

TEACHING EXPERIENCE AND ITS INFLUENCE ON GYMNASTICS IN SLOVAK PRIMARY SCHOOLS

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Abstract

This study investigated the role of teaching experience in delivering gymnastics content in Slovak primary schools, offering evidence for future interventions and curriculum development. A total of 1 246 primary school teachers participated in a cross-sectional, quantitative study using an online questionnaire. Participants were divided into two cohorts: teachers with < 10 years (N = 508) of teaching experience and teachers with ≥ 10 years (N = 738) of teaching experience. Descriptive statistics and chi-square tests (χ^2) were used to identify significant differences between the groups across various indicators. Both cohorts identified Gymnastics and Dance as among the most demanding areas of Physical Education curriculum. Teachers with ≥ 10 years of teaching experience more frequently used traditional gymnastics apparatus, whereas teachers with < 10 years of teaching experience tended to adopt non-traditional or mixed approaches. Significant differences were found in apparatus use ($p < .01$) and perceived challenges in specific thematic units ($p < .01$). Smaller but still significant differences were also observed in the evaluation of material (technical) conditions ($p = .02$), with most teachers in both groups rating them as “Sufficient” or “Good” and equipment preferences ($p = .05$). Teaching experience influences teaching gymnastics in Slovak primary schools. While teachers with ≥ 10 years of teaching experience adhere more to traditional methodology, teachers with < 10 years of teaching experience are more inclined toward innovative and blended practices. Despite pedagogical differences, both groups face systemic limitations in infrastructure and equipment. The findings underscore the need for differentiated professional development and improved material support to enhance gymnastics education at the primary level.

Keywords: *Gymnastics, Physical Education, teacher experience, primary education.*

INTRODUCTION

Physical Education plays an important role in the holistic development of children, combining psychomotor, affective, and cognitive domains (Sortwell et al., 2022). Among the curricular components of Physical Education, gymnastics offers

particular value, it fosters balance, coordination, and confidence (Anderson et al., 2022). However, the effectiveness of gymnastics instruction in primary schools depends on curriculum design, resource disposal and quality (e.g., experience,

competence) of teachers who deliver it (Robinson et al., 2020).

Gymnastics is underestimated (often) in school Physical Education curriculum, despite its ability to frame fundamental skills (Rudd et al., 2017; Kalinski et al., 2011) and contribute to children's physical literacy (Robinson et al., 2020). In many national curricula, the time allocation, resource constraints, and teacher preparation limit the depth and progression of gymnastic content (Marko et al., 2025; Kovač et al., 2020). In the Slovak context, gymnastics in primary schools receive (often) less attention than team sports, because students showed less interest in gymnastics, only 7.60% listing it as favorite activity, compared to team sports (Adamčák et al., 2020). Therefore, examining how teacher experience influences gymnastics in both timely and relevant.

In teacher education, teacher experience is considered as an important factor influencing instructional quality, classroom management, and student outcomes (Fauth et al., 2019). In the context of Physical Education, experienced teachers tend to refine their pedagogical content knowledge and anticipate common motor challenges (Chang et al., 2020), besides, demonstrate better ability to scaffold gymnastic content, adapt under environmental constraints, and ensure safety in skills progression (Henning, 2017). However, specific mechanisms by which teaching experience shapes gymnastics instruction remain underexplored and lack clear conceptual frameworks (Robinson et al., 2020).

Grounding gymnastics instruction within educational theory helps explain how teacher experience influences learning outcomes. Experiential learning theory emphasizes that students learn most effectively through active engagement and reflection, making physical movement tasks powerful learning opportunities (Chae, 2024). Constructivist perspectives further suggest that teachers act as facilitators who scaffold experience-rich environments where learners build understanding through

exploration and feedback (Mishra, 2023). This highlights that experienced teachers are better equipped to design authentic, student-centered gymnastics lessons that foster autonomy, confidence, and physical literacy.

In Slovakia, primary education comprises nine grades, organized into two stages: 1st stage (grades 1 - 4) and 2nd stage (grades 5 - 9) (Antala et al., 2023). According to national legislation, teachers for the 1st stage must hold university degrees in "Teacher Education and Pedagogical Sciences", in particular, master's (second-cycle) qualification, focused on primary education. Physical Education in primary schools may be delivered either by general classroom teachers - generalists (mainly 1st stage) or by specialist Physical Education teachers who have completed master's degrees in teacher training with Physical Education specialization (Buková et al., 2020). Teacher-training programs for both generalist and Physical Education teachers include compulsory courses in movement education and basic gymnastics, ensuring that graduates acquire the essential competences for teaching gymnastics in primary schools.

An increasing number of literature continues to explore teacher knowledge and confidence in delivering gymnastics in the context of Physical Education. Gymnastics programs (creative) in Indonesian schools enhanced teachers' confidence and physical literacy, in particular, coordination (Maris et al., 2025). Augmented reality technology supported primary school teachers in delivering complex activity like gymnastics, when their training lacked practical exposure (Rumenov & Topalská, 2025). It reinforces the urgent need to support teachers (e.g., educators) with innovative tools and reflective practices that bridge knowledge gaps and foster self-efficacy in gymnastics pedagogy.

Recent innovations in movement pedagogy, in particular, those grounded in non-linear and student-centered frameworks, reshaped the delivery of fundamental movement skills (FMS),

including gymnastics elements. Hybrid pedagogical models improved ($p < .001$) coordination and agility among primary school students (Goldrick et al., 2025). However, few literature examined whether teaching experience moderated the effects of these models. Beginning teachers using models struggle (often) with gymnastics content because of limited school experience, pointing to persistent gaps in teacher preparation (Hordvik et al., 2025). An intersection of literacy, rhythmic movement, and gymnastic routines in early grades shows that experienced teachers (confident) could support both motor and cognitive development through cross-curricular instruction (Arifin et al., 2025).

Experienced teachers may be limited by institutional factors, in particular, access to equipment, large class sizes, limited lesson time, and administrative concerns, all of which can impact the quality of gymnastics and its teaching (Robinson et al., 2020). Sports education models are adapted by experienced teachers to fit time constraints and gymnastic content, resulting in increased student engagement despite rigid curriculum (Alshuraymi & Hastie, 2025). Beginning teachers undervalue (often) gymnastics instruction because of grading demands and limited practical exposure, issues less common among experienced teachers (Kretschmann, 2025). Emerging technology, augmented reality, may help bridge the gaps for beginning teachers by demonstrating correct form and sequencing in gymnastics (Rumenov & Topalská, 2025). Success of such tools depends on teacher's classroom management and pedagogical knowledge, skills that develop through years of practice (König & Kramer, 2016).

Despite the increasing number of literature, little is known about how teacher experience impacts teaching gymnastics in Slovak primary schools. Available evidence focuses either on Physical Education (general) or international contexts (Adamčák et al., 2021; Nemec et al., 2019). To the best of the authors' knowledge, no comprehensive analysis of this nature exists

within the Slovak educational context. Therefore, the present study aimed to evaluate the role of teaching experience in delivering gymnastics content in Slovak primary schools (grades 1 - 4), offering evidence for future interventions and curriculum development.

METHODS

A total of 1 246 primary school teachers from across Slovakia participated in this study. Participants were recruited through targeted dissemination of an online questionnaire via official educational networks (e.g., EduPage) (Sapleton & Lourenço, 2016). Participants taught Physical Education as part of their teaching duty, either as generalist or specialist teachers, in particular, 75.20% ($N = 382$) of teachers with < 10 years of teaching experience and 76.16% ($N = 562$) of teachers with ≥ 10 years of teaching experience were generalists, while 24.80% ($N = 126$) and 23.84% ($N = 176$) respectively were specialists. To explore the impact of teaching experience on gymnastics, the sample was divided into two cohorts: Teachers with < 10 years of teaching experience ($N = 508$; 40.78%) and teachers with ≥ 10 years of teaching experience ($N = 738$; 59.22%). This categorization follows international conventions in teacher development research, where 10 years is used (often) as an inception to distinguish between early-career and experienced teachers. Distribution in gender showed an evident predominance of female teachers, in particular, in more experienced group. Among teachers with < 10 years of teaching experience, 368 (72.44%) were female and 140 (27.56%) were male. Among those with ≥ 10 years of teaching experience, 668 (90.52%) were female and 70 (9.48%) were male (*Table 1*). Distribution in age correlated with experience levels. In the < 10 years of teaching experience, significant portions were under 30 years ($N = 216$, 42.68%), whereas in ≥ 10 years of teaching experience, the largest age group was 30 - 39

years ($N = 322$, 43.52%), followed by 40 - 49 years (37.30%). Small proportion of respondents were aged ≥ 50 in both groups. Classification in career level was built up national standards in Slovakia. Among those with < 10 years of teaching experience, 118 (23.22%) were beginning teachers, while 390 (76.78%) were independent. In the ≥ 10 years group, nearly all participants (734; 99.46%) were independent teachers, with only 4 (0.54%) identifying as beginning teachers, perhaps because of delayed career

entry or non-linear career trajectory. Representation of regions indicated that participants were drawn from all parts of Slovakia: 36.62% ($N = 186$) from the Western region, 27.94% ($N = 142$) from the Central region, and 35.44% ($N = 180$) from the Eastern region among teachers with < 10 years of teaching experience and 33.34% ($N = 246$), 39.02% ($N = 288$), and 27.64% ($N = 204$) respectively among teachers with ≥ 10 years of teaching experience.

Table 1. Demographic data of 1 246 teachers

	Category	< 10 years (N; %)	≥ 10 years (N; %)
Gender	Male	140 (27.56%)	70 (9.48%)
	Female	368 (72.44%)	668 (90.52%)
Age	< 30 years	216 (42.68%)	138 (18.64%)
	30 - 39 years	96 (18.98%)	322 (43.52%)
	40 - 49 years	172 (33.98%)	276 (37.30%)
	≥ 50 years	22 (4.36%)	4 (.54%)
Classification	Beginning teacher	118 (23.22%)	4 (.54%)
	Independent teacher	390 (76.78%)	734 (99.48%)
Type	Generalist	382 (75.20%)	562 (76.16%)
	Specialist	126 (24.80%)	176 (23.84%)
Region	Western	186 (36.62%)	246 (33.34%)
	Central	142 (27.94%)	288 (39.02%)
	Eastern	180 (35.44%)	204 (27.64%)

^N Number, % Percentage.

The study was conducted in compliance with the ethical principles outlined in the Declaration of Helsinki (1964) and its subsequent amendments (Harriss et al., 2019). Ethical approval was obtained in advance from the Ethics Committee of the Artistic and Pedagogical Council of the Faculty of Performing Arts, Academy of Arts in Banská Bystrica (Approval No. 010, FMU-AU/24). Prior to participation, all participants were fully informed about the study's aims, procedures, potential risks, and benefits, and provided written informed consent.

This study employed quantitative and cross-sectional research designs to explore how teaching experience influences delivering gymnastics content in Slovak primary schools, offering evidence for future interventions and curriculum development.

The selection of cross-sectional designs aligns with the aim to capture and compare current perceptions, behaviors, and constraints experienced by teachers at differing stages of professional careers (Navaie et al., 2024). It provides snapshots of practice and belief systems across stratified national cohort of primary Physical Education teachers. This approach is important when examining profession-wide variables, in particular, teaching experience, which cannot be at random assigned and must be observed in natural contexts (Shareefa et al., 2024).

Teachers were divided into two cohorts based on teaching experience: < 10 years (early-career) and ≥ 10 years (experienced). This categorization reflects international conventions in educational research, where one decade of experience is accepted as the

threshold for advanced pedagogical maturity and professional identity consolidation (Belyaková & Bykov, 2023). It helps to explore experience-specific instructional strategy, material access, and confidence level, in particular, in complex Physical Education domains like gymnastics (Stasenko & Balashov, 2025).

The research was non-experimental in nature, relying on participants' self-reports via an online questionnaire. The decision not to use classroom observations or experimental interventions was deliberate, given the study's scale and its emphasis on perceived challenges and practices, rather than the evaluation of specific instructional interventions. Perception-based data has limitations, it remains essential in educational research, in particular, when investigating affective and organizational constructs like confidence, perceived preparedness, and instructional barriers.

Data was collected via an online questionnaire distributed through digital education platforms (e.g., EduPage). The questionnaire was open for three-month period between March and May, 2025. To maximize reach and ensure representative national sample, invitations were sent to all public primary schools across Slovakia through district-level coordinators.

Before participating, all respondents received detailed digital information explaining the study's purpose, voluntary nature, confidentiality assurances, and data protection measures.

The questionnaire itself comprised two structured sections:

- Demographic data: Gender, age, teaching experience, and career level (e.g., beginning or independent teacher).
- Gymnastics instructional practice and barriers: Use of traditional and non-traditional apparatus, equipment, thematic content delivery, and ratings of material (technical) conditions.

Questions included multiple-choice (see Table 2-4), Likert-scale (see Table 5), and categorical response formats. Piloting of the instrument was conducted with 120

Physical Education teachers from three different regions to ensure item clarity and content validity. Minor linguistic and formatting adjustments were made following feedback.

The final sample included 1 246 teachers, which represents strong response rates for voluntary nationwide teacher questionnaire. According to Slovak school system statistics from the Ministry of Education, this number corresponds to approximately 20% - 25% of primary Physical Education teachers, including both generalist and specialist teachers of Physical Education, ensuring solid generalizability of findings.

Available data, gathered through an online (electronic) questionnaire, was organized and stored in purpose-built database designed for single-measure comparative descriptive study (MacKenna et al., 2021). The original dataset consisted of responses from 1 280 primary school teachers from across Slovakia. After careful process of data cleaning and preprocessing, which included removing incomplete entries, duplicates, and inconsistent responses, the final analytical sample comprised 1 246 valid cases.

Descriptive statistical methods were applied to evaluate and summarize the data. These included the computation of arithmetic means ($\bar{x}$) for continuous variables and percentage (%) for all categorical survey items (e.g., gender, age) (Dong, 2023). It was used to describe the sample distribution and to compare trends in pedagogical practices and perceptions between teachers with < 10 years of teaching experience and teachers with ≥ 10 years of teaching experience.

Statistical analysis was conducted using Tap3 - Gamo statistical software (Banská Bystrica, Slovakia), tool designed for educational research with support for frequency analysis, cross-tabulation, and non-parametric statistical testing. To determine whether differences between the two subgroups were statistically significant, the Chi-square test (χ^2) of independence was

applied for each categorical variable. This test is suitable for analyzing associations between nominal variables, which made it appropriate for comparing categorical outcomes between the two independent groups. The threshold for statistical significance was set at $p < .01$ and $p < .05$, depending on the strength of the association (Sharpe, 2015).

RESULTS

Table 2 illustrates teachers' experiences of which thematic units in Physical Education curriculum they found most demanding, categorized by years of teaching experience. Gymnastics and Dance was perceived as demanding by an extensive proportion of both groups, 28.60% of teachers with < 10 years of teaching

experience and 31.80% of teachers with ≥ 10 years of teaching experience, indicating that complexity in teaching skills transcends experience levels. Teachers with < 10 years of teaching experience showed tendency to find Athletics challenging (13.60%) compared to teachers with ≥ 10 years of teaching experience (5.82%). Health and Fitness was reported as demanding by higher proportions of teachers with ≥ 10 years of teaching experience (42.48%) compared to teachers with < 10 years of teaching experience (32.54%). Sports Games and Outdoor Adventure were perceived as less demanding by both groups. Group comparisons indicated significant differences ($\chi^2_{(4)} = 34.08$, $p = 7.20 \text{ E-}07$), highlighting that teaching experience influences the perceived difficulty of thematic content.

Table 2. Teachers' experiences of demanding thematic unit ($N = 1246$, 100%)

Category	< 10 years (%)	≥ 10 years (%)
Athletics	13.60%	5.82%
Health, Fitness	32.54%	42.48%
Gymnastics, Dance	28.60%	31.80%
Outdoor Adventure	10.66%	7.18%
Sports Games	14.60%	12.72%
$\chi^2_{(4)} = 34.08$; $p = 7.20 \text{ E-}07$		

% Percentage, χ^2 Chi-square, p Value.

Table 3. Teachers' use of gymnastics apparatus ($N = 1246$, 100%)

Category	< 10 years (%)	≥ 10 years (%)
Don't use	3.16%	.96%
Traditional	52.66%	73.88%
Non-traditional	20.12%	6.22%
Trad. & Non-trad.	24.06%	18.94%
$\chi^2_{(3)} = 81.32$; $p = 1.60 \text{ E-}17$		

% Percentage, χ^2 Chi-square, p Value.

Table 4. Teachers' use of gymnastics equipment ($N = 1246$, 100%)

Category	< 10 years (%)	≥ 10 years (%)
Don't use it	3.94%	2.30%
Traditional	59.18%	63.46%
Non-traditional	16.96%	12.72%
Trad. & Non-trad.	19.92%	21.52%
$\chi^2_{(3)} = 7.74$; $p = .05$		

% Percentage, χ^2 Chi-square, p Value.

Table 3 provides an overview of how teachers integrate gymnastics apparatus in

their lessons, segmented by teaching experience. An open divergence in practice

was perceived: 73.88% of teachers with ≥ 10 years of teaching experience used traditional apparatus (e.g., balance beams, vaults), compared to 52.66% of teachers with < 10 years of teaching experience. Teachers with < 10 years of teaching experience were more prone to use non-traditional apparatus (20.12%) or combine both traditional and non-traditional (24.06%). Small portions of either group reported not using any apparatus, 3.16% (< 10 years) and .96% (≥ 10 years). Group comparisons indicated significant differences ($\chi^2_{(3)} = 81.32, p = 1.60 \text{ E-17}$), emphasizing the role of experience in shaping pedagogical choices related to gymnastic apparatus.

Table 4 shows teachers' use of gymnastics equipment, in particular, mats, ropes, hoops, or springboards. Most common approach across both experience groups was exclusive use of traditional equipment: 59.18% (< 10 years) and 63.46% (≥ 10 years). An important proportion of teachers with < 10 years of teaching experience (16.96%) indicated using non-traditional equipment (e.g., inflatable blocks, mobile supports), compared to only 12.72% of teachers with ≥ 10 years of teaching experience. Combining both traditional and non-traditional equipment

accounted for 19.92% (< 10 years) and 21.52% (≥ 10 years), showing an inclination toward blended approach. Few teachers in either group reported not using any equipment at all. Group comparisons indicated significant differences ($\chi^2_{(3)} = 7.74; p = .05$), suggesting that teaching experience affects the diversity of equipment utilized in gymnastics.

Table 5 summarizes teachers' evaluations of material (technical) conditions for delivering gymnastics in primary schools. Majority of teachers across both groups rated conditions as either Sufficient (43.78% for < 10 years; 42.08% for ≥ 10 years) or Good (32.36% and 35.72%, resp.). More teachers with < 10 years of teaching experience rated conditions as Excellent (4.34%) compared to teachers with ≥ 10 years of teaching experience (1.62%). An excessive percentage of teachers with ≥ 10 years of teaching experience considered conditions Insufficient (20.58%) compared to teachers with < 10 years of teaching experience. Group comparisons indicated significant differences ($\chi^2_{(3)} = 9.48; p = .02$), indicating consistent perceptions across experience levels regarding the adequacy of school facilities for gymnastics.

Table 5. Teachers' ratings of material (technical) conditions in gymnastics ($N = 1246, 100\%$)

Category	< 10 years (%)	≥ 10 years (%)
Excellent	4.34%	1.62%
Good	32.36%	35.72%
Sufficient	43.78%	42.08%
Insufficient	19.52%	20.58%

$$\chi^2_{(3)} = 9.48; p = .02$$

% Percentage, χ^2 Chi-square, p Value.

DISCUSSION

The findings of this study provide empirical insight into the relationships between teaching experience and instructional practices in gymnastics within Slovak primary schools. The results demonstrate significant differences ($p < .01, p < .05$) in how teachers with different levels of experience perceive the difficulty of

gymnastic content, utilize apparatus and equipment, and evaluate the adequacy of material conditions. The results align with global trends in Physical Education research, highlighting the structural and institutional challenges that persist in delivering high-quality gymnastics instruction.

An important finding was that Gymnastics and Dance was perceived as demanding by an extensive proportion of

both groups, in particular, 28.60% of teachers with < 10 years of teaching experience and 31.80% of teachers with ≥ 10 years of teaching experience. It supports existing literature suggesting that gymnastics remains one of the most complex and resource-intensive domains within Physical Education curriculum (Rudd et al., 2017). Its complexity arises from its dual demands, requiring both technical execution and instructional safety, in particular, when students attempt inverted movements and/or apparatus work (Heinen, 2017).

Teachers with < 10 years of teaching experience showed tendency to find Athletics challenging (13.60%), reflecting lack of confidence and instructional readiness in the areas, theme echoed in numerous teacher education research (Barbet et al., 2020). It may result from limited practical exposure during initial teacher education or insufficient mentoring during induction years (Jones et al., 2023). Health and Fitness was reported as demanding by higher proportions of teachers with ≥ 10 years of teaching experience (42.48%), maybe because of growing curricular pressures to integrate health education standards and broader well-being frameworks (Fernandes & Gopal, 2024).

With regard to equipment and apparatus, clear patterns emerged. Teachers with ≥ 10 years of teaching experience favored traditional gymnastics apparatus, including beams, boxes, and vaults. This preference may be because of their training backgrounds and alignment with more formalistic and technical models of Physical Education that prioritize skill proficiency and standardized routines (Leukel et al., 2023). Teachers with < 10 years of teaching experience showed greater openness to non-traditional or blended approaches, incorporating mobile mats, hoops, or inflatable structures. These trends mirror contemporary shifts in movement pedagogy, which promote non-linear learning environments and inclusive practices (Tolgfors et al., 2024; Lamošová & Kyselovičová, 2022).

Such divergence may reflect the evolving nature of teacher education, where modern curriculum incorporates constructivist, student-centered approaches that encourage improvisation, exploration, and individualized progressions in gymnastics (Neutzling et al., 2019). Teachers with < 10 years of teaching experience trained under this philosophy may feel more empowered to innovate, despite lacking the deep confidence of their experienced counterparts. However, innovations without sufficient experience may lead to safety issues, in particular, when apparatus is misused or tasks are under-scaffolded (McVeigh & Waring, 2023).

The perceived material conditions for gymnastics differed between the two groups. Teachers with < 10 years of teaching experience were more likely to rate conditions as “Excellent”, which may reflect early-career optimism or lower standards of comparison (Krtalić et al., 2020). Teachers with ≥ 10 years of teaching experience provided more critical evaluations, likely because of their broader exposure to infrastructural decay, budget limitations, and historical comparisons. It aligns with research suggesting that experienced teachers develop more nuanced, critical appraisals of teaching environments over time (Zulfikar et al., 2022).

Teachers’ perceptions of facility adequacy varied significantly by experience level ($p = .02$). However, despite this difference, both generalist and specialist Slovak primary education teachers reported similar systemic limitations in access to specialized gymnastics spaces, an issue also highlighted in international comparative research (Hergüner et al., 2016). Lack of access to safe, well-maintained gymnasiums and equipment is widely cited as major barriers to effective Physical Education delivery in both developing and developed contexts (Gentry et al., 2018).

Evidence from other countries indicates that these challenges are not unique to Slovakia. In Japan, primary education teachers emphasized peer-based feedback,

student self-reflection, and the struggle to execute ideal lessons amid material constraints, reflecting the reciprocal and dynamic teaching-learning environment in gymnastics (Iwaki et al., 2020). In Finland, teachers adopted connected and inquiry-based pedagogies that integrated digital and physical learning environments, demonstrating strong teacher agency and resourceful use of limited infrastructure (Vartiainen et al., 2018). In the United Kingdom, pre-service teachers experienced confidence gaps and identity challenges in teaching gymnastics and dance, underscoring the importance of experiential and mentorship-based preparation (Ward & Scott, 2020). These cross-national findings suggest that the Slovak experience aligns with broader international trends emphasizing teacher preparation and systemic support in gymnastics education.

Another dimension deserving attention is the intersection of technology and teaching experience. Emerging studies show that augmented reality and motion capture tools improve teacher confidence and student skill acquisition in complex activity like gymnastics (Artlip et al., 2022). An adoption of such tools often depends on digital literacy, which may not be distributed across age or experience cohorts. Teachers with < 10 years of teaching experience, trained during tech-rich era, may be willing to explore digital supplements, whereas older teachers may prefer traditional demonstration and feedback models (Mártínez-Rico et al., 2021).

In light of these findings, professional development programs should be differentiated. While teachers with < 10 years of teaching experience require support in foundational confidence, safety protocols, and task progression, teachers with ≥ 10 years of teaching experience may benefit from retooling and recontextualization workshops, integrating modern pedagogy and technology. Professional development that fosters collaborative inquiry, peer mentoring, and reflective practice is shown to enhance gymnastics instruction more than

isolated training sessions (McVeigh & Waring, 2023).

While the study boasts robust sample size ($N = 1\,246$) and strong national coverage, several limitations must be acknowledged. First, the reliance on self-reported questionnaire data introduces risks of social desirability bias and perceptual inflation, in particular, in responses related to confidence and competence (Lavidas et al., 2022). While perception-based data is essential for understanding affective and organizational constructs such as confidence, perceived preparedness, and instructional barriers, the absence of classroom observations or experimental interventions limits the ability to validate reported practices. This decision was deliberate, given the study's scale and focus on perceived challenges and instructional practices, rather than direct evaluation of classroom behavior. Another (second) limitation of this study is its cross-sectional design, which captures data from a single point in time. As a result, while associations between teacher experience and instructional practices can be identified, causal relationships cannot be established. Future longitudinal or experimental research would be necessary to track how teaching experience influences instructional approaches and student learning outcomes over time (Stritch, 2017). Third, although the sample was representative of the Slovak context, findings may not generalize to other educational systems with different curriculum structures, teacher education models, or resource allocations. Cultural values and policy frameworks influence how gymnastics is conceptualized and delivered (Kovač et al., 2020; Robinson et al., 2020). While the study disaggregated data by years of experience, it did not account for other moderating factors such as continuing professional development participation and/or school-level constraints, all of which can impact teaching practices.

Future research should incorporate qualitative data, such as classroom observations or semi-structured interviews,

to better capture the pedagogical reasoning and instructional challenges that underpin gymnastics teaching. Longitudinal designs would be valuable in tracking how teachers' attitudes and practices evolve across their careers. It would be beneficial to investigate how institutional support, including mentorship programs and in-service training, affects confidence and practice among teachers with < 10 years of teaching experience. Given the potential of emerging technology like augmented reality and artificial intelligence-based movement analysis, future research could explore how these tools influence instructional strategies, in particular, in environments with limited material infrastructure. Cross-national comparisons may also yield valuable insights, in particular, in Central and Eastern Europe, where systemic challenges are often shared but policy responses differ. Future inquiry should examine student learning outcomes in relation to teaching experience and pedagogical approach. Therefore, moving beyond teacher-centered perspectives and incorporating learner achievement and enjoyment as key metrics of effective gymnastics education. To operationalize these directions, pilot programs integrating modern pedagogical models and digital feedback tools could be tested in Slovak schools to evaluate feasibility and teacher engagement (McVeigh & Waring, 2023).

CONCLUSION

This study provides an evidence that teaching experience shapes the instructional delivery, perception, and material engagement with gymnastics content in Slovak primary schools. While both teachers with < and $\geq$ 10 years of teaching experience identified Gymnastics and Dance as complex domains within the Physical Education curriculum, equipment usage and evaluations of facility adequacy differed in meaningful ways. Teachers with $\geq$ 10 years of teaching experience tended to favor traditional apparatus and equipment,

drawing from long-standing pedagogical norms and prior training.

Despite the differences, both groups operate under similar material constraints, with many rating their schools' conditions for gymnastics instruction as only "Sufficient" or "Good" and concerning number labeling them "Insufficient". The responses point to systemic infrastructural shortcomings that cut across experience levels and compromise both safety and learning outcomes. The findings underscore that teacher competence alone cannot overcome environmental limitations, and point toward needs for broader institutional reform, including targeted investment in facility, equipment, and professional development.

The divergence in apparatus use and content confidence highlights the value of differentiated professional development. Teachers with < 10 years of teaching experience would benefit from structured mentoring, safety-focused training, and opportunity to observe expert-led instruction. Teachers with $\geq$ 10 years of teaching experience may require support in updating their means through exposure to emerging movement pedagogy and digital technology such as augmented reality and video modeling, which can enhance both student engagement and instructional precision.

This research contributes to growing body of literature emphasizing that teaching experience, while critical, interacts with training background, resource access, and evolving curricular expectations. For Slovak education stakeholders, the findings offer clear direction. If gymnastics is to be delivered effectively, in particular, given its foundational value for physical literacy, then system-level support must complement teacher-level expertise. Ensuring safe and meaningful gymnastics instruction for all students, regardless of their school context, requires more than teacher expertise alone. It demands systemic support that aligns with evolving curricular expectations and resource needs.

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