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Digital video-based learning for motivation and fundamental movement skills in physical education: a systematic review and thematic synthesis of 2021–2026 evidence

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ABSTRACT

Digital video is widely used in physical education, yet evidence on whether it improves learners' motivation and fundamental movement skills remains fragmented. This review examined whether digital video-based learning improves motivation and motor skill outcomes compared with no video, conventional teaching, or live demonstration, and identified the design conditions under which video is most effective. Following PRISMA 2020, a Boolean search in Scopus covering 2021–2026 yielded 78 records. After removing duplicates and retractions and screening against predefined criteria, 23 studies (20 primary studies and three reviews) were retained. Two reviewers independently screened records and appraised quality with the FICO framework; because heterogeneous designs and outcomes precluded meta-analysis, findings were integrated through thematic synthesis and vote counting by direction of effect. Of the 11 intervention studies measuring motor or tactical performance, nine reported gains favouring video or an enhanced video design, one found equivalence with live demonstration, and one found video inferior to artificial intelligence feedback; the ten core studies involved 583 participants (range 10–160). Motivational outcomes were reported in 13 studies, and benefits were consistent when video was embedded in blended or learner-controlled designs, increasing autonomous motivation, situational interest, and learning interest. Video was rarely superior to high-quality live demonstration or artificial intelligence feedback, indicating that it works best as a complement to teaching, and learner control, segmentation, and feedback moderated its effectiveness. Because only two uncontrolled studies examined fundamental movement skills in elementary learners, future research should prioritise randomised trials with elementary learners, validated movement skill instruments, and retention tests.

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Introduction

Physical education is the only school subject that reaches virtually all children with a curriculum designed to develop the movement competence on which lifelong participation in physical activity depends. Organised sport, informal play, and family-based activity also contribute to motor development, but participation in them is voluntary and uneven, so school-based instruction remains the most equitable route through which

all children can acquire fundamental movement skills. Developmental models propose that motor competence and physical activity become reciprocally linked across childhood, so that children who fail to master basic movement patterns enter a negative spiral of low perceived competence, low participation, and declining fitness (Stodden et al., 2008), and motor competence is positively associated with cardiorespiratory fitness and healthy weight status (Robinson et al., 2015). Because structured interventions can meaningfully improve children's fundamental movement skills (Logan et al., 2012), the quality of instruction in primary physical education has become a central concern (Snow et al., 2025). At the same time, digital technologies have reshaped instruction, raising the question of whether digital media can strengthen the teaching of movement.

Among digital tools, video holds a particular position because movement is inherently visual and dynamic. Instructional videos allow learners to observe expert models repeatedly, at different speeds and from multiple angles, which supports an accurate mental representation of a skill before and during practice (Trabelsi et al., 2025). Search engines and YouTube are among the resources physical educators use most when preparing lessons (Wyant et al., 2021), and even in under-resourced elementary schools instructional videos are among the most frequently mentioned ICT resources, although their classroom use remains at an early stage (Kempa et al., 2025). The problem addressed in this review is therefore not whether video is used, but whether its use improves two outcomes that matter most for young learners: motivation to learn and the acquisition of fundamental movement skills.

Empirical work on these questions is active and diversifying. Video-based instruction and live demonstration have produced comparable swimming outcomes (Šitić et al., 2025), flipped basketball instruction supported by educational videos has yielded larger psychomotor gains than traditional teaching (Hatami & Savaş, 2024), and YouTube-based blended learning increased fundamental movement skills in Indonesian elementary schools (Taufik et al., 2022). Studies grounded in multimedia learning theory have manipulated the pacing and modality of videos (Romdhane & Khacharem, 2023; Ben Romdhane et al., 2025), and sign-language videos have been used to improve the basic movement skills and learning interest of deaf learners (Haris et al., 2023; Abdul Gani et al., 2026). Applications are also becoming more interactive and data-rich, including short social-media videos in blended gymnastics units (Ghorbel, Abdelkefi, et al., 2026; Ghorbel, Yaakoubi, et al., 2026), digital video feedback (Fauzi et al., 2026; Wilkie & Liefeith, 2022), interactive dance videos (Mhamdi et al., 2026), and artificial intelligence tutors benchmarked against video instruction (Cao et al., 2026). These findings are not consistent: video has been reported as superior to traditional teaching (Hatami & Savaş, 2024), equivalent to live demonstration (Šitić et al., 2025), and inferior to artificial intelligence feedback (Cao et al., 2026), and motor outcomes have been assessed with instruments ranging from researcher-made checklists to sport-specific tests rather than validated batteries such as the Test of Gross Motor Development. Beyond physical education, video improves learning in higher education when it supplements other teaching (Noetel et al., 2021) and has been examined for motivational outcomes across learning modalities (de la Mora Velasco et al., 2026).

Despite this momentum, two gaps remain. First, the evidence is scattered and population-specific. Studies of fundamental movement skills among elementary children are few and often use single-group or action research designs (Taufik et al., 2022; Haris et al., 2023), whereas rigorous experiments tend to involve secondary or university students learning sport-specific skills (Romdhane & Khacharem, 2023; Cao et al., 2026). Large elementary video programmes such as Brain Breaks® have mainly targeted fitness and physical activity rather than movement skill acquisition (Bonnema et al., 2022; Kuan et al., 2024), and much pandemic-era work described video content or teacher practices without measuring learning (Yücekaya et al., 2021; Bowles et al., 2024). Second, motivation is measured through heterogeneous constructs, from situational interest and intrinsic motivation to self-efficacy and perceived usefulness (Romdhane & Khacharem, 2023; Murfay et al., 2024; Hrg et al., 2023). Self-determination theory explains how learning environments support autonomous motivation through competence, autonomy, and relatedness (Ryan & Deci, 2000; Krijgsman et al., 2021), and cognitive load theory explains why transient video may overload novices and why segmentation and learner control help (Sweller, 1988; Mayer & Moreno, 2003), yet few physical education studies test these mechanisms explicitly.

A systematic synthesis is therefore timely. Teachers now face an abundance of online videos of uneven quality (Wyant et al., 2021), critics warn that celebrity-led online physical education can privilege exercise sessions over learning (Bowles et al., 2024), digital technology can both inspire and distract students during practice (Lindgren Fjellner, 2026), and digital tools need clear pedagogical distinctions so that teachers use them for the right purposes (Price et al., 2024). Previous reviews compiled best practices for video modelling (Trabelsi et al., 2025) and showed that eye movement modelling examples foster observers' performance

(Emhardt et al., 2023), but neither focused on fundamental movement skills in school physical education. Noetel et al. (2021) concluded that video benefits learning mainly when it supplements other instruction, but their review was confined to higher education, and Kuan et al. (2024) synthesised Brain Breaks® programmes with fitness and physical activity rather than skill acquisition as outcomes. No previous review has therefore established whether video improves both movement skills and motivation in school physical education, how its effect depends on the comparison condition, or why prior findings diverge. This review addressed three research questions: (RQ1) What is the effectiveness of digital video-based learning on fundamental movement skills and motor skill performance in physical education? (RQ2) How does digital video-based learning influence learning motivation, interest, and engagement? (RQ3) Which instructional design features, delivery modes, and contextual factors moderate its effectiveness? The novelty of this review lies in jointly examining motor and motivational outcomes, separating evidence for elementary learners from that for older students, and linking design features to cognitive load and self-determination mechanisms; methodologically, it also classifies each study by comparison condition and direction of effect, so that the conditions under which video is superior, equivalent, or inferior to other instruction can be distinguished.

Method

A systematic literature review design was adopted because it enables transparent and replicable identification, appraisal, and synthesis of evidence while reducing the selection bias of narrative reviews (Tranfield et al., 2003). The review applied explicit eligibility criteria and documented search procedures (Liberati et al., 2009) and was reported according to the PRISMA 2020 statement (Page et al., 2021). Heterogeneity was assessed on three criteria: design (single-group, controlled, or randomised), comparison condition (no video, conventional teaching, live demonstration, or an alternative video design), and outcome measure (validated battery, sport-specific test, or researcher-made checklist). Because no subset of at least three studies shared the same design, comparator, and outcome measure, effect sizes were not pooled; instead, findings were synthesised without meta-analysis following the SWiM guideline (Campbell et al., 2020), combining vote counting by direction of effect with thematic synthesis and descriptive and bibliometric mapping.

The search string combined three concept blocks representing digital video-based learning, physical education contexts, and motivation or motor outcomes. The final Boolean string applied in Scopus was:

> TITLE-ABS-KEY (("video-based learning" OR "video based instruction" OR "instructional video*" OR "educational video*" OR "digital video*" OR "video model*" OR "video feedback" OR youtube OR "multimedia learning" OR "online video") AND ("physical education" OR "PE lesson*" OR "sport pedagogy" OR "physical literacy") AND (motivation OR engagement OR interest OR "motor skill*" OR "movement skill*" OR "motor competence" OR "fundamental movement" OR "learning outcome*")) AND PUBYEAR > 2020 AND PUBYEAR < 2027

Quotation marks were used for phrase searching of multi-word terms, and the TITLE-ABS-KEY field restricted matching to titles, abstracts, and keywords to balance sensitivity and precision. Scopus was the sole information source because of its broad coverage of education and sport science journals and its standardised metadata export (Aria & Cuccurullo, 2017). Scopus was preferred over Web of Science because the two databases overlap substantially in sport science and education journals while Scopus offers broader journal coverage, and over ERIC because ERIC indexes many non-peer-reviewed documents; the restriction to a single database is nevertheless acknowledged as a limitation. The 2021–2026 window was chosen to capture post-pandemic evidence, when video use in physical education expanded rapidly (Wyant et al., 2021), and to complement earlier reviews (Noetel et al., 2021; Emhardt et al., 2023). Grey literature, theses, and conference papers were excluded to restrict the synthesis to peer-reviewed evidence. The search was executed on 18 October 2026 and limited only to the period 2021–2026; language, document type, and relevance were applied during screening so that every exclusion could be documented. All records were exported in CSV format with bibliographic data, abstracts, keywords, citation counts, and DOIs. Eligible studies examined a digital video-based intervention (instructional, demonstration, modelling, feedback, or blended delivery) in physical education or a related school or university movement-learning context and reported or reviewed at least one learner outcome related to motor skills, motivation, interest, engagement, or associated learning (Table 1). Motivational outcomes were operationalised as any learner-reported or observed measure of motivation, interest, engagement, self-efficacy, or perceived usefulness, and motor outcomes as any measure of movement skill, technique, tactical recall or transfer, or physical performance.

Table 1. Inclusion and exclusion criteria

Criterion	Inclusion	Exclusion
Language	English	Non-English (German, Russian, Spanish, Portuguese, Korean)
Document type	Journal article; review article	Conference paper or review, book, book chapter, note, erratum, retraction note
Publication status	Final or article-in-press, not retracted	Retracted articles and retraction/correction notices
Period	2021–2026	Before 2021
Subject area	Physical education, sport pedagogy, educational technology, motor learning, educational psychology	Unrelated disciplines (e.g., nursing, oncology education, engineering without learner outcomes)
Traceability	Record includes a DOI	No DOI in the source record
Accessibility	Abstract and full bibliographic record available	Record without abstract
Relevance	Video is a central instructional component and learner motor, motivational, or learning outcomes are reported or reviewed	Video tangential; technical system design; teacher-only outcomes; content analysis without learner outcomes

Selection proceeded in three stages: removal of duplicates and retracted or correction records; screening of titles, abstracts, and metadata for language, document type, DOI, and relevance; and full-record assessment of whether video formed a central part of the intervention and whether learner-level outcomes were reported. Two reviewers screened records independently, and disagreements were resolved through discussion or, if needed, by a third reviewer. Inter-rater agreement was quantified with Cohen's kappa for title and abstract screening (κ = [insert]), full-record eligibility (κ = [insert]), and FICO appraisal (κ = [insert]). Methodological quality was appraised with the FICO framework (Table 2), which scores Focus, Information, Context, and Outcome from 0 to 2 (total 0–8). Studies scoring at least 5 with no dimension scored 0 were included; scores of 7–8 indicated high and 5–6 moderate quality, and these scores were used to weight the interpretation of findings.

Table 2. FICO quality appraisal criteria

Dimension	Guiding question	0	1	2
Focus	Is the aim clearly linked to video-based learning and motor or motivational outcomes?	Not stated	Partly linked	Explicit and specific
Information	Are the sample, intervention, and instruments adequately described?	Missing	Incomplete	Complete and replicable
Context	Are the setting, learner level, and implementation conditions reported?	Missing	Partial	Detailed
Outcome	Are outcomes clearly measured and supported by appropriate analysis?	Unsupported	Descriptive only	Inferential or rigorous qualitative analysis

A piloted extraction form captured the authors, year, country, journal, design, sample and learner level, movement content, type of video intervention, comparison condition, duration, motor and motivation measures, and key findings; details not reported in the source were recorded as unavailable rather than inferred. Descriptive bibliometric indicators were computed for all 78 records and for the 23 included studies. Because author keywords were highly heterogeneous, a conventional VOSviewer keyword map would have been sparse (van Eck & Waltman, 2010); instead, each study was coded for video delivery mode, learner context, and outcome domain, and a concept co-occurrence network was constructed following the logic of science-mapping tools such as bibliometrix (Aria & Cuccurullo, 2017). Findings were synthesised through the three-stage thematic synthesis of Thomas and Harden (2008), moving from line-by-line coding to descriptive themes and then to analytical themes addressing the research questions. The initial coding framework was derived deductively from the research questions and contained four code families, namely video delivery mode, comparison condition, outcome domain and direction of effect, and moderating design or contextual features, to which inductive codes were added when extracted findings did not fit existing codes. Two reviewers were involved in coding, and analytical themes were finalised by consensus. Coding by one reviewer was checked by a second, and reported p-values, effect sizes, and percentage changes were tabulated but not pooled, and each comparison was classified as favouring video, showing no difference, or favouring the comparator. The search string, eligibility criteria, exclusion reasons, and extraction categories are reported in full, and the coding sheets are available from the authors on reasonable request.

Results and Discussions

The Scopus search identified 78 records. Nine records were removed before screening: three duplicates, three retracted articles, and three retraction or correction notices. Of the 69 screened records, 36 were excluded because they were not in English (n = 7), were ineligible document types (n = 12), lacked a DOI (n = 2), or were out of scope (n = 15). Of the 33 full records assessed, 10 were excluded: seven were out of scope (teacher-level outcomes, content analysis of videos, ICT barriers, or no video component) and three did not yield learner outcome data. In total, 23 studies, comprising 20 primary studies and three reviews, were included (Figure 1).

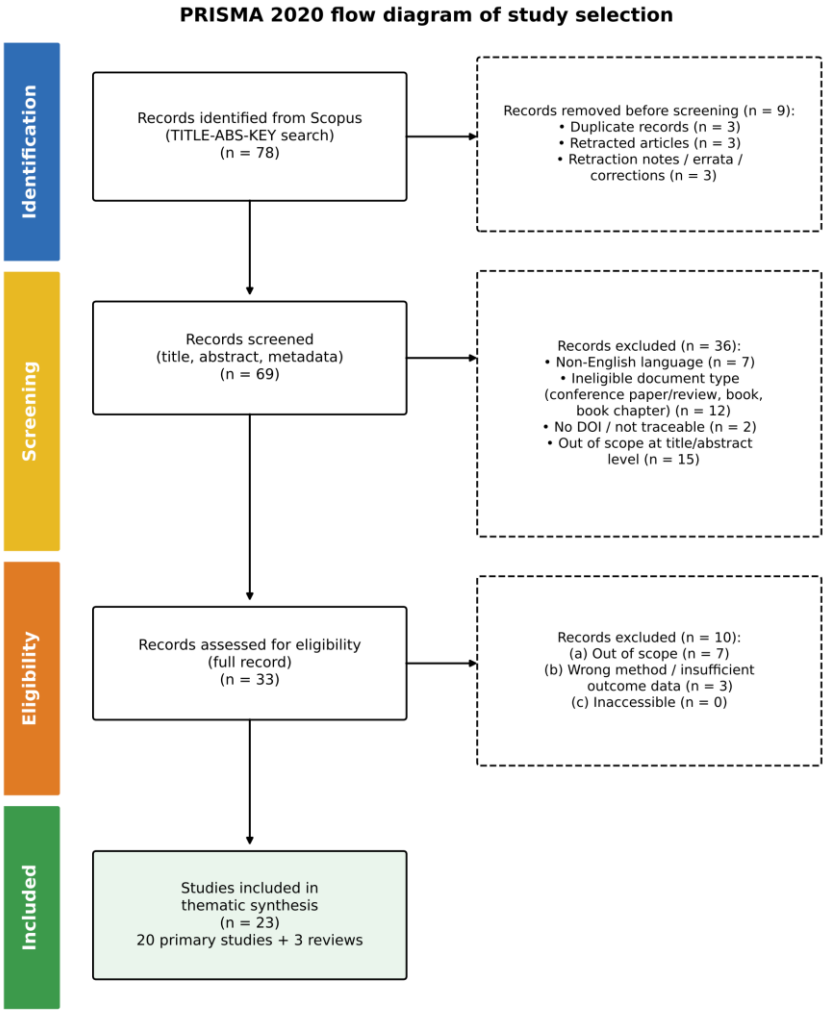


Figure 1. PRISMA 2020 flow diagram of study identification, screening, eligibility, and inclusion

The retrieved records increased to a peak in 2024 (n = 19), while the included studies clustered in recent years, with eight published in 2026, five in 2025, three in 2024, four in 2023, and three in 2022 (Figure 2). Of the 20 primary studies, 13 used experimental, quasi-experimental, or classroom action research designs, and seven used qualitative, mixed-method, developmental, or descriptive designs. Thirteen studies were rated high quality (FICO 7–8) and ten moderate quality (FICO 5–6). Indonesia and Tunisia each contributed six studies, followed by Croatia and Malaysia with two each (Figure 3). Learners ranged from elementary and special-school children to university students and pre-service teachers, but only five studies involved elementary learners and only two of these measured fundamental movement skills, confirming that evidence on fundamental movement skills in primary physical education remains thin. Table 3 summarises the ten core studies reporting learner-level motor or motivational outcomes, and Table 4 classifies all 23 included studies.

Table 3. Summary of selected core studies (n = 10)

Author(s), Year	Country	Method	Key findings
Taufik et al. (2022)	Indonesia	Classroom action research (two cycles); 32 fifth-grade students	Fundamental movement skill attainment rose from 80.43% to 85.42%; significant pre–post increase ($p < .001$).
Haris et al. (2023)	Indonesia	One-group pre–post; 10 deaf children aged 7–13; 8 weeks	Basic motor skill scores increased from 2.12 ± 0.27 to 3.22 ± 0.34 after QR-linked YouTube sign-language videos (significant Wilcoxon test).
Abdul Gani et al. (2026)	Indonesia	R&D (ADDIE); 23 deaf students	Platform with sign-supported videos rated very valid; learning interest increased by 58.1%.
Romdhane & Khacharem (2023)	Tunisia	Experiment, three groups; 60 tenth-grade students	System- and self-controlled videos improved recall and transfer over continuous video; self-control yielded higher situational interest.
Ben Romdhane et al. (2025)	Tunisia	Randomised 2 × 2 experiment; 80 secondary students	Learner control improved recall and transfer; video + text with control outperformed video + audio (reverse modality effect).
Ghorbel, Yaakoubi, et al. (2026)	Tunisia	Quasi-experimental; 54 secondary students; 6 weeks	Video-based blended group improved motor performance more than controls (+76.69% vs +37.58%) and gained autonomous motivation.
Fauzi et al. (2026)	Indonesia	One-group pre–post; 36 students	Round-off performance increased from 1.74 to 3.67 ($r = .86$) after digital video feedback.
Hatami & Savaş (2024)	Türkiye	Experimental with control; 30 university students; 6 weeks	Video-supported flipped group showed larger psychomotor gains in several basketball skills.
Šitić et al. (2025)	Croatia	Randomised comparative design; 98 university students	No significant difference between video and live demonstration for crawl and backstroke technique.
Hrg et al. (2023)	Croatia	Quasi-experimental with control; 160 students in grades 6–8	Video group showed greater health knowledge and perceived usefulness of PE; no difference in satisfaction.

Note. Data were extracted from the Scopus export; all 23 included studies are classified in Table 4.

Table 4. Study classification by theme and method (n = 23)

Author(s)	Year	Country	Research design	Theme/Focus	Technology/Intervention	Outcome	FICO
Abdul Gani et al.	2026	Indonesia	R&D (ADDIE), pre–post use	Inclusive PE; motivation	Web platform with sign-supported videos	Learning interest	6
Ben Romdhane et al.	2025	Tunisia	Randomised experiment (2 × 2)	Modality and control	Basketball tactic videos	Recall, transfer	8
Bonavita	2026	Brazil	Intervention, post-test survey	Motivation	Transmedia storytelling (yoga)	Intrinsic motivation	6
Bonnema et al.	2022	South Africa	Quasi-experimental with control	Fitness; elementary	Brain Breaks® videos	Fitness components	8
Cao et al.	2026	Malaysia	Randomised controlled trial	AI vs video	AI pose-estimation tutor vs video (Tai Chi)	Performance, retention	8
Emhardt et al.	2023	Netherlands	Systematic review (72 studies)	Video modelling	Eye movement modelling examples	Observer learning	7
Fauzi et al.	2026	Indonesia	Quasi-experimental, one group	Motor skill	Digital video feedback	Skill performance	6
Ghorbel, Abdelkefi, et al.	2026	Tunisia	Quasi-experimental with control	Blended; motivation; motor	Facebook-based blended model	Motor, knowledge, SIMS	7

Author(s)	Year	Country	Research design	Theme/Focus	Technology/Intervention	Outcome	FICO
Ghorbel, Yaakoubi, et al.	2026	Tunisia	Quasi-experimental with control	Blended; motivation; motor	Short videos via Facebook	Motor, knowledge, motivation	8
Haris et al.	2023	Indonesia	Quasi-experimental, one group	Inclusive PE; FMS	E-book with QR-linked videos	Basic motor skills	6
Hatami & Savaş	2024	Türkiye	Experimental with control	Motor skill	Flipped learning via WhatsApp	Psychomotor skills	7
Hrg et al.	2023	Croatia	Quasi-experimental with control	Knowledge; attitudes	Educational videos in lessons	Health literacy, usefulness	7
Kuan et al.	2024	Malaysia	Systematic review (15 studies)	Fitness; elementary	Brain Breaks® programme	Attitudes, PA, fitness	7
Kurniawan et al.	2025	Indonesia	Qualitative interviews	Teacher perception	Videos and simulations (swimming)	Perceived motivation	5
Lindgren Fjellner	2026	Sweden	Video ethnography	Motor learning; engagement	Self-recorded video, YouTube	Meaning-making	7
Mhamdi et al.	2026	Tunisia	Experimental, matched groups	Interactivity, time of day	Passive vs interactive dance videos	Recall, retention, IMI	7
Murfay et al.	2024	United States	Qualitative focus groups	Self-efficacy	Online PE videos and models	PA self-efficacy	6
Romdhane & Khachareem	2023	Tunisia	Experimental (three groups)	Pacing; interest	Continuous vs controlled video	Recall, transfer, interest	8
Safari et al.	2025	Indonesia	Mixed methods	Motor skill; values	Android multimedia (table tennis)	Rules, technique, sportsmanship	6
Šitić et al.	2025	Croatia	Randomised comparative design	Motor skill	Video vs live demonstration (swimming)	Technique execution	8
Taufik et al.	2022	Indonesia	Classroom action research	FMS; elementary	YouTube-based blended learning	FMS	6
Trabelsi et al.	2025	Tunisia	Literature review (31 studies)	Video modelling	Video modelling best practices	Recommendations	6
Wilkie & Liefeith	2022	United Kingdom	Qualitative group interviews	Feedback; engagement	Live synchronised video feedback	Feedback experiences	6

Note. FICO = Focus, Information, Context, Outcome score (0–8; threshold ≥ 5). Country refers to the first author's affiliation. FMS = fundamental movement skills; PA = physical activity; SIMS = Situational Motivation Scale; IMI = Intrinsic Motivation Inventory.

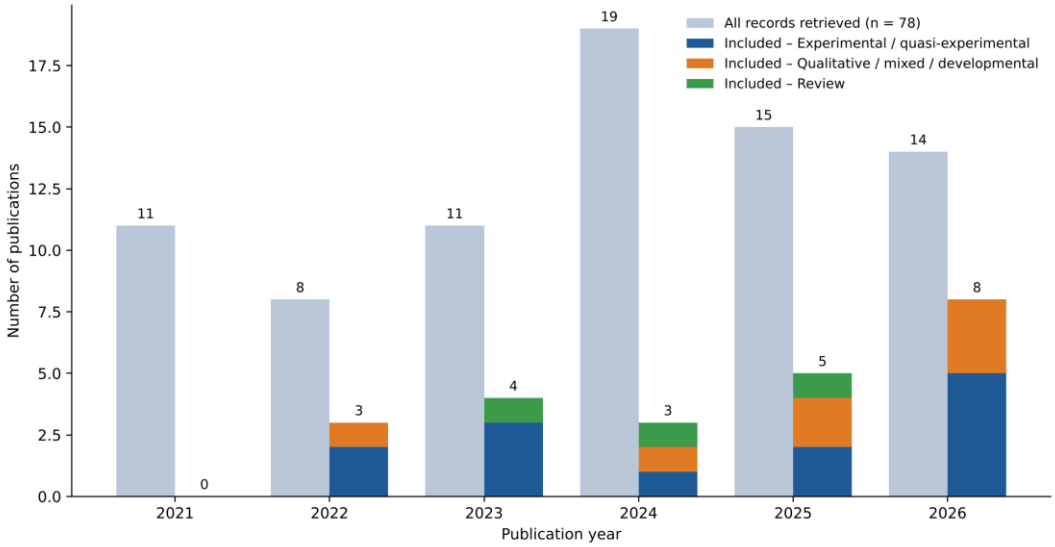


Figure 2. Annual publication trend of retrieved records (n = 78) and included studies (n = 23)

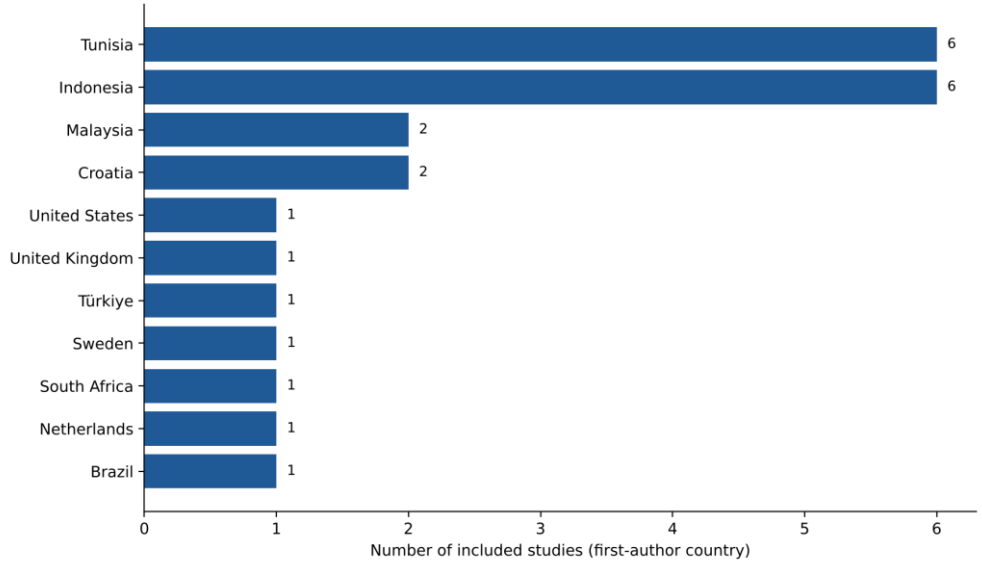


Figure 3. Geographic distribution of included studies by first-author country (n = 23)

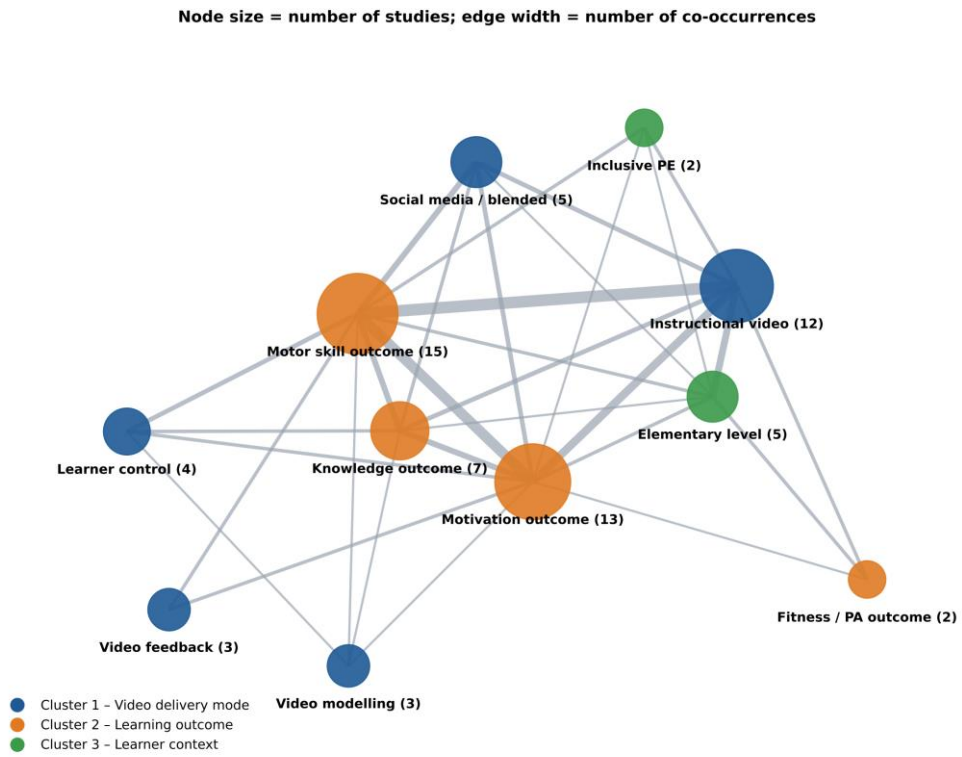


Figure 4. Concept co-occurrence network of video delivery mode, learning outcome, and learner context

Figure 4 shows that motor skill (15 studies) and motivation (13 studies) were the most frequently investigated outcomes, with instructional video as the dominant delivery mode (12 studies). The strongest links were between instructional video and motor skill outcomes (nine co-occurrences) and between motor and motivational outcomes (eight co-occurrences), whereas video feedback, video modelling, and inclusive physical education formed peripheral nodes, and elementary studies were linked mainly to instructional video and fitness outcomes rather than to learner control or feedback designs.

Regarding RQ1, video-based learning was generally associated with improved motor skill performance, although the strength of this conclusion depended on the comparison condition. Of the 11 experimental, quasi-experimental, or classroom action research studies that measured motor or tactical performance, six reported gains for video against conventional teaching or baseline, three reported gains for an enhanced video design (learner control, segmentation, or interactivity) over a less supportive video design, one found no difference from live demonstration, and one found video inferior to artificial intelligence feedback. Where effect sizes were reported they were large (e.g., r = .86 for digital video feedback; Fauzi et al., 2026), but most studies reported only p-values or percentage changes, so the magnitude of the effect could not be estimated across studies and heterogeneity statistics such as I^2 could not be computed. Single-group and action research designs consistently reported pre–post gains: YouTube-based blended learning raised fifth graders' fundamental movement skills above the achievement target (Taufik et al., 2022), QR-linked sign-language videos improved the basic motor skills of deaf children aged 7–13 years (Haris et al., 2023), digital video feedback produced a large improvement in the gymnastics round-off (Fauzi et al., 2026), and a web-based video platform was developed to improve deaf students' motor skills and literacy (Abdul Gani et al., 2026). An Android multimedia programme also improved pre-service teachers' table tennis proficiency, rule comprehension, and sportsmanship (Safari et al., 2025), and teachers perceived that videos improved students' stroke coordination in swimming, although without objective measurement (Kurniawan et al., 2025). These findings suggest that video makes movement information accessible to learners who struggle with verbal instruction and that it typically operates together with cognitive outcomes such as rule and tactical knowledge (Trabelsi et al., 2025).

Controlled comparisons provided a more nuanced picture. When video was added to conventional teaching, as in flipped basketball instruction (Hatami & Savaş, 2024) and the "Did You Know?" gymnastics model (Ghorbel, Abdelkefi, et al., 2026; Ghorbel, Yaakoubi, et al., 2026), experimental groups outperformed controls, with motor gains of 76.69% versus 37.58%. When video replaced live demonstration of equal

quality, outcomes were equivalent (Šitić et al., 2025), and when video served as the comparison condition for an artificial intelligence tutor with real-time pose feedback, it produced smaller performance and retention gains (Cao et al., 2026). The motor benefit of video therefore appears to arise from additional, repeatable exposure rather than from the medium itself. Mechanistically, repeated viewing supports an accurate mental representation of the skill that guides subsequent practice (Trabelsi et al., 2025), and learner control reduces the transient information load of dynamic visualisations (Sweller, 1988). This interpretation, however, exposes an important confound: in most supplementary designs the video group received more total instructional time than the control group, so intervention modality and instructional time were not separated. Other rival explanations, including greater teacher attention, peer modelling during viewing, and novelty or Hawthorne effects, were not controlled in any single-group study, which is why the equivalence and inferiority findings from randomised comparisons (Šitić et al., 2025; Cao et al., 2026) carry particular weight. Evidence for elementary fundamental movement skills remains limited: only two primary studies targeted these skills, both without a control group (Taufik et al., 2022; Haris et al., 2023), while Brain Breaks® programmes improved fitness, attitudes, and physical activity rather than skill acquisition (Bonnema et al., 2022; Kuan et al., 2024). Moreover, slow-motion self-recordings did not automatically help learners detect errors in their own movements (Lindgren Fjellner, 2026). Although motor skill interventions are effective in children (Logan et al., 2012), the unique contribution of video for young children has not yet been rigorously established.

Regarding RQ2, motivational outcomes were reported in 13 studies. The most theoretically grounded evidence came from the "Did You Know?" studies, in which blended video-based instruction increased autonomous motivation and decreased controlled motivation, whereas traditional teaching showed the opposite pattern (Ghorbel, Abdelkefi, et al., 2026; Ghorbel, Yaakoubi, et al., 2026). This shift matters because autonomous motivation is associated with greater persistence and quality of engagement (Ryan & Deci, 2000). Transmedia yoga content delivered through YouTube and social media produced high intrinsic motivation for interest, value, and relatedness, although perceived choice was lowest (Bonavita, 2026), and a web-based video platform increased deaf students' learning interest by 58.1% (Abdul Gani et al., 2026). The way video was presented, however, mattered. Learner-controlled videos increased situational interest on almost all dimensions (Romdhane & Khacharem, 2023), whereas interactive dance videos improved recall without raising intrinsic motivation (Mhamdi et al., 2026), and lesson videos increased the perceived usefulness of physical education but not satisfaction (Hrg et al., 2023).

Qualitative studies added important nuances. Students preferred observing models similar to themselves in skill level, which shaped their self-efficacy (Murfay et al., 2024); some were inspired by YouTube clips but disengaged when they realised how far they were from the expert performance (Lindgren Fjellner, 2026); university students found live synchronised video feedback engaging and conducive to reflection (Wilkie & Liefeith, 2022); and teachers reported greater engagement in swimming lessons while warning of dependency on media (Kurniawan et al., 2025). Instructional videos also produced comparable motivational outcomes across online, mixed, and in-person modalities (de la Mora Velasco et al., 2026). Video-based learning therefore generally supports interest and autonomous motivation, but the effect depends on learner agency, model similarity, and integration with social interaction in lessons.

Regarding RQ3, the most consistent design moderator was learner control over video pacing. Segmenting videos or allowing learners to pause and replay them improved the recall and transfer of basketball content compared with continuous presentation (Romdhane & Khacharem, 2023; Ben Romdhane et al., 2025), consistent with cognitive load theory's prediction that transient information overloads working memory unless learners can regulate its flow (Sweller, 1988; Mayer & Moreno, 2003). Video with on-screen text and learner control even outperformed video with narration, a reverse modality effect (Ben Romdhane et al., 2025), and self-control, slow motion, and appropriate viewing angles are recommended in the video modelling literature (Trabelsi et al., 2025). A second moderator was integration with face-to-face teaching: blended and flipped designs distributing short videos through social media or messaging applications consistently outperformed traditional teaching (Taufik et al., 2022; Hatami & Savaş, 2024; Ghorbel, Abdelkefi, et al., 2026), mirroring evidence that video works best as a supplement (Noetel et al., 2021). Feedback-oriented video also showed promise (Fauzi et al., 2026; Wilkie & Liefeith, 2022), in line with the strong influence of feedback on learning (Hattie & Timperley, 2007), although artificial intelligence feedback outperformed standard video instruction (Cao et al., 2026), and gaze-cueing in eye movement modelling examples offers another promising feature (Emhardt et al., 2023).

Contextual moderators included learner characteristics, timing, and infrastructure. Video was especially valuable in inclusive settings, where sign-language videos, QR codes, and visually oriented platforms

improved access for deaf learners and learners with disabilities (Haris et al., 2023; Abdul Gani et al., 2026; Fernández-Gavira et al., 2021; Mokmin & Ridzuan, 2022). Immediate recall was better after morning learning, but long-term retention was better after afternoon learning, regardless of video type (Mhamdi et al., 2026). Limited infrastructure, low digital literacy, and inadequate teacher training constrained implementation (Kurniawan et al., 2025; Kempa et al., 2025), and freely available content was of uneven quality (Yücekaya et al., 2021; Bernstein, 2021).

Critically, the corpus is dominated by quasi-experimental designs, often single-group pre–post studies that cannot exclude maturation, practice effects, or teacher enthusiasm as alternative explanations (Taufik et al., 2022; Haris et al., 2023; Fauzi et al., 2026). Randomised designs were concentrated among secondary and university students (Šitić et al., 2025; Ben Romdhane et al., 2025; Cao et al., 2026), and much experimental work on video design originated from a single Tunisian research network (Romdhane & Khacharem, 2023; Mhamdi et al., 2026). Motor outcomes were assessed with researcher-made checklists or sport-specific tests rather than validated fundamental movement skill batteries, motivational measures ranged from validated scales to single items (Bonavita, 2026; Hrg et al., 2023), retention tests were rare (Cao et al., 2026; Mhamdi et al., 2026), and interventions of six to eight weeks were short relative to the developmental timescale of fundamental movement skills (Stodden et al., 2008). Regionally, Indonesian studies mainly developed learning media for elementary, special-needs, or teacher education contexts (Safari et al., 2025), Tunisian studies tested design principles under experimental control, and European studies were more often qualitative (Lindgren Fjellner, 2026; Wilkie & Liefeith, 2022). The field has moved from describing pandemic-era resources (Wyant et al., 2021) toward testing design principles and intelligent systems (Cao et al., 2026), while teacher-focused tools such as video annotation (Bouten et al., 2023), online motor competence assessment resources (Snow et al., 2025), and video-based physical literacy assessment (Wilkie, Foulkes, et al., 2022) have yet to be connected to student outcomes.

At least four research gaps were identified. First, controlled studies of fundamental movement skills among elementary-school children are scarce, despite the developmental importance of this period (Robinson et al., 2015). Second, few studies used validated fundamental movement skill instruments or retention tests. Third, although most studies measured both motor and motivational outcomes, the mechanisms linking them have rarely been tested through mediation analysis. Fourth, evidence from teacher-level video tools has not yet been connected to student motivational and motor outcomes (Bouten et al., 2023).

Taken together, digital video-based learning is a beneficial addition to physical education when it provides repeated, controllable, and well-integrated access to movement information, thereby extending observation and mental rehearsal beyond lesson time. Theoretically, the findings extend cognitive load theory to motor and tactical learning by showing that segmentation and learner control reduce the transient information problem of dynamic visualisations (Sweller, 1988; Ben Romdhane et al., 2025), while the reverse modality effect suggests that written cues may compete less than narration with spatially complex visual content (Mayer & Moreno, 2003). The shift toward autonomous motivation in blended designs supports self-determination theory and positions video as an autonomy-supportive structure (Ryan & Deci, 2000), whereas the inspiration–disengagement pattern indicates that observational learning must account for the motivational costs of upward comparison with expert models (Murfay et al., 2024; Lindgren Fjellner, 2026). These findings agree with prior reviews on video modelling (Trabelsi et al., 2025), eye movement modelling examples (Emhardt et al., 2023), and Brain Breaks® programmes (Kuan et al., 2024), and they confirm in physical education the supplementary pattern reported for higher education (Noetel et al., 2021). The pre–post gains in single-group studies are also of the order expected from structured motor skill interventions in general (Logan et al., 2012), which suggests that the video component may contribute less than the structured practice in which it is embedded. Apparent contradictions, such as superiority versus equivalence of video, or gains in situational interest but not intrinsic motivation, likely reflect whether video added information or merely replaced an equivalent source and the differing sensitivity of motivational constructs to short-term manipulations. Similarly, the same video resource was described as both inspiring and disengaging, depending on learners' perceived distance from the model (Lindgren Fjellner, 2026).

Practically, teachers should prefer short, segmented, learner-controlled videos used before or between lessons to free class time for practice and feedback (Romdhane & Khacharem, 2023; Hatami & Savaş, 2024), include models of varied skill levels, including peers (Murfay et al., 2024), and accompany video feedback with guidance that helps learners interpret what they see (Fauzi et al., 2026). For elementary physical education, the developmental window in which locomotor, object control, and stability skills are expected to mature (Stodden et al., 2008; Robinson et al., 2015) calls for teacher-guided viewing, simple segmentation, and immediate practice, because young children have limited capacity to regulate their own viewing (Mayer

& Moreno, 2003). Simple, low-bandwidth solutions such as QR-linked or activity-break videos (Haris et al., 2023; Bonnema et al., 2022), combined with investment in infrastructure and teacher training, appear more realistic than sophisticated interactive or artificial intelligence systems in under-resourced schools (Kempa et al., 2025). For inclusive education, sign-language and visually oriented video content offers a practical means of improving access (Haris et al., 2023), while policymakers and teacher educators should invest in curated content repositories and digital pedagogy training.

In summary, in response to RQ1, digital video-based learning was associated with improved motor skill performance in most included studies, particularly when used to supplement teaching, but evidence for fundamental movement skills among elementary learners remains limited and methodologically weak. In response to RQ2, video-based learning generally supported interest, perceived usefulness, and autonomous motivation, especially in blended and learner-controlled designs, although interactivity alone did not consistently increase intrinsic motivation. In response to RQ3, learner control and segmentation, blended integration with face-to-face teaching, feedback on learners' own performance, accessibility features, and teacher and infrastructure readiness emerged as the main moderators of effectiveness.

This review has limitations. Only Scopus was searched; restricting inclusion to English-language articles with DOIs excluded nine records, including one potentially relevant elementary study; the synthesis relied mainly on Scopus records and abstracts; and the heterogeneity of designs and outcomes precluded meta-analysis. The corpus is also geographically clustered, with 12 of the 23 studies from Indonesia and Tunisia and much experimental work from a single Tunisian research network, which limits external validity for other education systems. Publication bias could not be assessed statistically because effect sizes were not pooled, but the predominance of positive single-group studies suggests that null findings may be under-reported. At the design level, most supplementary studies conflated intervention modality with additional instructional time. Future research should conduct cluster-randomised trials with time-matched control conditions in elementary physical education using validated fundamental movement skill batteries and retention tests of at least four weeks, test whether autonomous motivation mediates the effect of video design on motor learning, systematically manipulate segmentation, learner control, modality, and model similarity, compare video feedback, video modelling, and artificial intelligence feedback within the same trial, and examine teacher readiness and infrastructure as moderators in low-resource contexts. If video exerts an effect beyond additional practice time, time-matched trials should still show advantages for learner-controlled, segmented video on validated fundamental movement skill batteries; if they do not, the supplementary benefit observed in this review should be attributed to added practice rather than to video itself.

Conclusions

This systematic review synthesised 23 studies published between 2021 and 2026 on the effectiveness of digital video-based learning on learning motivation and fundamental movement skills in physical education. The evidence base is modest: most intervention studies used quasi-experimental or single-group designs, motor outcomes were rarely measured with validated instruments, interventions lasted only six to eight weeks, and design heterogeneity precluded meta-analytic pooling; only two uncontrolled studies addressed fundamental movement skills among elementary children. Within these limits, video-based learning was associated with improved motor skill performance when videos supplemented live teaching, but not when they replaced live demonstration of equal quality. Video-based learning also tended to enhance interest, perceived usefulness, and autonomous motivation, particularly when learners could control viewing and when video was embedded in blended designs, whereas interactivity alone did not guarantee motivational gains. Learner control, segmentation, blended integration, feedback on one's own performance, accessibility features, and teacher and infrastructure readiness emerged as key moderators. The contribution of this review is therefore to map, rather than to establish, the joint motor and motivational effects of video and to link them to cognitive load and self-determination mechanisms that future trials can test. Pending such trials, short, learner-controlled videos used before and between lessons, video feedback paired with guidance, and content adapted for inclusive settings should be regarded by teachers as promising rather than proven practices. Future research should prioritise randomised, time-matched trials lasting at least one school term with elementary learners, using validated movement skill instruments, retention tests, and mediation analyses of motivational processes, and should report means, standard deviations, and effect sizes with confidence intervals so that future syntheses can pool results.

References

Abdul Gani, H., Fadlih, A. M., Affandi, A., & Ikadarny. (2026). The development of a web-based PJOK digital learning media to increase deaf students' motor skills and literacy. *Disability and Rehabilitation: Assistive Technology, 21*(5), 2229–2243. https://doi.org/10.1080/17483107.2026.2624720

Aria, M., & Cuccurullo, C. (2017). bibliometrix: An R-tool for comprehensive science mapping analysis. *Journal of Informetrics, 11*(4), 959–975. https://doi.org/10.1016/j.joi.2017.08.007

Ben Romdhane, M., Mguidich, H., Ben Chikha, H., Chtourou, H., & Khacharem, A. (2025). Optimizing basketball tactics learning in physical education: The impact of modality and video control. *Perceptual and Motor Skills, 132*(5), 969–987. https://doi.org/10.1177/00315125251328727

Bernstein, E. (2021). Students' perceived experiences of competitive activities through electronic platforms. *Kinesiology Review, 10*(1), 101–108. https://doi.org/10.1123/KR.2020-0018

Bonavita, N. (2026). Transmedia storytelling to enhance intrinsic motivation in yoga practice within health education. *American Journal of Health Education, 57*(3), 213–218. https://doi.org/10.1080/19325037.2025.2603194

Bonnema, J., Coetzee, D., & Lennox, A. (2022). Effect of a three-month HOPSports Brain Breaks® intervention program on the physical fitness levels of grade 6-learners in South Africa. *International Journal of Environmental Research and Public Health, 19*(18), Article 11236. https://doi.org/10.3390/ijerph191811236

Bouten, A., Haerens, L., Van Doren, N., Compernolle, S., & De Cocker, K. (2023). An online video annotation tool for optimizing secondary teachers' motivating style: Acceptability, usability, and feasibility. *Teaching and Teacher Education, 134*, Article 104307. https://doi.org/10.1016/j.tate.2023.104307

Bowles, H., Clift, B. C., & Wiltshire, G. (2024). Joe Wicks, lifestyle capitalism and the social construction of PE (with Joe). *Sport, Education and Society, 29*(2), 119–131. https://doi.org/10.1080/13573322.2022.2117150

Campbell, M., McKenzie, J. E., Sowden, A., Katikireddi, S. V., Brennan, S. E., Ellis, S., Hartmann-Boyce, J., Ryan, R., Shepperd, S., Thomas, J., Welch, V., & Thomson, H. (2020). Synthesis without meta-analysis (SWiM) in systematic reviews: Reporting guideline. *BMJ, 368*, Article l6890. https://doi.org/10.1136/bmj.l6890

Cao, L., Chau, K. T., Wan Yahaya, W. A. J., & Yahaya, W. (2026). Integrating embodied cognition and artificial intelligence in university physical education: A randomized controlled trial of an AI-based Tai Chi tutoring system. *Education and Information Technologies*. Advance online publication. https://doi.org/10.1007/s10639-026-14132-8

de la Mora Velasco, E., Jahani, S., & Haberlin, S. (2026). Are instructional videos effective across learning modalities? Examining motivational and psychological outcomes. *TechTrends, 70*(5), 1248–1259. https://doi.org/10.1007/s11528-026-01226-w

Emhardt, S. N., Kok, E., van Gog, T., Brandt-Gruwel, S., van Marlen, T., & Jarodzka, H. (2023). Visualizing a task performer's gaze to foster observers' performance and learning—A systematic literature review on eye movement modeling examples. *Educational Psychology Review, 35*(1), Article 23. https://doi.org/10.1007/s10648-023-09731-7

Fauzi, R. A., Suherman, A., Saptani, E., Tingsabhat, S., & Heryanto, M. (2026). The effect of digital video feedback on roundoff learning outcomes in gymnastics learning. *Frontiers in Sports and Active Living, 8*, Article 1771596. https://doi.org/10.3389/fspor.2026.1771596

Fernández-Gavira, J., Espada-Goya, P., Alcaraz-Rodríguez, V., & Moscoso-Sánchez, D. (2021). Design of educational tools based on traditional games for the improvement of social and personal skills of primary school students with hearing impairment. *Sustainability, 13*(22), Article 12644. https://doi.org/10.3390/su132212644

Ghorbel, A., Abdelkefi, H., Yaakoubi, M., Trabelsi, O., Masmoudi, L., Weiss, K., Rosemann, T., Knechtle, B., & Gharbi, A. (2026). Blended learning in physical education: Examining the effectiveness of the "did you know?" model in gymnastics. *Acta Psychologica, 263*, Article 106284. https://doi.org/10.1016/j.actpsy.2026.106284

Ghorbel, A., Yaakoubi, M., Alsaeed, M. I., Said, N. B., Masmoudi, L., Scharenberg, S., Gharbi, A., & Trabelsi, O. (2026). A quasi-experimental study of the video-based "Did You Know?" blended learning model in physical education: Impact on motor skills, knowledge acquisition, and motivation in gymnastics. *Frontiers in Psychology, 17*, Article 1695403. https://doi.org/10.3389/fpsyg.2026.1695403

Haris, F., Alnedral, Taufan, J., Aulia, F., & Gusril. (2023). The effect of Motor Coordination Learning (MCL) based on a combination of e-book and QR-Code media with sign language to improve Basic Movement Skill (BMS) in deaf children: An inclusion education research. *Journal of Physical Education and Sport, 23*(12), 3349–3355. https://doi.org/10.7752/jpes.2023.12383

Hatami, O., & Savaş, S. (2024). Comparative analysis of flipped learning versus traditional teaching methods in basketball technical instruction: Effect on students' psychomotor achievement levels. *Journal of Physical Education and Sport, 24*(6), 1507–1514. https://doi.org/10.7752/jpes.2024.06170

Hattie, J., & Timperley, H. (2007). The power of feedback. *Review of Educational Research, 77*(1), 81–112. https://doi.org/10.3102/003465430298487

Hrg, K., Lončar, P., Zelanto, W. H., Novak, D., & Podnar, H. (2023). Attainment of the health outcomes by implementing educational videos during the final part of the physical education lesson. *Montenegrin Journal of Sports Science and Medicine, 19*(2), 11–16. https://doi.org/10.26773/mjssm.230902

Kempa, R., Sahalessy, A., Souisa, M., & Apituley, V. H. R. (2025). Barriers to ICT integration in elementary physical education: Evidence from Tual City, Maluku Province. *Online Learning in Educational Research, 5*(1), 217–229. https://doi.org/10.58524/oler.v5i1.685

Krijgsman, C., Mainhard, T., Borghouts, L., van Tartwijk, J., & Haerens, L. (2021). Do goal clarification and process feedback positively affect students' need-based experiences? A quasi-experimental study grounded in self-determination theory. *Physical Education and Sport Pedagogy, 26*(5), 483–503. https://doi.org/10.1080/17408989.2020.1823956

Kuan, G., Chin, M.-K., Kueh, Y. C., Sabo, A., Mok, M. M. C., Balasekaran, G., Chang, Y.-K., Edginton, C. R., Culpan, I., Popeska, B., & Durstine, J. L. (2024). A systematic review on the effectiveness of Brain-Breaks® video programming on academic performance and physical activity of school children. *Turkish Journal of Physiotherapy and Rehabilitation, 35*(2), 258–272. https://doi.org/10.21653/tjpr.1489761

Kurniawan, F., Raharjo, B. B., Rahayu, T., & Rahayu, S. (2025). Teachers' and students' perceptions of the use of learning media in improving swimming learning outcomes in junior high schools in Cirebon City. *Journal of Ecohumanism, 4*(1), 4586–4592. https://doi.org/10.62754/joe.v4i1.6357

Liberati, A., Altman, D. G., Tetzlaff, J., Mulrow, C., Gøtzsche, P. C., Ioannidis, J. P. A., Clarke, M., Devereaux, P. J., Kleijnen, J., & Moher, D. (2009). The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: Explanation and elaboration. *PLoS Medicine, 6*(7), Article e1000100. https://doi.org/10.1371/journal.pmed.1000100

Lindgren Fjellner, R. (2026). Practising under digital conditions: How DigiTech shapes students' learning of movement in PE. *Physical Education and Sport Pedagogy*. Advance online publication. https://doi.org/10.1080/17408989.2026.2665674

Logan, S. W., Robinson, L. E., Wilson, A. E., & Lucas, W. A. (2012). Getting the fundamentals of movement: A meta-analysis of the effectiveness of motor skill interventions in children. *Child: Care, Health and Development, 38*(3), 305–315. https://doi.org/10.1111/j.1365-2214.2011.01307.x

Mayer, R. E., & Moreno, R. (2003). Nine ways to reduce cognitive load in multimedia learning. *Educational Psychologist, 38*(1), 43–52. https://doi.org/10.1207/S15326985EP3801_6

Mhamdi, E., Rekik, G., Belkhir, Y., & Jarraya, M. (2026). Learning dance sequences from passive and interactive videos at different times of day. *Perceptual and Motor Skills*. Advance online publication. https://doi.org/10.1177/00315125261471224

Mokmin, N. A. M., & Ridzuan, N. N. I. B. (2022). Immersive technologies in physical education in Malaysia for students with learning disabilities. *IAFOR Journal of Education, 10*(2), 91–110. https://doi.org/10.22492/ije.10.2.05

Murfay, K., Pyszczynski, S., & Erwin, H. (2024). A qualitative examination of online practices during the COVID-19 pandemic and observational preferences within physical education. *Journal of Teaching in Physical Education, 43*(2), 343–351. https://doi.org/10.1123/jtpe.2023-0070

Noetel, M., Griffith, S., Delaney, O., Sanders, T., Parker, P., del Pozo Cruz, B., & Lonsdale, C. (2021). Video improves learning in higher education: A systematic review. *Review of Educational Research, 91*(2), 204–236. https://doi.org/10.3102/0034654321990713

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., . . . Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ, 372*, Article n71. https://doi.org/10.1136/bmj.n71

Price, A., Beckey, A., & Collins, D. (2024). Developing a love for playing games: A clarification of why Digital Video Games Approach is not gamification. *Physical Education and Sport Pedagogy, 29*(6), 558–572. https://doi.org/10.1080/17408989.2022.2125946

Robinson, L. E., Stodden, D. F., Barnett, L. M., Lopes, V. P., Logan, S. W., Rodrigues, L. P., & D'Hondt, E. (2015). Motor competence and its effect on positive developmental trajectories of health. *Sports Medicine, 45*(9), 1273–1284. https://doi.org/10.1007/s40279-015-0351-6

Romdhane, M. B., & Khacharem, A. (2023). Controlling the display of videos in a physical education context: Effects on learning outcomes and situational interest. *Physical Education and Sport Pedagogy, 28*(5), 517–529. https://doi.org/10.1080/17408989.2021.2005013

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(1), 68–78. https://doi.org/10.1037/0003-066X.55.1.68

Safari, I., Supriyadi, T., & Susilawati, D. (2025). Holistic pedagogical model for table tennis: Integrating regulations, multimedia, and sportsmanship. *International Journal of Human Movement and Sports Sciences, 13*(3), 636–646. https://doi.org/10.13189/saj.2025.130318

Šitić, K., Bavčević, D., & Bavčević, T. (2025). Implementing a new method for teaching freestyle and back-stroke technique in high education PE—A comparative study. *Journal of Kinesiology and Exercise Sciences, 13*(23), 38–46. https://doi.org/10.5604/01.3001.0055.2686

Snow, S. L., Brown, T. D., Barnett, L. M., Salmon, J., & Lander, N. J. (2025). Using participatory action to develop and refine an online motor competence assessment educational resource for teachers. *Physical Education and Sport Pedagogy*. Advance online publication. https://doi.org/10.1080/17408989.2025.2587027

Stodden, D. F., Goodway, J. D., Langendorfer, S. J., Roberton, M. A., Rudisill, M. E., Garcia, C., & Garcia, L. E. (2008). A developmental perspective on the role of motor skill competence in physical activity: An emergent relationship. *Quest, 60*(2), 290–306. https://doi.org/10.1080/00336297.2008.10483582

Sweller, J. (1988). Cognitive load during problem solving: Effects on learning. *Cognitive Science, 12*(2), 257–285. https://doi.org/10.1207/s15516709cog1202_4

Taufik, M. S., Ridlo, A. F., Solahuddin, S., Iskandar, T., & Taroreh, B. S. (2022). Application of YouTube-based virtual blended learning as a learning media for fundamental movement skills in elementary schools during the Covid pandemic 19. *Annals of Applied Sport Science, 10*(1), Article e1020. https://doi.org/10.52547/aassjournal.1020

Thomas, J., & Harden, A. (2008). Methods for the thematic synthesis of qualitative research in systematic reviews. *BMC Medical Research Methodology, 8*, Article 45. https://doi.org/10.1186/1471-2288-8-45

Trabelsi, O., Romdhani, A., Ghorbel, A., Bouchiba, M., Souissi, M. A., Scharenberg, S., & Gharbi, A. (2025). A review of best practices in video modeling for sport pedagogues. *International Journal of Sports Science & Coaching, 20*(4), 1749–1760. https://doi.org/10.1177/17479541251335611

Tranfield, D., Denyer, D., & Smart, P. (2003). Towards a methodology for developing evidence-informed management knowledge by means of systematic review. *British Journal of Management, 14*(3), 207–222. https://doi.org/10.1111/1467-8551.00375

van Eck, N. J., & Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics, 84*(2), 523–538. https://doi.org/10.1007/s11192-009-0146-3

Wilkie, B., Foulkes, J., Woods, C. T., Sweeting, A., Lewis, C., Davids, K., & Rudd, J. (2022). A games-based assessment in ecological dynamics for measuring physical literacy. *Asian Journal of Sport and Exercise Psychology, 2*(1), 50–58. https://doi.org/10.1016/j.ajsep.2022.03.002

Wilkie, B., & Liefeith, A. (2022). Student experiences of live synchronised video feedback in formative assessment. *Teaching in Higher Education, 27*(3), 403–416. https://doi.org/10.1080/13562517.2020.1725879

Wyant, J. D., Tsuda, E., Keath, A., & Baek, J.-H. (2021). Insights from teachers on the digitization of the physical education knowledge base. *Journal of Physical Education and Sport, 21*(5), 2687–2696. https://doi.org/10.7752/jpes.2021.05358

Yücekaya, M. A., Sağin, A. E., & Uğraş, S. (2021). Physical education and sports lesson in distance education: Content analysis of videos on YouTube. *International Journal of Educational Research and Innovation, 15*, 533–551. https://doi.org/10.46661/ijeri.5766