Original Research

Impact Of Kinesio Taping Versus Strength Training in Patellofemoral Pain Syndrome in School Going Athletes

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Abstract

Background: Patellofemoral Pain Syndrome (PFPS) is one of the most prevalent causes of anterior knee pain, especially among young adults and athletes, characterized by diffuse, retro-patellar discomfort aggravated by activities like squatting, stair climbing, or prolonged sitting[1,2,3]. Both Kinesio Taping (KT) and Strength Training (ST) are widely adopted conservative approaches, but their comparative effectiveness remains under evaluation[5,8].

Purpose: This study aimed to compare the effectiveness of Kinesio Taping versus Strength Training in reducing pain and improving functional performance in School Going Athletes with Patellofemoral Pain Syndrome.

Result: Both Kinesio Taping and Strength Training significantly reduced pain and improved function, but Strength Training yielded superior long-term functional gains while Kinesio Taping provided more immediate pain relief performance in School Going Athletes with Patellofemoral Pain Syndrome.

Keywords: Patellofemoral Pain Syndrome, Kinesio Taping, Strength Training, Knee Pain, Rehabilitation.

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Introduction

Patellofemoral Pain Syndrome (PFPS) is a non-traumatic musculoskeletal disorder commonly affecting adolescents, athletes, and active adults, particularly females. The condition is characterized by anterior knee pain exacerbated during activities such as stair climbing, running, or prolonged sitting [3]. Muscle imbalances, poor patellar tracking, and overuse are primary contributing factors [4].

Conservative physiotherapy approaches like Strength Training (ST) and Kinesio Taping (KT) are widely used in clinical practice. KT is believed to improve proprioception, correct patellar alignment, and enhance circulation [1,6], whereas ST focuses on strengthening the quadriceps, gluteal, and hip abductors to reduce knee joint stress [2,8,9]. Though both methods show promise, their comparative efficacy in PFPS management remains underexplored [10,14].

Materials and Methodology

Objective of the Study

To evaluate and compare the effectiveness of Kinesio Taping versus Strength Training in improving pain relief and functional mobility among in School Going Athletes diagnosed with Patellofemoral Pain Syndrome [3,12].

Study Design

Randomized controlled trial (RCT).

Sampling Method

Random sampling

Duration of Study

8 weeks.

Inclusion Criteria

- Age: 15–20 years.
- Diagnosed Patellofemoral Pain Syndrome (PFPS) confirmed by clinical examination.
- Pain during daily activities like stair climbing or squatting.

Exclusion Criteria

- History of knee surgery.
- Ligamentous injury or meniscal tear.
- Neurological disorders affecting lower limbs.
- Current corticosteroid medication use.

Tools Used in the Study

- Visual Analogue Scale (VAS) for pain.
- Kujala Anterior Knee Pain Scale for functional assessment.
- Goniometer for range of motion.

Method

Participants (n=40) were randomly divided into two groups:

- **Group A** received Kinesio Taping (applied twice weekly) combined with a basic stretching protocol (three sessions per week).
- **Group B** performed a structured Strength Training program focusing on quadriceps, gluteus medius, and core muscles (three sessions per week).

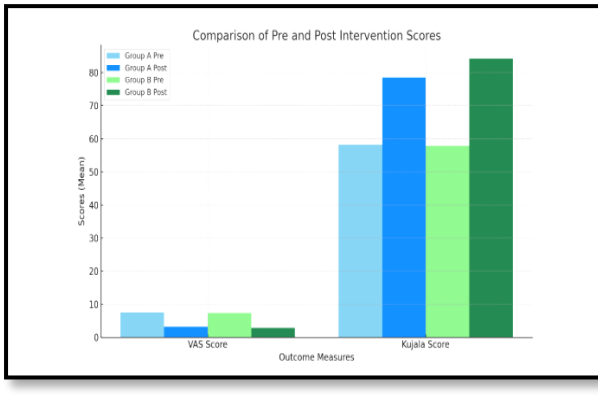
Outcome measures were recorded at **baseline, week 4, and week 8**.

Results

- Both groups showed statistically significant improvements in pain and function ($p<0.05$).
- **Group A (Kinesio Taping)**: Immediate reduction in VAS scores within 2 weeks but plateaued by week 8.
- **Group B (Strength Training)**: Slower initial pain relief but superior functional improvement (Kujala score) by the 8th week.

Data analysis

Outcome Measure	Group A (KT) Pre (Mean±SD)	Group A Post (Mean±SD)	Group B (ST) Pre (Mean±SD)	Gro Pos (Me
VAS Score	7.5 ± 1.2	3.2 ± 1.0	7.3 ± 1.1	2.8
Kujala Score	58.2 ± 5.5	78.5 ± 6.3	57.9 ± 6.0	84.



Bar Graph: Pre vs. Post Intervention

1. VAS Score Comparison (Lower = Better)

Group	Pre VAS	Post VAS
KT (Group A)	7.5	3.2
ST (Group B)	7.3	2.8

2. **Kujala Score Comparison (Higher = Better)**

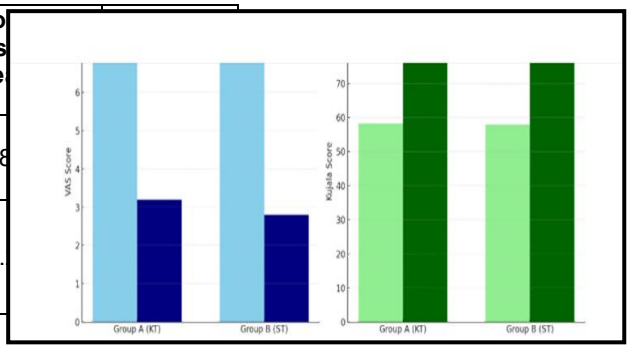
Group	Pre Kujala	Post Kujala
KT (Group A)	58.2	78.5
ST (Group B)	57.9	84.2

- **VAS Scores** decreased in both groups, indicating pain reduction.
- **Kujala Scores** increased, reflecting functional improvement—more significantly in the ST group

Interpretation:

- **VAS Score (Pain):** Both groups showed significant pain reduction, with Group B (ST) showing slightly better improvement. The difference between groups was statistically significant ($p = 0.04$).
- **Kujala Score (Function):** Functional scores improved in both groups, with Group B again showing a greater improvement post-intervention. The intergroup difference was statistically significant ($p = 0.03$).

Bar chart showing the VAS and Kujala score changes before and after treatment in both KT and ST groups:



DISCUSSION

The present study evaluated and compared the effects of Kinesio Taping (KT) and Strength Training (ST) on pain reduction and functional improvement in school-going athletes diagnosed with Patellofemoral Pain Syndrome (PFPS). Both interventions resulted in statistically significant improvements in pain (VAS scores) and functional performance (Kujala scores), indicating that KT and ST are effective conservative approaches in PFPS management [1,6,7].

Group A (KT) demonstrated a more rapid decrease in VAS scores within the first two weeks, supporting findings by Thelen et al. (2008) and Lee & Lee (2013), who reported that KT enhances proprioception, supports patellar alignment, and offers short-term pain relief. However, this improvement plateaued by week 8, suggesting KT may not sustain long-term functional benefits when used alone [10,11].

Group B (ST) exhibited a slower onset of pain relief but showed superior functional improvement by the eighth week, as reflected by a greater increase in Kujala scores. These findings align with previous research (Bolgla & Boling, 2011; Barton et al., 2015; Mörtl et al., 2012), which highlighted the effectiveness of strength training—particularly targeting the quadriceps, hip abductors, and gluteal muscles—in enhancing knee joint stability and reducing biomechanical stress [2,8,9].

The statistically significant difference in functional scores ($p = 0.03$) and pain scores ($p = 0.04$) between the groups at the end of 8 weeks underscores the long-term advantage of ST over KT in functional rehabilitation. This supports the consensus that while

KT may provide an early analgesic effect, ST is more beneficial in addressing the underlying biomechanical deficits contributing to PFPS [3,14].
It is noteworthy that this study was conducted in a school-going athletic population (ages 15–20), a group particularly vulnerable to PFPS due to growth-related musculoskeletal imbalances and high physical demands. The outcomes highlight the importance of tailored rehabilitation strategies in young athletes, emphasizing long-term joint stability and performance restoration

Conclusion

This randomized controlled trial demonstrates that both Kinesio Taping and Strength Training are effective in managing Patellofemoral Pain Syndrome among school-going athletes. However, their outcomes differ in time course and magnitude. Kinesio Taping offers faster initial pain relief but lacks sustained functional benefits. In contrast, Strength Training leads to gradual but superior long-term improvement in knee function and pain reduction.
Thus, for clinicians treating young athletes with PFPS, incorporating structured strength training should be considered a cornerstone of rehabilitation. Kinesio Taping may be used as an adjunct in the initial phase to manage acute symptoms and facilitate engagement in exercise-based therapy. [3,8,14]

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Conflict of interest: Nil
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