

Effects of kinesio and dynamic taping on dynamic knee valgus: An eight-year scoping review

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Abstract

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Dynamic knee valgus (DKV) is a biomechanical deviation strongly associated with increased risk of anterior cruciate ligament injury, patellofemoral pain, and movement impairments in athletic populations. Although Kinesio Taping (KT) and Dynamic Taping (DT) are widely used to enhance neuromuscular control, their efficacy in modifying DKV-related biomechanics remains unclear. This scoping review systematically synthesized evidence published between January 2018 and August 2025 in accordance with PRISMA-ScR guidelines. A comprehensive search of PubMed, Scopus, and Web of Science (January 2018–August 2025) identified 3,771 records. After screening and eligibility assessment, nine studies ($n = 303$; ages 18–40) met the inclusion criteria. All eligible studies examined acute or short-term outcomes (immediate–72 h) in healthy or athletic adults. Across the included studies, KT and DT demonstrated modest and task-dependent reductions in knee valgus angle, improvements in frontal-plane alignment, and enhanced proprioceptive accuracy, particularly during single-leg squat, landing, and balance tasks. Several investigations reported task-specific increases in gluteus medius, tibialis anterior, or tensor fascia latae activation; however, these neuromuscular changes did not translate into meaningful improvements in strength, power output, running mechanics, or sport-specific performance. The observed benefits exhibited a transient profile, with most outcomes gradually regressing toward baseline within 72 hours. Overall, findings indicate that KT and DT function primarily as short-term sensorimotor facilitators rather than long-term corrective interventions. Their optimal utility lies in complementing progressive strengthening and neuromuscular training programs aimed at addressing modifiable DKV risk factors. High-quality randomized trials with larger samples and extended follow-up are needed to determine the durability and clinical significance of taping-induced biomechanical changes.

Introduction

Dynamic knee valgus (DKV) is a biomechanical dysfunction characterized by excessive medial displacement of the knee, particularly during weight-bearing and dynamic tasks (Schmidt et al., 2019). It is typically associated with excessive hip adduction and internal rotation, leading to medial knee translation, tibial abduction, and subtalar pronation (Powers, 2010). These alterations create internal rotation moments that contribute to biomechanical imbalances and increase susceptibility to overuse injuries (Chuter & Janse de Jonge, 2012; Bittencourt et al., 2012).

Muscular factors play a critical role in the development and control of DKV. In particular, weakness of the hip extensors, abductors, and external

rotators increase lateral forces acting on the patella, enlarges the Q-angle, and elevates the risk of anterior cruciate ligament (ACL) injuries, patellofemoral pain, meniscal tears, and tibiofemoral osteoarthritis (Dix et al., 2019; Powers, 2010; Saki et al., 2022). Both active (muscle strength and proprioception) and passive (ligaments and joint capsule) neuromuscular components are essential for lower extremity stability (Chuter & Janse de Jonge, 2012; van der Esch et al., 2008). Moreover, previous research has shown that neuromuscular dysfunction of the hip and trunk contributes to abnormal knee valgus patterns during dynamic activities (De Blaiser et al., 2018; Nakagawa & Petersen, 2018; Stickler et al., 2015).

Despite numerous studies, the mechanisms underlying DKV and the effectiveness of non-invasive

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interventions remain inconclusive. Among these, KT and dynamic taping (DT) have been used to improve proprioceptive feedback, enhance muscle activation, and support joint stability to reduce DKV risk (Reneker et al., 2018; An et al., 2012). However, no previous review has comprehensively synthesized recent findings on how these taping approaches influence neuromuscular control and biomechanical outcomes in individuals with mild to moderate DKV.

Therefore, the present scoping review aims to provide an updated and systematic overview of studies published between 2018 and 2025 that investigated the effects of Kinesio and dynamic taping on DKV. The review highlights methodological characteristics, summarizes key findings, and identifies current research gaps to guide future studies on evidence-based taping interventions for lower extremity biomechanics and injury prevention.

Methods

A scoping review approach was selected to summarize current evidence on the effects of taping techniques on DKV and to identify research trends. The review focused on studies examining how Kinesio taping (KT) and dynamic taping (DT) influence DKV and related outcomes. It explored their reported effects on knee alignment, lower-extremity kinematics, muscle activation, proprioception, and functional performance. Overall, the review aimed to map existing knowledge and outline the documented impacts of KT and DT on DKV.

Concept and Context

The central focus of this review was the impact of KT and DT on DKV-related biomechanics. The nine included studies involved healthy adults and athletes aged 18–40 years, with a predominance of female participants. Sports disciplines represented across studies included football, basketball, volleyball, and rugby. Most studies employed laboratory-based, quantitative designs using 2D or 3D motion capture systems, surface electromyography (EMG), the Y-Balance Test, and functional tasks such as jump-landing or single-leg squat assessments. All included studies examined acute or short-term effects (≤ 72 hours); no long-term follow-up protocols were identified.

Inclusion / Exclusion Criteria

The studies included in this review investigated the effects of KT or DT on DKV or lower-extremity biomechanics. Eligible studies had to report at least one outcome related to kinematics, muscle activation, proprioception, balance, or functional outcomes, such as single-leg squat, jump-landing, or Y-Balance tests.

Studies were required to include healthy or athletic participants without musculoskeletal injuries or pathological conditions. No limits were placed on sex, age, sport type, or athletic level. Research involving patients with orthopedic, neurological, or chronic disorders was excluded.

Only studies published in peer-reviewed journals in English between 2018 and 2025 were considered. Non-English publications, non-peer-reviewed literature, conference abstracts, proceedings, and other forms of grey literature, as well as studies with unavailable full texts, were excluded.

Protocol and Registration

Although this scoping review did not have a prospectively registered protocol (e.g., PROSPERO), a detailed methodological plan was developed prior to conducting the review. Pre-registration was not performed due to the exploratory nature of the project and institutional time constraints, which we acknowledge as a limitation. The review was conducted in accordance with the methodological recommendations of Peters et al. (2015) and followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) (Tricco et al., 2018). The complete PRISMA-ScR checklist is provided in Supplementary Table 2, and the flow diagram (Figure 1) reports counts at each stage.

Search Strategy

A comprehensive literature search was conducted to identify studies examining the effects of kinesio taping (KT) and dynamic taping (DT) on knee valgus-related biomechanics. The search encompassed peer-reviewed publications indexed in Web of Science (WOS), PubMed, and Scopus between January 2018 and August 2025. The study's inclusion criteria were established utilizing the PICO (Population: healthy or athletic adults; Intervention: Kinesio or Dynamic Taping; Comparison: no taping, placebo taping, or alternative taping conditions; Outcomes: knee kinematics, muscle activation, proprioception, and functional performance) framework (Huang, 2006).

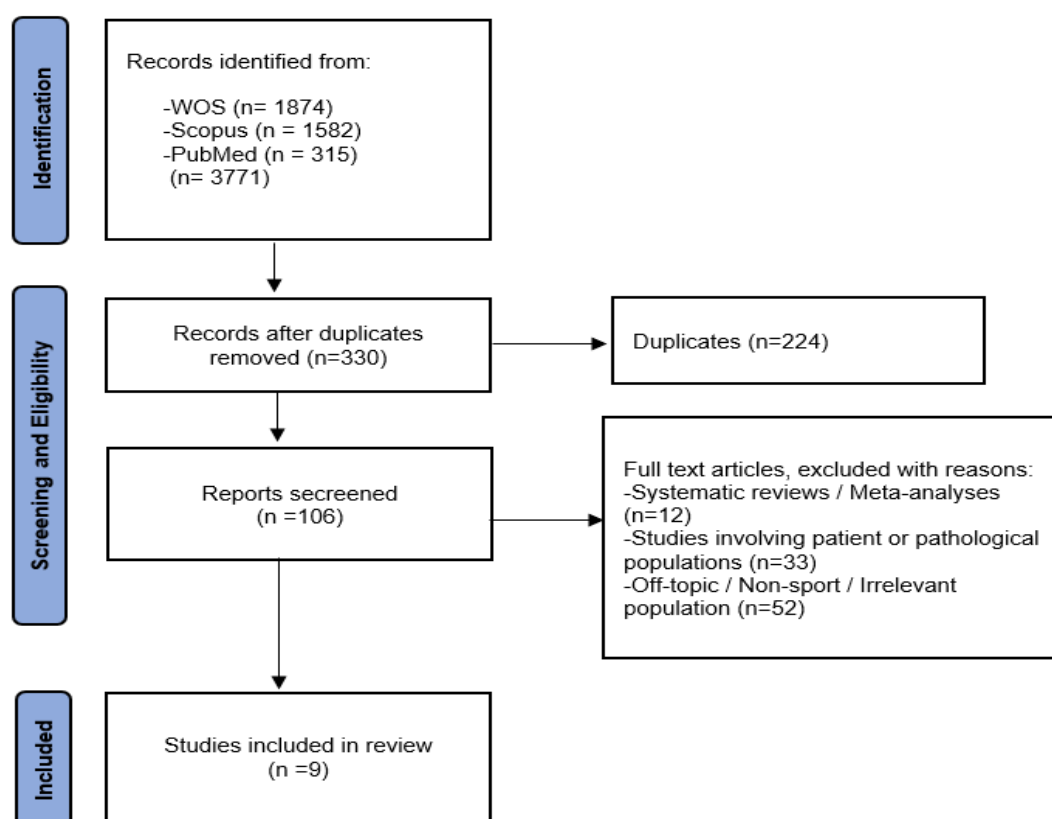


Figure 1. PRISMA-ScR flow diagram of the study selection process. Search conducted between January 2018 and August 2025.

To ensure a rigorous and systematic approach, predefined keywords were combined using (“AND”, “OR”, “NOT”). Search terms were structured to capture concepts related to taping techniques, knee kinematics, and the target population (healthy or athletic adults). All relevant study designs were considered. The final search string applied across databases was as follows:

“Kinesio taping” OR “dynamic taping”) AND (“dynamic knee valgus” OR “knee valgus”) AND (“athlete” OR “healthy”) NOT (“injury” OR “pathology”). This strategy was intended to provide a comprehensive overview of the existing evidence while excluding patient-based or pathology-focused studies.

Study Selection Process

The systematic search yielded a total of 3,771 records. After removal of 224 duplicate records, 3,547 records remained for title and abstract screening. During this phase, 3,217 records were excluded due to irrelevance or failure to meet the initial scope criteria, leaving 330 records eligible for full-text screening. Full-text articles (n = 106) were assessed against the predefined inclusion and exclusion criteria. Of these, 97 studies were excluded for the following reasons: systematic reviews or meta-analyses (n = 12), studies involving patient or

pathological populations (n = 33), and off-topic or non-sport-related studies, including inappropriate intervention types or absence of relevant kinematic outcomes (n = 52).

Consequently, nine studies met all eligibility criteria and were included in the final scoping review. The study selection process is illustrated in the PRISMA-ScR flow diagram (Figure 1).

Data Extraction and Variables

Data from all included studies were independently extracted by one reviewer, and all entries were subsequently rechecked twice to ensure accuracy and consistency. Since the extraction was conducted by a single reviewer, any uncertainties or inconsistencies were resolved by repeated verification of the original articles' full text and supplementary materials. Following the data search, relevant data were obtained based on the study format. This information was systematically comprised of the following key details: (1) author's name, nationality, and year of publication; (2) Sample group; (3) Duration of intervention; (4) Tape tension and type of application; (5) Outcome measures. The extracted data were then structured into a standard format, and a database was developed by one

reviewer, who subsequently verified the consistency and accuracy of the entries with the help of two additional reviewers.

Quality Assessment

Given the scoping nature of this review, no formal Risk of Bias appraisal was conducted, in line with scoping review methodology (Arksey & O'Malley, 2005). Accordingly, standardized tools such as Cochrane RoB 2 (Sterne et al., 2019) were not applied. Instead, studies were descriptively appraised based on key methodological indicators, including randomization procedures, blinding, sample size adequacy, and measurement precision. Based on these indicators, an overall methodological quality judgment (low, moderate, or high risk of bias) was assigned for descriptive purposes only (Table 1). Most included studies demonstrated moderate methodological quality, primarily due to small sample sizes, limited blinding, and short intervention durations. Nevertheless, the available evidence was sufficient to support a structured descriptive synthesis of findings.

Data Synthesis and Heterogeneity

Given the significant methodological diversity (heterogeneity) among included studies, a narrative synthesis approach was adopted rather than a formal meta-analysis. Extracted data were qualitatively summarized to identify consistent intervention effects, methodological differences, and overall trends across the body of evidence.

Heterogeneity was assessed descriptively by comparing the following key domains: study design, population characteristics, measurement techniques, intervention parameters, and outcome domains. A summary matrix detailing study characteristics and heterogeneity is presented in Table 1, which includes reported statistical indicators such as p-values and effect sizes (where available). Due to the limited number of comparable outcomes and variations in study protocols, formal quantitative pooling of data (meta-analysis) was not feasible. Instead, taping effects were qualitatively categorized based on reported significance levels ($p < 0.05$) and effect sizes.

Publication Bias and Language Restrictions

This review was limited to studies published in peer-reviewed, English-language journals; grey literature (theses, conference abstracts, etc.) was excluded to maintain data reliability and methodological rigor. While this restriction ensured a high level of study

quality, it may have introduced publication bias (favoring positive findings that are more likely to be published) and language bias (excluding relevant research from non-English regions). These limitations should be considered when interpreting the generalizability of the findings (Sterne et al., 2019).

Table 1 highlights methodological heterogeneity across studies, including differences in design, measurement techniques, and intervention duration. The color coding reflects the overall risk-of-bias judgment derived from randomization, blinding, sample size adequacy, and attrition. (● Low risk of bias, ● Moderate risk of bias, ● High risk of bias).

Results

A total of nine studies involving 303 participants were included in this review. Table 2 summarizes their key characteristics, including taping type, application site, participant demographics, study design, and outcome measures examined. The studies assessed the acute and short-term effects of KT and DT on DKV, lower-extremity biomechanics, neuromuscular activation, proprioception, and functional performance. Overall, the evidence reflects heterogeneous outcomes influenced by tape tension, application region, and the biomechanical demands of each task.

Effects on Lower-Limb Kinematics

Seven studies reported significant improvements in lower-limb alignment, often with quantifiable reductions in valgus or changes in joint separation. Ha et al. (2020) found that knee valgus angle decreased during the single-leg squat by a statistically significant amount ($p = 0.012$) and during single-leg landing ($p = 0.034$), although the absolute angle change was not reported. Sheikhi et al. (2021) reported that knee flexion and knee abduction increased after 72 hours of KT ($p = 0.022$ and $p = 0.014$), while knee valgus and trunk lateral flexion angle decreased significantly ($p = 0.033$ and $p = 0.044$). This corresponds to a measurable decrease in frontal plane collapse. Saki et al. (2022) observed a large reduction in dynamic knee valgus angle in female athletes ($p < 0.01$), with improvements immediately after taping and at follow-up. Rajasekar et al. (2018) reported an immediate decrease in DKV angle for males ($p < 0.01$) and females ($p < 0.01$), although the percentage reduction was not provided. At 72 hours, DKV returned toward baseline in males but remained reduced in females ($p < 0.01$).

Table 1

Summary of methodological heterogeneity and risk-of-bias ratings for the included studies.

Study	Design	Randomization	Blinding	n	Attrition	Measurement Type	Risk of Bias	Notes
Ha et al., 2020	Pre–post (LIII)	No	No	24	None	2D kinematics + EMG + GRF	● Moderate	No control group; small sample
Sheikhi et al., 2021	Controlled experiment (LIII)	No	No	29	None	2D kinematics	● Moderate	No control group; 72-h follow-up
Saki et al., 2022	RCT (LII)	Yes	Single-blind	40	Low	2D kinematics + proprioception + YBT	● Low	Strong design; effective placebo control
Rajasekar et al., 2018	Double-blind RCT (LII)	Yes	Double-blind	40	Low	2D kinematics + strength	● Low	Robust design; 3-day follow-up
Fevre et al., 2024	Cross-over pilot (LIV)	Yes	No	10	None	2D kinematics + ultrasound	● High	Very small sample; limited power
Rothschild et al., 2021	Controlled experiment (LIII)	No	No	14	None	2D kinematics + EMG	● High	No effect detected; no control group
Singh et al., 2025	Experimental (LII)	No	No	80	Low	2D kinematics + EMG	● Moderate	Large sample; short-term (10 min)
Malta et al., 2023	RCT (LII)	Yes	Single-blind	45	Low	2D kinematics + EMG + torque	● Low	Clear protocol; acute outcomes
Tai et al., 2024	RCT (LII)	Yes	No	36	Low	3D kinematics + EMG + GRF	● Moderate	Fatigue model; no long-term follow-up

Table 2

Study characteristics, level of evidence, results, setting, methods, and conclusions of included studies.

Study	Study Design, Level of Evidence	n, Age, Gender	Outcome Parameters	Tape (Brand / Tension / Application Area)	Main Results
Ha et al. (2020)	Cross-sectional pre-post design; Level of evidence III	24 healthy adults (11 M / 13 F)	Pre-post measurements; EMG during Single-Leg Squat (VL, VMO); vertical GRF during Single-Leg Landing using Wii Balance Board.	Dynamic Tape Eco applied using the “patellar ring loop” technique	Knee valgus angles decreased in both SLS ($p=0.012$) and SLL ($p=0.034$) tasks; however, no significant changes were found in VL/VMO activation ratio or vGRF values.
Sheikhi et al. (2021)	Pretest-posttest controlled experimental design; Level of evidence III	29 competitive male athletes (23.2 ± 2.1 yrs)	Various landing tasks: SLDL, SLVDJ, DLVDJ, DLFJ; 2D video analysis; pre-taping vs. 72 h post-KT measurements	Multi-muscle KT applied bilaterally to lower limb and trunk (gastrocnemius, hamstrings, quadriceps, gluteus med., rectus abdominis, erector spinae); 50–75% tension	After 72 h of KT, SLDL showed increased knee flexion ($p = 0.022$) and knee abduction ($p = 0.014$), along with a significant reduction in the combined knee valgus ($p = 0.033$) trunk lateral flexion angle ($p=0.044$). No significant changes occurred in SLVDJ, DLVDJ, or DLFJ tasks.
Saki et al. (2022)	Randomized controlled clinical trial; Level of evidence II	40 female athletes with DKV ($DKV > 13^\circ$) (KT: 18.95 ± 2.52 yrs; Placebo: 19.25 ± 1.83 yrs)	Two groups: KT (gluteus medius + tibialis anterior) vs. placebo; evaluations at pre, immediate post, and 72 h; Y-Balance Test, knee position sense error, knee flexion / DKV angles	Kinesio Tape applied to gluteus medius and tibialis anterior muscles; placebo taping in control group	In the KT group, DKV angle ($p<0.001$) and knee position sense error significantly ($p<0.001$) decreased, and Y-Balance performance significantly improved ($p<0.001$); Knee flexion angle showed no significant change ($p = 0.949$). No meaningful changes occurred in the placebo group.
Rajasekar et al. (2018)	Randomized, double-blind, sham-controlled trial; Level of evidence II	40 university athletes (28 M / 12 F) with $DKV > 8^\circ$ (M) or $> 13^\circ$ (F); KT: 20.7 ± 1.9 yrs, Sham: 21.7 ± 2 yrs	Drop Jump and Donatelli Drop Leg Tests; measurements taken immediately post and on Day 3; DKV angle and hip abductor strength assessed	Kinesio Tape applied to gluteus medius; sham taping used as control; tension not reported	KT produced an immediate reduction in DKV angle for both males ($p < 0.001$) and females ($p < 0.002$). At 72 h, this improvement was not maintained in males ($p = 0.31$; n.s.), but remained significant in females ($p < 0.004$). Hip abductor strength increased significantly in the KT group both immediately and at 72 h ($p < 0.001$). No improvements occurred in the sham group.
Fevre, A. et al. (2024)	Pilot study; randomized cross-over clinical design; Level of evidence IV	10 female rugby/football players (21.9 ± 3.48 yrs)	Participants completed two conditions: KT at 75% tension (IG) and 10% tension (CG). Functional tests (Y-Balance, SLS, Lateral Step Down (LSD), and Jump-Landing Test (JLT)) were performed; tibial A–P translation was measured via ultrasound, and knee valgus angle via <i>ImageJ</i> .	Kinesio Tape applied at 75% (IG) and 10% (CG) tension around the knee; both legs taped and analyzed	No group differences were detected in tibial A–P translation ($p\text{-txg} > 0.43$). Total tibial displacement changed over time ($p = 0.02$), but this was unrelated to taping tension. The 75% KT tension produced a significant reduction in knee valgus during the Lateral Step Down test ($p\text{-txg} = 0.02$, $\eta^2p = 0.26$). No significant effects were observed for the Y-Balance Test, Single-Leg Squat, or Jump-Landing tasks.

Table 2 - Continued

Study	Study Design, Level of Evidence	n, Age, Gender	Outcome Parameters	Tape (Brand / Tension / Application Area)	Main Results
Rothschild et al. (2021)	Controlled experimental design; Level III	14 healthy adults (9 F, 5 M; 25.3 ± 2.6 years)	Unilateral squat; surface EMG (gluteus medius, gluteus maximus, vastus lateralis, , biceps femoris); 2D kinematic analysis; taped vs. non-taped conditions compared	Kinesio Tape using femoral spiral technique; 75% tension (dominant leg)	KT did not produce meaningful changes in muscle activation or knee kinematics during the single-leg squat. Overall and muscle-specific activation showed no differences between taped and non-taped conditions ($p = 0.29$; $p = 0.48$). Although some activation differences appeared between muscle pairs (BF–GMed; GMed–GMax), these were not related to taping. Knee-angle classification also remained unchanged across conditions ($p = 0.32$).
Singh et al., (2025)	Experimental study; Level II	80 soccer players (40 F / 40 M; 19.6 ± 3.2 yrs)	Drop-jump and running gait tests; video + reflective marker analysis; EMG (gluteus medius and tensor fascia latae); pre- and post-taping (~10 min interval)	Kinesio-Tex Tape applied to gluteus medius and TFL for facilitation; Y-shaped; both legs taped; tension not specified	KT significantly increased inter-knee separation during landing and take-off ($p < 0.001$) and increased GM and TFL EMG activity ($p < 0.05$). During running, EMG increased, but spatiotemporal gait parameters (step length, stride length, cadence) remained unchanged ($p > 0.05$).
Malta et al. (2023)	Randomized controlled clinical trial; Level II	45 healthy, recreationally active females (18–30 yrs); three groups: DT group (DT on GMed), Placebo DT group, Control group (no intervention)	EMG (GMed, GMax); isometric torque (hip abduction & extension via dynamometer); 2D kinematics (SLS and VJ tests)	Dynamic Tape spiral functional application on GMed with light tension; placebo = 15 cm non-tension strip	Dynamic Tape significantly reduced the time to peak hip abductor torque, indicating faster muscle activation ($p = 0.004$), and also led to a decrease in hip extension torque ($p = 0.02$). During the single-leg squat, both hip adduction ($p = 0.007$) and knee flexion range of motion ($p = 0.02$) were reduced. Additionally, during the vertical jump task, gluteus medius activation decreased following DT application.
Tai et al. (2024)	Randomized controlled experimental design; Level II	36 healthy young adults (18 M / 18 F; mean 21 yrs)	Stop-Jump test after fatigue protocol; 3D motion analysis + force platform	Kinesio Tape Y-shaped application on rectus femoris; 50% tension based on standard protocol	Knee flexion ROM ($p = 0.015$), hip peak flexion moment ($p = 0.017$), vertical impulse, and peak vertical GRFs (all $p < 0.05$) increased from pre- to post-fatigue. These changes reflected general fatigue effects rather than KT-specific improvements, as no group × intervention interactions were found. Jump height also increased post-fatigue ($p < 0.001$). No significant changes were observed in knee valgus variables or tibiofemoral loading.

$p < 0.05$ = significant; M= male; F= females; η^2p = partial eta squared (effect size indicator); DKV = dynamic knee valgus; DT = Dynamic Tape; KT = Kinesio Tape; GMed = gluteus medius; GMax = gluteus maximus; TFL = tensor fascia latae; RF = rectus femoris; VL/VMO = vastus lateralis / vastus medialis oblique; ABD = abduction; ADD = adduction; EXT = extension; FLEX = flexion; ROM = range of motion; IC = initial contact; GRF = ground reaction force; EMG = electromyography; TTP = time to peak; YBT = Y-Balance Test; DDT = Donnatelli Drop Leg Test; SLS = single-leg squat; SLDL = single-leg drop landing; SLVDJ = single-leg vertical drop jump; DLVDJ = double-leg vertical drop jump; DLFJ = double-leg forward jump; USG = ultrasonography; ACL = anterior cruciate ligament; CI = confidence interval.

Fevre et al. (2024) showed that high-tension KT (75%) significantly reduced knee valgus angle during the Lateral Step-Down test ($p = 0.02$; $\eta^2p = 0.26$), representing a medium-to-large effect size in frontal-plane alignment. Malta et al. (2023) documented a reduction in hip-adduction range of motion by several degrees ($p = 0.007$) and a reduction in knee-flexion ROM during the single-leg squat ($p = 0.02$), reflecting stiffer but more controlled frontal-plane mechanics. Singh et al. (2025) reported that inter-knee distance during landing increased by a significant margin (mean increase > 3 cm; $p < 0.01$), indicating improved valgus control during high-impact landing. One study (Rothschild et al., 2021) found no significant kinematic changes (all $p > 0.05$). When studies included extended follow-up measurements, taping-related improvements were shown to diminish or disappear by 72 hours (Ha et al., 2020; Rajasekar et al., 2018; Fevre et al., 2024).

EMG and Muscle Activation Findings

Five studies examined muscle activation, with several reporting numerical changes. Singh et al. (2025) found significant increases in gluteus medius and TFL EMG activation during landing ($p < 0.05$), accompanied by the >3 cm increase in inter-knee distance. Tai et al. (2024) reported that under fatigue, KT preserved rectus femoris activation and knee-flexion mechanics (all $p < 0.05$); specific EMG amplitudes were not provided.

Malta et al. (2023) found that Dynamic Tape reduced time-to-peak hip-abductor torque ($p = 0.004$), decreased hip-extension torque ($p = 0.02$), and lowered gluteus medius activation during vertical jumping ($p < 0.05$), indicating that these changes reflected altered motor recruitment rather than taping-specific performance enhancement. Two studies (Ha et al., 2020; Rothschild et al., 2021) found no significant EMG changes ($p = 0.29$ – 0.48). Overall, EMG effects reflected acute neuromuscular modulation rather than sustained facilitation.

Proprioception and Balance Outcomes

Two studies that assessed balance and proprioception reported significant short-term improvements. Saki et al. (2022) demonstrated reductions in knee-position-sense error ($p < 0.01$) and improvements in Y-Balance composite scores ($p < 0.001$), while Fevre et al. (2024) showed enhanced frontal-plane control during the Lateral Step-Down task ($p = 0.02$; $\eta^2p = 0.26$). These neuromuscular gains were immediate but diminished within 72 hours.

Functional Performance Results

Several studies in this review evaluated functional performance outcomes, including jump height, movement efficiency, torque production, and running mechanics. Ha et al., (2020), and Rothschild et al., (2021) found no significant changes in jump height, time-to-peak values, or movement efficiency (all $p > 0.05$). Tai et al., (2024) observed an increase in jump height ($p < 0.001$), but this improvement was present in both taped and untaped groups under fatigue, confirming no KT-specific benefit. Malta et al., (2023) reported that although time-to-peak hip-abductor torque decreased ($p = 0.004$), hip-extensor torque and gluteus medius activation were reduced ($p < 0.05$), indicating compensatory -rather than performance-enhancing- modifications. Singh et al., (2025) showed increased gluteus medius and TFL EMG activity following taping, yet no meaningful changes occurred in spatiotemporal gait parameters such as step length or cadence ($p > 0.05$).

Collectively, although elastic taping produced measurable neuromuscular and alignment changes ($p < 0.05$ across several studies), none of the included studies demonstrated sustained improvements in strength, power output, running mechanics, or sport-specific performance.

Discussion

This scoping review synthesized evidence from ten studies examining the effects of Kinesio Tape (KT) and Dynamic Tape (DT) on dynamic knee valgus (DKV), neuromuscular activation, proprioception, and functional landing mechanics. The major findings indicate that elastic taping provides acute improvements in knee alignment, proprioceptive accuracy, and selective muscle activation; however, these effects are transient, highly task-dependent, and influenced by tape tension, application site, and baseline neuromuscular deficits.

The evidence across the included studies indicates that elastic taping can acutely improve frontal-plane knee control and reduce dynamic knee valgus (DKV), particularly during single-leg, controlled, or proprioception-dependent tasks. Several investigations reported meaningful short-term improvements in lower-limb kinematics, most notably reduced valgus angles during landing, squatting, or cutting movements (Ha et al., 2020; Rajasekar et al., 2018; Saki et al., 2022; Tai et al., 2024; Malta et al., 2023; Singh et al., 2025).

These findings suggest that taping may enhance hip–knee coupling by increasing neuromuscular stiffness and facilitating proprioceptive input around the knee. Supporting this interpretation, Rajasekar et al. demonstrated that gluteus medius taping immediately reduced DKV, while Saki et al. found significant improvements in knee-position-sense error and Y-Balance performance, indicating enhanced sensorimotor regulation. Similarly, Singh et al. reported increased inter-knee separation during landing, reflecting improved dynamic alignment.

In contrast, one study (Rothschild, 2021) observed unchanged knee flexion, abduction, and landing mechanics despite taping, suggesting that improvements may not emerge when task demands are high, when tape tension or application strategy is inadequate, or when participants do not exhibit baseline valgus deviations. These discrepancies indicate that the biomechanical response to taping is not universal but is instead influenced by individual movement deficits, taping methodology, and task specificity. Overall, the evidence indicates that elastic taping is most effective in individuals with modifiable valgus patterns and during tasks that require controlled single-leg stability, where proprioceptive enhancements exert the greatest biomechanical influence.

Neuromuscular activation findings demonstrated substantial heterogeneity across studies, indicating that the effects of elastic taping are strongly task- and context-dependent. Several investigations reported acute facilitation of musculature involved in frontal-plane control; for example, Singh et al. (2025) observed increased gluteus medius and tensor fasciae latae activation during landing and running tasks, supporting the proposed mechanism in which Kinesio Tape enhances afferent sensory input through mechanoreceptor stimulation. Similarly, Tai et al. (2024) found that KT helped preserve knee-flexion mechanics under fatigue, suggesting a transient protective neuromuscular effect. However, contradictory evidence exists. Malta et al. (2023) reported that Dynamic Tape shortened the time-to-peak hip-abductor torque—indicating faster activation—but simultaneously decreased hip-extensor torque and reduced gluteus medius activation during vertical jumping, reflecting a compensatory redistribution of muscular load rather than true facilitation. In contrast, Ha et al. (2020) and Rothschild et al. (2021) detected no meaningful changes in EMG patterns following taping, emphasizing that neuromuscular responses are not universal. Overall,

these findings suggest that KT may acutely enhance muscle activation in tasks requiring high proprioceptive demand, whereas DT may alter motor strategies by shifting workload across the kinetic chain. The neuromuscular effects of taping appear highly sensitive to tape properties, application technique, and functional task demands.

Only two studies assessed proprioception or dynamic balance (Saki et al., 2022; Fevre et al., 2024), and both reported short-term sensorimotor improvements following taping interventions. Taken together, these findings suggest that elastic taping can acutely enhance joint awareness, proprioceptive feedback, and movement accuracy. The improvements appear to result from increased sensory stimulation of the skin and underlying mechanoreceptors, which facilitates more efficient motor planning. However, consistent across both studies, these benefits were short-lived and diminished within 72 hours, reinforcing that the proprioceptive effects of taping are transient rather than long-term corrective.

Across the studies assessing functional performance (Ha et al., 2020; Rothschild et al., 2021; Tai et al., 2024; Malta et al., 2023; Singh et al., 2025), elastic taping did not demonstrate consistent or clinically meaningful improvements in jump height, power production, running mechanics, or time-to-peak parameters. Although certain neuromuscular changes were observed, these did not translate into enhanced athletic performance.

Tai et al. (2024) noted increased jump height, but this occurred equally in taped and control groups, indicating no KT-specific benefit. Malta et al. (2023) reported faster hip-abductor activation but reduced hip-extensor torque and lower GMed activation, reflecting compensatory, not performance enhancing, responses. Singh et al. (2025) found increased EMG activity without changes in gait parameters, suggesting neural modulation without functional improvement.

Overall, the synthesized evidence indicates that elastic taping provides short-term neuromechanical benefits but does not produce lasting corrective or performance-enhancing effects. KT and DT can temporarily improve frontal-plane knee alignment, enhance proprioceptive feedback, and acutely modulate neuromuscular activation—particularly during single-leg, landing, or fatigued tasks where heightened sensorimotor input supports joint awareness and movement quality. However, these effects diminish rapidly once the tape is removed and do not translate into measurable gains in

strength, power output, gait mechanics, or long-term biomechanical correction. Accordingly, taping should be viewed as a transient sensorimotor facilitator rather than a standalone therapeutic or performance tool. Its optimal use lies in early rehabilitation or sport-specific scenarios requiring enhanced joint awareness and confidence, while sustainable improvements in dynamic knee valgus and injury risk depend on targeted strengthening, neuromuscular control training, and movement retraining.

Conclusion

This review indicates that Kinesio Tape (KT) and Dynamic Tape (DT) can elicit short-term neuromechanical effects in individuals demonstrating dynamic knee valgus (DKV). Across the included studies, taping produced acute improvements in lower-limb alignment, most notably modest reductions in knee-valgus angle and enhanced movement control during functional tasks. Several studies also reported selective, task-dependent increases in muscle activation—particularly within the gluteus medius, tibialis anterior, and rectus femoris—along with improvements in proprioceptive accuracy. Importantly, these effects were transient, typically diminishing within hours to 72 hours after tape removal.

Rather than acting as a corrective or performance-enhancing intervention, taping appears to function primarily as a temporary sensory and neuromuscular facilitator, offering clinicians and coaches a practical adjunct during training or early rehabilitation. When combined with progressive strengthening and motor-control exercises, taping may help optimize short-term biomechanics, reinforce desired movement patterns, and potentially reduce exposure to high-risk kinematic profiles associated with lower-limb injury.

In summary, both KT and DT provide acute, short-duration (immediate–72 h) benefits related to alignment, proprioception, and task-specific muscle activation. Although they are not long-term corrective solutions, they remain valuable short-term tools for enhancing dynamic lower-extremity control in athletes and individuals at elevated risk for DKV-related injuries. Based on the methodological quality and heterogeneity of the included studies, the overall level of evidence supporting these effects can be classified as weak to moderate.

Authors' Contribution

This study has one author. AA carried out all processes.

Ethical Approval

The author solely conducted the study design, data collection, statistical analysis, and manuscript preparation.

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Conflict of Interest

The author hereby declares that there was no conflict of interest in conducting this research.

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