvey and the interviews provide us with the implementation status of HRFT across the participants' diverse settings. This foundational knowledge is critical for contextualizing the background of HRFT in China. Although participants were recruited from a broad geographical range across China, minimal variation was found in the implementation of the HRFT across the nation, which is not surprising, as the protocol of HRFT implementation is standardized by the government. Specifically, the HRFT is consistently administered once per academic year, typically during the autumn semester, regardless of the locations. While the specific implementation dates varied by school, the deadline for uploading test results was uniform, falling before the end of December in all cases. The standards and test items administered are identical across all settings, adhering to national mandates. Furthermore, it was reported that few schools issued formal written documents or policies regarding the HRFT implementation, as it is typically communicated verbally among PE teachers (e.g., oral notifications). The research team did, however, collect one official fitness testing policy from participating schools, which was used for data triangulation.

Themes Related to HRFT Guided by the SDT

The results indicate that PE teachers exhibited controlled motivation and faced significant obstacles to their basic psychological need satisfaction. Although teachers demonstrated some competence satisfaction regarding the organization of the test, this was overshadowed by competence frustration at the level of pedagogical efficacy. More importantly, the high-stakes nature and perceived formalism of HRFT led to widespread autonomy frustration and relatedness frustration among teachers. The following themes emerged: (a) professional identity and practice challenged by mandatory policy (i.e., autonomy), (b) a misalignment of competence: the capable organizer versus the failed educator (i.e., competence), and (c) local cohesion amid external isolation (i.e., relatedness).

Professional Identity and Practice Challenged by Mandatory Policy (Autonomy)

Autonomy concerns the extent to which teachers perceive control over the fitness test, rather than being controlled by external forces. However, top-down mandatory policies directly challenged the teachers' professional identity as curriculum designers and professional practitioners.

Downgrading of Professional Identity: From "Educator" to "Executor" or "Outsider"

The mandatory fitness test, as a rigid institutional mandate, stripped PE teachers of their autonomy in selecting fitness testing content, leading to a downgrade in their professional identity. P1 noted: "I have no autonomy regarding the test items. These items cannot be changed; they are all uniformly stipulated by the national policy." The collected document supported this, listing the official test items at the end and noting they were prescribed by China's national department of education (Policy Document). Although teachers did not complain about their lack of choice, most mentioned that students complained about the testing items, stating, "Students have a very negative attitude when testing certain items; they don't want to be tested on some items" (P3).

Beyond being reduced to test executors, an exceptional phenomenon emerged in some cases. In several schools, fitness testing, traditionally a core responsibility of PE teachers, has recently been outsourced to third-party testing agencies. This has completely stripped teachers of their autonomy and motivation to implement the tests. In these cases, the teachers' professional identity was further narrowed to that of a fitness coach. P2 described this phenomenon:

> In recent years, my school has outsourced the fitness test to a third-party agency. So, sometimes I am only responsible for training students on these test items. I don't even know the students' test results (because it is not done by me).

Under this outsourcing policy, teachers become outsiders in the actual testing process. This practice diminishes the teacher's role in the HRFT and demotivates them from getting involved in implementing it.

Pressure-Driven Controlled Motivation

Lacking autonomy, teachers' motivation to implement the fitness test did not stem from intrinsic value endorsement but rather from external and internal pressures. On one hand, teachers' behaviors

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were driven by external regulation; they implemented the test purely to comply with national regulations and to avoid penalties for poor results. They repeatedly stressed that the test was mandated by national policy and they "must follow the policy." This compliance pressure even originated from the test data management platform. P12 stated:

> If a student's score on the pull-up item is 0, I cannot even upload the test result. The authorities require that a student's score cannot be 0 in any single item. So, I have to guide the students to practice; otherwise, my leader will come looking for me (to give me a hard time).

On the other hand, participants demonstrated low autonomy characterized by introjected regulation, engaging in behaviors primarily to avoid feelings of guilt. Overall, unsatisfactory student test results generated pressure for teachers. P10 noted: "If the pass rate and excellence rate do not meet the requirements, the test data will be sent back." Collected documents confirmed this: When test data failed to meet the education department's requirements, the data were returned to the school (Policy Document). PE teachers were pressured to achieve compliant results, as failure could impact their promotions and salary increases. This fear of data being sent back constituted a strong internal pressure. Furthermore, fitness test scores are linked to students' applications for special-status university admissions (e.g., military or police academies). P11 discussed the impact of fitness test results on university admissions:

> When filling out college applications, many of my students apply to military academies and police universities. These institutions require a passing fitness test score as a prerequisite for eligibility. Therefore, I am very concerned that fitness test results could affect my students' futures.

Therefore, teachers felt a strong sense of responsibility pressure, driven by the need to avoid jeopardizing their students' futures.

A Misalignment of Competence: The Capable Organizer Versus the Failed Educator (Competence)

Competence refers to PE teachers' perceived ability to meet the challenges of fitness testing and to achieve desired outcomes in the present study. Within this theme, teachers reported feelings of competence satisfaction in organizing and administering the tests, yet experienced pronounced competence frustration in the core areas of pedagogical effectiveness and student motivation.

Emotional Dissatisfaction Caused by Ineffective Pedagogy and Student Resistance

The greatest source of competence dissatisfaction for participants was the feeling that their instructional efforts failed to produce the desired educational outcomes—improve HRFT scores. This directly challenged their professional identity as educators. Most teachers perceived the HRFT as meaningless and useless for students. When confronted with test items that were difficult to improve—such as pull-ups, which preinterview surveys identified as students' lowest performing component—teachers reported feeling helpless and experiencing considerable anxiety. P6 reported:

> I design targeted fitness training for them using the school's limited facilities. But sometimes their test scores show no improvement. This situation causes me significant anxiety because no matter what I do, their performance stagnates, and I begin to doubt my own capabilities as an educator.

Furthermore, the inability to effectively motivate students during fitness testing troubled the teachers. Students were "not very engaged" and "always just went through the motions." (Consistent with the observation notes) P12 bluntly stated, "It is impossible to control the students' negative emotions during the test." The analysis of lesson plans revealed that all exercises in fitness-focused lessons were structured around the test items without additional fun fitness activities. P4 confessed, "In the two months leading up to the test, I changed all my class exercises to be test-item-centered training," which was a deviation from his lesson plan. Thus, under the pressure of high-stakes testing, teachers were forced to narrow the curriculum to "teach to the test."

A Shift in Competence: From "Educator" to "Organizer" or "Outsider"

Teachers experienced frustration in their attempts to improve students' fitness test scores. To achieve psychological compensation, they derived confidence from the organizational aspects of the test. Participants displayed an optimistic perception of implementing the tests, with their confidence stemming from their ability to skillfully organize and manage the entire process (supported by the observation notes). P11 described:

> The organization of the entire testing process is quite orderly. My students always follow my instructions. I have no problems! For example, the transitions between different segments (test items) are smooth. I can complete the tests quickly and accurately within the specified time.

In summary, although teachers experienced competence satisfaction during the test, this satisfaction only stemmed from organizing and managing the testing process, not from their ability to improve students' testing scores.

Local Cohesion Amid External Isolation (Relatedness)

Relatedness refers to teachers feeling cared for, understood, and a sense of belonging with colleagues, students, and the broader professional community. This theme consists of two subthemes: a teacher–student relationship thwarter and isolation outside, solidarity within.

A Teacher–Student Relationship Thwarter

All participants mentioned requiring students to assist with the fitness test. During remote observations, teachers often used controlling language, commanded, and criticized students' test performance while compelling some students to help record scores. The observation notes suggested that most students lacked opportunities for meaningful or individualized communication with their teachers during the testing. Thus, the connection with students was primarily instrumental, mobilizing them as assistants for the tests. P2 noted: "We mostly ask students to help [before outsourcing]. It's because we are short-handed, so we mainly rely on student cooperation." In this instrumental relationship, warm, affective connections between students and teachers were often absent, and the interactions even damaged the teacher–student relationship. P4 stated, "I think this kind of relationship during the fitness test only

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makes students hate the teacher more." Most teachers indicated that students disliked the test; therefore, when teachers forced students to perform a task they already disliked, teachers were positioned in opposition to their students. As a result, the obvious relatedness between teachers and students due to HRFT was not established.

Isolation Outside, Solidarity Within

When teachers attempted to connect with groups outside their PE department (including parents, other teachers, and external colleagues) regarding the fitness test, they encountered overwhelming neglect, misunderstanding, and a lack of communication. This severely thwarted their relatedness needs and reinforced their professional marginalization. Teachers consistently reported that the parent community showed complete apathy toward this core task of student health. "Parents have never cared about the students' fitness test. They just don't value this matter at all" (P8).

Notably, this school-home disconnect stands in sharp contrast to official policy requirements. The policy document explicitly states, "Teachers must promptly inform students and parents of the test results after the test." This disconnection between the required expectation and the reality suggests either that teachers face practical barriers or lack the motivation to perform this communicative task, or that the parent community places insufficient importance on this core student fitness data.

At the same time, teacher interactions with school leadership were limited, characterized as instrumental and unidirectional. Teachers indicated their communication with administrators was mainly restricted to task delegation and data reporting. P11 and P1 both mentioned that administrators were primarily concerned with outcome metrics, such as "pass rates and excellence rates," rather than the students' actual HRF. This narrow focus on metrics was perceived as stemming from high-stakes accountability pressure imposed by higher-level education departments. Policy document confirmed this inference, showing that "schools with consecutively declining test scores will have their principals summoned for an 'accountability interview' by the education department administrators." Consequently, the high-stakes nature of the test narrowed the teacher–administrator relationship to a managerial–executive one based on student performance data, largely undermining the test's fundamental educational goal of promoting student health.

In stark contrast to the isolation described above, the fitness test actually promoted relatedness within the PE department. Teachers actively collaborated with their PE colleagues to manage shared challenges regarding facilities and test item coordination. P11 explained:

> For a shared field, we need to coordinate. For example, if you are testing a certain item today, then my colleagues will test on a different day to avoid conflict because we have limited testing equipment. Through working with my colleagues on getting the tests done, I feel I know my peers better.

This functional cooperation was clearly perceived by teachers as strengthening their emotional bonds and satisfying their relatedness needs. However, the collaboration fostered by the test was confined to the PE department. The study found no evidence that teachers were motivated to seek cooperation with peers from other schools. This is possibly due to an interschool competitive atmosphere fostered by the high-stakes accountability mechanisms, as well as a lack of perceived need or opportunity for outside-school collaboration.

Discussion

The implementation of HRFT has long been a mandatory component of high school PE programs in China (Yang, Hamilton, et al., 2025). Despite this longstanding policy enforcement, the lived experiences of Chinese high school PE teachers in implementing HRFT remain largely unexplored. According to SDT, examining teachers' psychological needs within this context is crucial, as the satisfaction of these needs fundamentally shapes their instructional styles and intrinsic motivation (Teraoka et al., 2025). However, to date, there remains a lack of evidence regarding how this high-stakes mandate impacts PE teachers' basic psychological needs. Addressing this critical gap, the present study is the first to employ SDT as a theoretical lens to uncover the satisfaction and/or frustration of teachers' basic psychological needs within this specific assessment context.

The important finding of this study lies in the fact that China's HRFT is not a neutral pedagogical assessment tool but rather a structural political mandate that controls teacher motivation. It systematically thwarts PE teachers' basic psychological needs, leading to deep frustration in autonomy and relatedness. Under the pressure of this mandatory policy, teachers who are unable to satisfy their basic needs experience psychological paradoxes. On one hand, teachers had partial autonomy in the execution and organization of the test, yet they did not have any autonomy in how to use HRFT. On the other hand, teachers achieve partial competence satisfaction by compromising and downgrading their professional identity. Finally, the test strengthens teachers' connections within their PE department while simultaneously creating a negative relationship with the students and isolating them from external connections. These findings indicate that China's top-down HRFT implementation model fosters a controlling environment. This not only constrains teachers' practices related to HRFT but also alienates their pedagogical philosophies and downgrades their professional identity.

Teachers' Autonomy for HRFT

Teachers' autonomy plays a critical role in shaping the design, implementation, and educational value of HRFT in PE (Keating & Silverman, 2009). Within the framework of SDT, when teachers possess autonomy, they can adapt HRFT practices to meet the diverse needs, interests, and developmental levels of their students. This freedom allows them to move beyond rigid, standardized procedures and design assessments that emphasize learning, personal growth, and long-term engagement in physical activity rather than mere performance outcomes.

Consistent with prior research, our study also found that HRFT in China functions essentially as a tool for performative health data surveillance (Cale et al., 2014). Specifically, the testing is utilized merely to fulfill political mandates and facilitate teacher performance evaluations. Under the influence of such rigid structural policy mandates, teachers often lack the space for diversity in pedagogical practice, resulting in restricted autonomy (Dieudé & Prøitz, 2024). By depriving teachers of the scope to exercise agency for adaptive adjustments, the mandatory policy prevents them from developing a strong sense of identification with the testing (Beni et al., 2024). As a result, teachers' roles are forced to devolve from proactive educators into passive executors or even outsiders, precipitating a state of autonomy frustration and controlled motivation.

It is critical to note that the current implementation practices embody a performativity that prioritizes scores, which runs counter

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to the "Health First" philosophy advocated by the Chinese PE and health curriculum (Meng et al., 2021). Within this testing context centered on scores, the teachers in this study lacked autonomy regarding the use of HRFT and were consequently unable to utilize it as a pedagogical tool for promoting student health. Notably, previous research suggests that autonomy frustration increases the likelihood of teachers adopting a controlling teaching style (Reeve, 2009), an approach that has been shown to diminish intrinsic motivation among students to participate in PE and physical activity (Moreno-Murcia et al., 2018). Evidently, need frustration among teachers, such as restricted autonomy, exacerbates negative interactions between teachers and students, thereby severely undermining the intrinsic motivation of both parties (Park & Ramirez, 2022). Furthermore, this dynamic hinders the capacity of HRFT to motivate students toward lifelong engagement in HRF activities.

It is important to note that previous research has suggested the use of multiple ways to work on students' fitness based on autonomy and decision making. For example, although HRFT is mandatory in China and the government controls how and when HRFT will be implemented (Liu et al., 2017; Yang, Hamilton, et al., 2025), teachers could still use self-testing and/or modern technologies to increase the autonomy of students (Graser et al., 2011; Keating et al., 2020). Furthermore, instead of testing student HRFT at the same time, it has been reported that students should be allowed to get tested at any time they choose within an academic year to reduce their anxiety caused by the testing (Keating et al., 2020).

Teachers' Competence for HRFT

In SDT, perceived competence is a basic psychological need that fuels autonomous motivation, enhances persistence and performance, and is essential for individuals to feel capable and engaged in meaningful action (Ryan & Deci, 2000). Given that teachers' competence is primarily exercised during the test implementation process, it is concerning that many teachers experience competence frustration when attempting to improve students' HRFT results—one of the essential purposes of conducting HRFT in China (Chinese Department of Sports Hygiene and Health Education, 2014; Liu et al., 2017). This pattern indicates a low level of perceived competence related to HRFT among Chinese high school PE teachers. Considering that research suggests that high competence can enhance teachers' performance in both test administration and fitness instruction (Santiago & Morrow, 2020), the observed competence frustration raises concern, as it may contribute to the inappropriate or ineffective use of HRFT in Chinese schools, which has been constantly reported in the literature on this topic by researchers in western countries (Hamilton et al., 2025; Harte et al., 2024).

Because this study is the first to investigate this issue, empirical evidence explaining why Chinese in-service high school PE teachers report low competence is not yet available. However, the existing literature points to two plausible explanations. First, teachers may lack adequate professional preparation in their PETE programs. Harris (2014) found that PETE programs frequently fail to provide preservice teachers with sufficient HRF knowledge, and Liu et al. (2022) reported that practical experience administering HRFT is often limited during field placements in the United States. The extent to which Chinese PETE programs prepare future teachers for HRFT remains unknown, however, as no studies have examined this issue. Recently, a recommendation to incorporate self-fitness testing into PETE warrants adoption, as it provides valuable opportunities for self-testing and reinforces preservice teachers' internalization of the importance of fitness testing (Liu et al., 2023). Second, the low competence reported by teachers may reflect limited PD opportunities related to HRFT. PD is well established as essential for updating teachers' knowledge and instructional skills (Colburn et al., 2024; Gesel et al., 2021). Therefore, the competence challenges reported in this study may indicate a broader lack of PD focused on HRFT among Chinese high school PE teachers. More research is needed to examine how to enhance teachers' competence in using HRFT to improve students' testing results in the future.

Teachers' Relatedness for HRFT

Within the PE system, teachers and students represent the most significant stakeholders (Ní Chróinín et al., 2020), with their interactions constituting the core of the pedagogical process. While previous studies have mainly examined the fitness testing experiences of students or teachers in isolation (Alfrey, 2024; Harte et al., 2024), this study innovatively reveals that the highly controlling fitness testing environment directly deteriorates teacher–student relationships, alienating the affective connection within the learning process into a cold, instrumental connection. According to SDT, highly controlling instructional environments undermine the sense of relatedness between teachers and students and thwart students' intrinsic motivation (Niemiec & Ryan, 2009). In contrast, autonomy-supportive climates created by teachers are effective in stimulating student motivation and enhancing engagement (Carriedo et al., 2023). Consequently, it is necessary to reconceptualize how autonomy-supportive environments can be cultivated through specific teacher motivational behaviors. Ahmadi et al. (2023) recently developed a classification system of teacher motivational behaviors that offers concrete, actionable strategies. Following this system, future PE teachers could connect the rigid test to students' personal health goals by explaining why the test is meaningful for them individually. Similarly, to address students' competence frustration, teachers can be guided to praise students' progress or effort rather than focusing solely on normative standards.

Furthermore, it is critical to note that HRFT reinforced the professional isolation of the PE discipline. Beyond the strong connections established within the PE department, teachers had no meaningful connections or communication about HRFT with school leaders, parents, or even peers from other schools. Although policy requires reporting results to parents, teachers did not establish this contact, indicating that test results are still not being fully utilized (Harte et al., 2024). This lack of school–home communication may lead to parents lacking awareness to encourage their children's physical activity, thereby hindering the formation of healthy lifestyles (Mercier et al., 2016). Additionally, support from school administration has been shown to help PE teachers build relatedness in the teaching environment (Carson & Chase, 2009). However, this support is often hindered by multiple factors, including parents and policy (McNamara et al., 2022). To secure administrative support, PETE programs need to embed training that enhances teachers' communication skills with administrators and provide preservice opportunities to negotiate with stakeholders (e.g., administrators and parents) to maximize support and build relatedness (Kinder et al., 2024).

Limitations and Future Research

Cautions need to be exercised because of the study's qualitative nature. Participants were drawn from a specific cultural and policy

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context; thus, results may not reflect experiences in other regions or countries. Future research could examine how autonomy, competence, and relatedness predict both teacher and student outcomes across broader contexts. Longitudinal studies could also explore how policy changes, PETE program reforms, or PD influence teacher perceptions and the effectiveness of fitness testing over time.

Conclusion

Overall, this study highlights that while Chinese PE teachers demonstrate strong process-related competence and rely heavily on peer collaboration, their autonomy is constrained, and their competence to impact student outcomes remains limited. Strengthening autonomy-supportive policies, improving PETE preparation, and developing systemic support beyond peer networks may be essential for transforming fitness testing from a compliance-driven task into a meaningful health-promotion practice.

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