10.61882/aassjournal.1676 Video summary on YouTube Infographic summary on LinkedIn

Ann Appl Sport Sci 14(1): e1676, 2026.
e-ISSN: 2322-4479; p-ISSN: 2476-4981

ORIGINAL ARTICLE

Comparison of Jump Performance in Female University Students According to the Application of Mechano-taping: A Cross-Sectional Study

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Submitted October 29, 2025;
Accepted January 10, 2026.

CrossMark

KEYWORDS
Athletic Tape,
Female,
Lower Extremity,
Physical Functional Performance,
Plyometric Exercise.

ABSTRACT
Background. Jump performance is an important indicator of lower-limb neuromuscular function and athletic performance. Mechano-taping has been used to provide mechanical stimulation and facilitate movement control. However, its effects on jump performance and biomechanical variables across different jump types remain unclear. **Objectives.** This study aimed to investigate the effect of mechano-taping on jump performance in female university students by analyzing changes in key biomechanical variables across different jump types. **Methods.** A total of 117 healthy female university students participated in this study. Each participant was randomly assigned to perform both the mechano-taping and non-taping conditions. Participants completed three types of vertical jumps: countermovement jump (CMJ), squat jump (SJ), and stiffness jump (STIFFJ) under both conditions (with and without taping). Jump height, take-off force, peak speed, and take-off speed were measured using a validated jump analysis system, and the differences between conditions were compared. **Results.** A total of 117 female university students were analyzed. Significant increases were observed in jump height, peak speed, and take-off speed under the taping condition compared with the non-taping condition across all jump types ($p<0.05$). However, take-off force showed no significant difference. These findings suggest that mechano-taping may enhance neuromuscular coordination and control during jumping tasks. **Conclusion.** Mechano-taping appears to facilitate improved jump performance by promoting efficient lower limb control and movement speed. It may serve as a useful adjunct for athletic preparation or performance enhancement. Further studies involving diverse age groups and both sexes are warranted to generalize these findings.

INTRODUCTION

The foot and ankle complex consists of 26 bones, 33 joints, and numerous muscles, tendons, and ligaments that coordinate movement and provide structural stability (1). The unique architecture of the foot forms the plantar arch, which distributes ground reaction forces and enhances energy efficiency (2). Among these, the medial longitudinal arch plays a pivotal role in weight-bearing and shock absorption during dynamic activities (3). Its integrity is maintained through the synergistic support of osseous, muscular, and ligamentous structures (4). Dysfunction, such as excessive tension of the triceps surae or impaired function of the posterior tibial tendon, can result in collapse of the medial longitudinal arch (5), ultimately compromising lower-limb mechanics and predisposing individuals to musculoskeletal disorders.

The triceps surae, characterized by its abundance of type II (fast-twitch) fibers, generates rapid force required for activities such as walking, running, and jumping (6). Continuous contraction of this muscle group during gait contributes to maintaining the center of mass over the base of support (BOS), thereby ensuring postural stability (7). The Achilles tendon, the thickest and strongest tendon in the human body, functions as a biological spring that stores and releases elastic energy during locomotion. By facilitating propulsion and attenuating impact forces, it is indispensable in both daily function and athletic performance (8). Dysfunction of the Achilles tendon is strongly associated with impaired mobility and reduced quality of life, underscoring its clinical importance.

Elastic therapeutic tapes have been widely applied in both clinical rehabilitation and sports medicine (2). Taping provides external support for joints, protects soft tissues, and promotes functional movement without the adverse effects of invasive or pharmacological interventions (9). In addition, the elasticity of therapeutic tape enhances proprioceptive input and neuromuscular control, contributing to improved muscle activation and compensating for deficits in strength (10). Taping has also been shown to decrease plantar pressure (11), increase vertical jump torque, and improve proprioception and static balance (10). Furthermore, taping applied to peri-ankle musculature has demonstrated effectiveness in improving joint stability (7). By lifting the skin and creating subcutaneous space, taping can enhance blood and lymphatic circulation, thereby supporting functional recovery (12). Clinical studies have reported improved muscle activation and reduced fatigue following kinesio taping of the lower extremities, with statistically significant results (13).

Among elastic therapeutic tapes, kinesio taping is widely utilized for musculoskeletal rehabilitation (14). Mechano tape, composed of 80% nylon and 20% spandex, demonstrates approximately six times greater tensile strength (310%) compared with conventional kinesio tape. With superior elasticity and moisture absorption, mechano tape is designed to either facilitate or inhibit muscle activity, depending on clinical application (11, 14). Its high elasticity and recovery capacity were developed specifically to reinforce muscle and joint stability (2).

Despite its potential, evidence regarding the clinical effects of mechano-taping applied to the medial longitudinal arch, triceps surae, and Achilles tendon remains limited, particularly in female university students. Given the importance of these anatomical structures in functional stability and performance, such research is essential. Therefore, the present study aims to investigate the effects of mechano-taping on jump performance in female university students. By examining the functional and biomechanical outcomes, this study seeks to provide scientific evidence supporting mechano-taping as a clinically relevant intervention to enhance lower-limb stability and performance. Ultimately, these findings may inform rehabilitation strategies and preventive approaches for populations at risk of lower-limb dysfunction.

MATERIALS AND METHODS

Participants. A total of 124 female university students enrolled at K University were recruited between April and August 2025 for this study. The exclusion criteria were as follows: 1) history of lower extremity injury within the past 6 months; 2) structural deformities or abnormalities of the lower extremities; 3) history of fracture or surgery in the lower extremities that could interfere with participation in the intervention; 4) inability to perform a vertical jump higher than 15 cm from the ground; and 5) hypersensitivity or allergy to taping materials. All participants were fully informed of the study's purpose, procedures, and exercise methods, and only those who voluntarily agreed and provided written informed consent were included.

This study involved no invasive procedures or collection of identifiable personal information; therefore, institutional review board approval was not required under national guidelines. All research procedures were conducted in accordance with the ethical principles of the Declaration of Helsinki.

Study design. This study employed a cross-sectional design to compare differences in jump performance according to the application of mechano-taping. The sample size was calculated using G*Power 3.1.9.7, considering a within-subjects design in which the same participants performed under both conditions (with and without mechano-taping). Based on a pilot study (n = 10), the effect size (d) was estimated at 0.28. With a significance level of $\alpha = 0.05$ and statistical power of $1-\beta = 0.80$, the minimum required sample size was determined to be 113 participants.

Of the 124 participants initially recruited, seven were excluded due to a history of lower extremity surgery (n = 1), inability to achieve a vertical jump height of at least 15 cm (n = 1), or allergy to taping materials (n = 5). Consequently, a total of 117 participants were included in the final analysis, satisfying the required sample size. For random assignment, each participant drew a slip of paper labeled either "Taping O" or "Taping X." Participants who drew "Taping O" first performed jumps with mechano-taping applied to the plantar arch, triceps surae, and Achilles tendon, followed by jumps without taping. Conversely, participants who drew "Taping X" performed jumps without taping first, then repeated the jumps after applying mechano-taping to the same regions. All other conditions were strictly controlled to minimize confounding factors.

Jump performance was assessed using the G-Jump system (BTS G-Jump, BTS Bioengineering, Garbagnate Milanese, Italy). The evaluation included three jump tests: Counter Movement Jump (CMJ), Squat Jump (SJ), and Stiffness Jump (STIFFJ). Each test was performed separately, with a 2-minute rest interval provided between trials to minimize fatigue effects. The data collected via the G-Jump system were analyzed to determine statistical differences in jump performance between the taping and non-taping conditions (Figure 1).

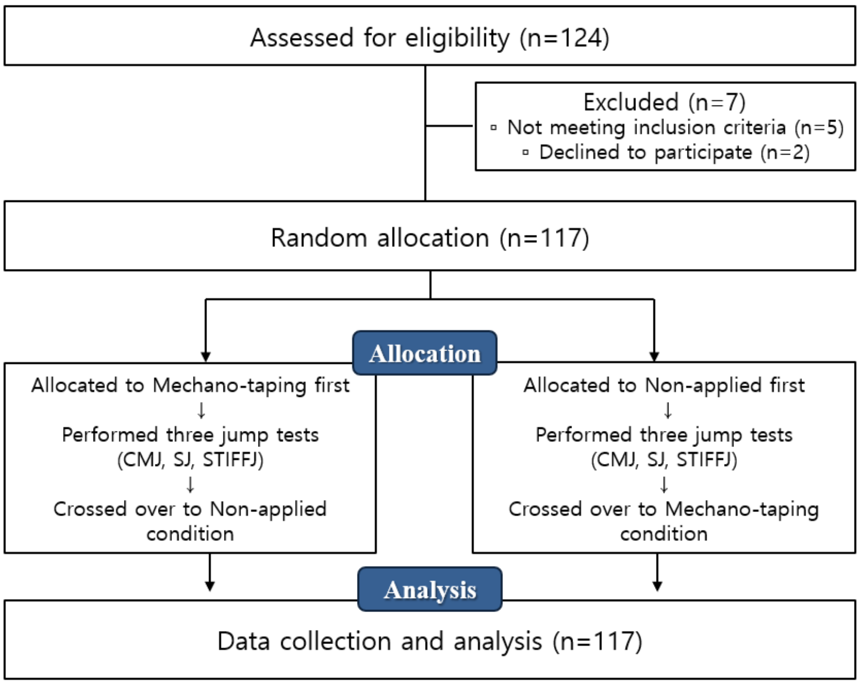

Figure 1. CONSORT Flow chart

Interventions. In this study, the neutral position of the ankle joint was set as the standard posture during the mechano-taping (Mechano tape, TR.Co, Daejeon, Republic of Korea) intervention. Two tape configurations were used, consisting of four and six connected segments, respectively. Each segment measured 5 × 5 cm, resulting in a total tape length of 20 cm (4-segment) and 30 cm (6-segment). For every participant, one strip of each type was applied bilaterally to ensure reproducibility.

Before application, the elastic stretch of the tape was standardized by pulling to approximately 10–15% tension, which corresponds to a visually estimated increase in length of ~1 cm per segment. Tension was monitored using a consistent manual stretch method referenced to the printed segment grid to minimize variability across participants.

- **Plantar arch support (4-segment tape)**: With the participant seated in a long-sitting position, the tape was applied starting from the medial heel and directed diagonally across the plantar arch toward a point just superior to the lateral malleolus (i.e., approximately midway between the distal fibula and ankle joint line) (Figure 2-A).
- **Achilles tendon and calf support (6-segment tape)**: With the participant in a prone position, the tape was applied starting at the heel, wrapping around the Achilles tendon with adequate tension, and extended upward along the calf to the popliteal fossa (Figure 2-B).

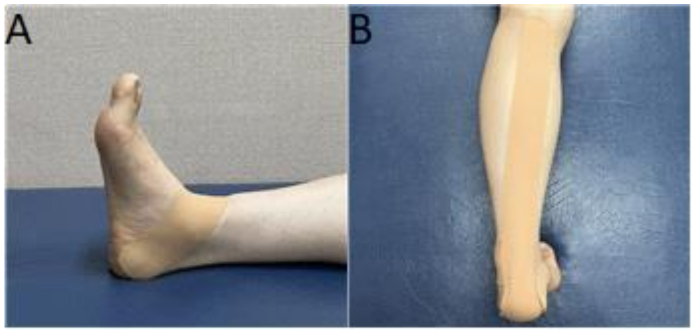

Figure 2. Application of mechano-taping (A. plantar arch support, B. Achilles tendon and calf support).

All taping was performed by a physical therapist trained in therapeutic taping who replicated the same product batch, tension range, length measurements, and anatomical reference points to ensure consistency across participants.

Assessment methods. Jump performance was evaluated using the G-Jump system (BTS G-Jump, BTS Bioengineering, Garbagnate Milanese, Italy). The G-Jump utilizes a wireless G-sensor equipped with a tri-axial gyroscope and a tri-axial accelerometer to measure spatiotemporal parameters of jumping, including jump height, take-off force, peak speed, and take-off speed. The recorded data were analyzed using the G-STUDIO software.

During testing, the sensor was secured to the first sacral segment (S1) using an adjustable belt. The following parameters were obtained:

- Jump height (Height): maximum elevation achieved during the jump.
- Take-off force (Force): force generated when pushing against the ground.
- Peak speed (Peak): maximum velocity reached during the jump.
- Take-off speed (Speed): velocity at the moment of take-off.

All jumps were initiated from a standardized starting posture: participants stood upright with their arms crossed over the chest in an "X" position and feet shoulder-width apart. The following jump protocols were assessed:

- Counter Movement Jump (CMJ): Participants performed a countermovement by flexing the knees maximally, then immediately jumping upward using the rebound motion. After landing, they returned to a knee-flexed position. Each participant performed three trials, and the mean value of the three trials was used for analysis (Figure 3-A).
- Squat Jump (SJ): Participants began from a squat position with knees flexed to approximately 90°, then performed a vertical jump. After landing, they returned to the squat position. Three repetitions were performed, and the mean value was used (Figure 3-B).
- Stiffness Jump (STIFFJ): Participants began from the same starting position as the SJ, but performed 15 consecutive jumps using only the elasticity of the ankles while keeping the knees extended during landing (toe landing). This test primarily assessed lower-limb stiffness and reactive strength, focusing particularly on the ankle joint. The average value of the trials was used for analysis (Figure 3-C).

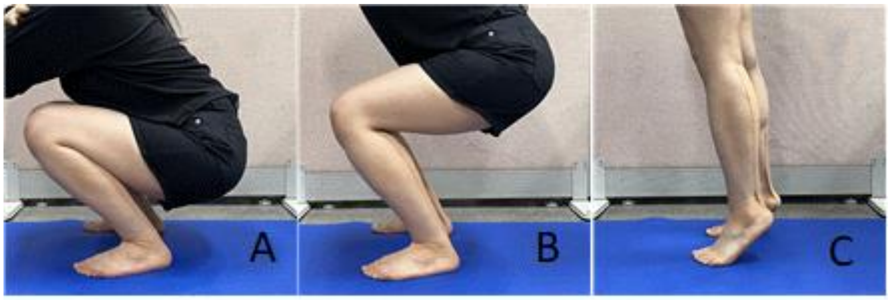

Figure 3. Specific jump postures [A. Countermovement Jump (CMJ), B. Squat Jump (SJ), C. Stiffness Jump (STIFFJ)].

Statistical analysis. The data obtained in this study were analyzed using SPSS version 21.0 (IBM Corp., Armonk, NY, USA). The general characteristics of the participants were presented as means and standard deviations. To verify the normality of jump performance according to the presence or absence of mechano-taping, the Shapiro–Wilk test was conducted. Because the normality assumption was not satisfied, non-parametric analyses were performed. Differences in jump performance were analyzed using the Wilcoxon signed-rank test, and the level of statistical significance (α) was set at 0.05.

RESULTS

A total of 124 female university students were initially recruited. Seven participants were excluded based on predefined criteria (lower-extremity surgery history: n = 1; inability to achieve a ≥15-cm vertical jump: n = 1; taping allergy: n = 5). Thus, data from 117 participants were included in the final analysis. No participants withdrew after enrollment, and no missing outcome data occurred. The general characteristics of the analyzed sample are presented in Table 1.

In Counter Movement Jump (CMJ), jump height, peak speed, and take-off speed were significantly higher with mechano-taping compared to without taping ($p<0.05$), while take-off force showed no significant difference (Table 2).

In Squat Jump (SJ), significant improvements were observed in jump height, peak speed, and take-off speed following mechano-taping application ($p<0.05$), whereas take-off force remained unchanged (Table 2).

Similarly, for Stiffness Jump (STIFFJ), mechano-taping led to significant increases in jump height, peak speed, and take-off speed during STIFFJ ($p<0.05$), with no significant change in take-off force (Table 2).

Table 1. General characteristics (n=117).

Age (year)	22.04±2.66 [a]
Height (cm)	161.64±5.32
Weight (kg)	61.5±14.3
BMI (score)	23.5±4.99

[a]Mean±Standard deviation, BMI: Body mass index

DISCUSSION

This study investigated the effects of mechano-taping on jump performance among female university students using three types of jumps: CMJ, SJ, and STIFFJ. The results showed no significant difference in take-off force between conditions, whereas jump height, peak speed, and take-off speed were significantly higher with mechano-taping application. According to An et al., taping enhances proprioceptive feedback mechanisms, shortens muscle recruitment time during movement, and promotes postural stability, thereby improving muscular function (15). Therefore, the present study has clinical and practical implications, as it provides experimental evidence supporting the beneficial effects of mechano-taping on functional performance in Korean female adults.

The mechano-tape used in this study possesses high elasticity, excellent elastic recovery, and four-way stretch properties. In addition, it allows effective sweat absorption and ventilation, enabling stable adhesion even during dynamic physical activities. For the SJ, Di Domenico et al. reported that jump height varies depending on knee flexion angle, with the greatest height observed at approximately 90° of knee flexion (16). Based on this finding, participants in the present study performed the SJ at a knee flexion angle of about 90°. Similarly, in the CMJ, the starting knee angle has been shown to influence performance. Gheller et al. demonstrated that performing CMJ from a deeper or individually preferred knee flexion angle (around 90° or more) enhances jump height, power output, and interjoint coordination (17). Accordingly, both CMJ and STIFFJ in this study were performed from a maximally flexed starting position to optimize jump performance.

Table 2. Comparison of Jump Performance with and without Mechano-Taping (n=117).

		Non- Mechano-taping	Mechano-taping	z	p	Effect size r (95% CI)
CMJ	Height (cm)	16.3±4.73[a]	16.91±4.96	-2.676	0.007*	0.25 (0.07-0.41)
	Force (kN)	1.44±1.34	1.37±0.67	-1.537	0.124	0.14 (-0.06-0.33)
	Peak (m/s)	2.2±0.31	2.32±0.82	-2.639	0.008*	0.24 (0.06-0.41)
	Speed (m/s)	2.1±0.33	2.15±0.37	-2.516	0.012*	0.23 (0.05-0.40)
SJ	Height (cm)	15.55±4.1	16.37±4.28	-4.177	0.000*	0.39 (0.22-0.52)
	Force (kN)	1.24±0.56	1.28±0.58	-1.546	0.122	0.14 (-0.06-0.33)
	Peak (m/s)	2.28±1.73	2.29±1.14	-3.153	0.002*	0.29 (0.12-0.45)
	Speed (m/s)	2.04±0.29	2.1 ±0.29	-3.688	0.000*	0.34 (0.17-0.49)
STIFFJ	Height (cm)	11.85±3.95	12.8 ±3.95	-3.365	0.001*	0.31 (0.14-0.46)
	Force (kN)	2.66±1.19	2.67±1.11	-.699	0.484	0.07 (-0.14-0.26)
	Peak (m/s)	1.89±0.33	1.96±0.31	-3.055	0.002*	0.28 (0.11-0.44)
	Speed (m/s)	1.83± 0.34	1.91±0.32	-3.207	0.001*	0.30 (0.13-0.45)

*p<0.05, [a]Mean±Standard deviation, CMJ: Counter Movement Jump, SJ: Squat Jump, STIFFJ: Stiffness Jump, Height: Jump height, Force: Take off force, peak: Peak speed, Speed: Take off speed.

When comparing jump performance with and without mechano-taping among female university students, jump height, peak speed, and take-off speed values significantly increased with taping in all three jump types (CMJ, SJ, and STIFFJ), while force did not show a significant difference. This finding aligns with the meta-analysis by Yam et al., which reported that taping can positively affect lower limb strength and vertical jump performance (18). These results suggest that mechano-taping may enhance performance variables such as jump height, peak speed, and take-off speed even in healthy young females, indicating its potential to improve athletic performance across various populations. Similarly, Huang et al. reported that applying Kinesio taping to the calf in healthy adults increased the vertical ground reaction force (VGRF) and improved jump performance (19). Liu et al. also found that taping reduced ankle inversion angle and moment, thereby enhancing ankle stability and increasing knee flexion angle to buffer VGRF effectively (20). These biomechanical mechanisms may reduce energy loss and improve propulsive efficiency during jump execution, leading to improvements in jump height, peak speed, and take-off speed. Moreover, the enhanced proprioceptive input provided by taping may improve joint position sense, enabling more precise and efficient motor performance.

In this study, no significant differences in take-off force were observed between the mechano-taping and non-taping conditions across all jump types (CMJ, SJ, and STIFFJ). According to Kümmel et al., ankle taping during jumping can influence not only the taped joint itself but also the biomechanical motion of adjacent joints (21). The maximal vertical ground reaction force generated during a jump is determined by the coordinated net moments of the hip extensors, knee extensors, and ankle plantar flexors (22). Since the mechano-taping in this study was applied mainly to the arch, calf muscles, and Achilles tendon region, it likely had minimal direct influence on the major force-generating joints such as the hip and knee. This may explain the absence of significant changes in force. Moreover, Shadmehr et al. reported that including an arm swing during jump execution increases force by enhancing energy transfer and the displacement of the center of mass (CoM) (23). However, as participants in this study performed the jumps without arm swing, the contribution of this kinetic factor was excluded. Therefore, the non-significant difference in force suggests that mechano-taping may not directly increase maximal muscular strength, but rather contributes more to movement coordination and efficiency.

This study has several limitations. First, the participants were limited to female university students in their twenties, which restricts the generalizability of the findings to the broader population. Second, individuals with tape allergies were excluded from participation, which may have reduced the diversity and representativeness of the sample. Third, in some participants, the jump height did not reach the device's detection threshold, resulting in missing data that were excluded from the final analysis. Fourth, the intervention and measurement order was not analyzed for potential order effects, and data processing was not blinded to group allocation or taping condition; therefore, the possibility of assessor bias cannot be ruled out. Therefore, future research should include participants of various ages and genders, employ more precise and blinded measurement procedures, and utilize hypoallergenic taping materials to more accurately and reliably verify the biomechanical effects of mechano-taping.

CONCLUSION

This study aimed to compare the effects of mechano-taping application on jump performance in female university students. A total of 117 participants were analyzed under two conditions: with mechano-taping applied to the plantar arch, Achilles tendon, and calf regions, and without taping. After performing three types of jumps CMJ, SJ, and STIFFJ the variables of jump height, take-off force, peak speed, and take-off speed were compared. The results revealed significant differences in jump height, peak speed, and take-off speed, but not in take-off force. These findings suggest that mechano-taping may enhance lower limb muscle control and neuromuscular coordination during jumping, thereby contributing to improved jump height and velocity. Therefore, mechano-taping can be considered a supportive method during pre-exercise preparation or as an aid for performance enhancement. Furthermore, the results of this study may serve as foundational data for future research investigating the biomechanical effects of mechano-taping.

APPLICABLE REMARKS

- Mechano-taping significantly improves jump height, peak speed, and take-off speed across CMJ, SJ, and STIFFJ, without significantly affecting take-off force.
- Mechano-taping may be used as an adjunctive strategy to facilitate lower-limb movement control and enhance jump performance during athletic preparation and performance training.

AUTHORS' CONTRIBUTIONS

Study concept and design: So-Hyun Park, Yu-Mi Park, Sam-Ho Park. Acquisition of data: So-Hyun Park, Yu-Mi Park. Analysis and interpretation of data: So-Hyun Park, Sam-Ho Park. Drafting the manuscript: So-Hyun Park, Yu-Mi Park. Critical revision of the manuscript for important intellectual content: Sam-Ho Park. Statistical analysis: Sam-Ho Park. Administrative, technical, and material support: Sam-Ho Park. Study supervision: Sam-Ho Park.

ACKNOWLEDGMENTS

Not applicable.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

FINANCIAL DISCLOSURE
Not applicable.

FUNDING/SUPPORT
No funding was received for this study.

ETHICAL CONSIDERATION
This study was conducted in accordance with the principles of the Declaration of Helsinki. All participants were fully informed about the study purpose and procedures, and provided their voluntary written consent before participation.

ROLE OF THE SPONSOR
Not applicable.

ARTIFICIAL INTELLIGENCE (AI) USE
No AI-assisted technologies were used in the preparation of this manuscript.

REFERENCES
1. Hillstrom HJ, Song J, Kraszewski AP, Hafer JF, Mootanah R, Dufour AB, et al. Foot type biomechanics part 1: Structure and function of the asymptomatic foot. *Gait & Posture*. **2013**;37(3):445-51. doi:10.1016/j.gaitpost.2012.09.007.
2. Kim S, Song J-Y, Lee M-M. Mechanical Changes in Foot and Function According to Types of Elastic Tapes: Focusing on Individuals with Flexible Flatfoot. *Physical Therapy Rehabilitation Science*. **2024**;13(4):423. doi:10.14474/ptrs.2024.13.4.423.
3. Lee E-S. Impact of Intrinsic Foot Muscle Training and Navicular Mobilization on Flexible Flatfeet to Improve Life-care. *Journal of the Korea Entertainment Industry Association*. **2019**;13(5):195. doi:10.21184/jkeia.2019.7.13.5.195.
4. Kirby KA. Longitudinal arch load-sharing system of the foot. *Revista Española de Podología*. **2017**;28:e18-e26. doi:10.1016/j.repod.2017.03.003.
5. Pfeiffer M, Kotz R, Ledl T, Hauser G, Sluga M. Prevalence of flat foot in preschool-aged children. *Pediatrics*. **2006**;118(2):634-9. doi:10.1542/peds.2005-2126. PMid:16882817.
6. Lievens E, Klass M, Bex T, Derave W. Muscle fiber typology substantially influences time to recover from high-intensity exercise. *Journal of Applied Physiology*. **2020**;128(3):648-59. doi:10.1152/japplphysiol.00636.2019.
7. Jang GH, In TS, Kim KH. Effects of Heel Raising Exercise with Kinesio Taping on Triceps Surae Muscle Activity and Balance in 20s Adults. *The Journal of Korean Academy of Physical Therapy Science*. **2022**;29(4):17-26. doi:10.26862/jkpts.2022.12.29.4.17.
8. Zhang X, Deng L, Xiao S, Li L, Fu W. Sex differences in the morphological and mechanical properties of the Achilles tendon. *International Journal of Environmental Research and Public Health*. **2021**;18(17):8974. doi:10.3390/ijerph18178974.
9. Jaraczewska E, Long C. Kinesio Taping in Stroke: Improving Functional Use of the Upper Extremity in Hemiplegia. *Topics in Stroke Rehabilitation*. **2006**;13(3):31-42. doi:10.1310/33KA-XYE3-QWJB-WGT6.
10. Lee H, Lim H. Effects of Double-Taped Kinesio Taping on Pain and Functional Performance due to Muscle Fatigue in Young Males: A Randomized Controlled Trial. *International Journal of Environmental Research and Public Health*. **2020**;17(7):2364. doi:10.3390/ijerph17072364.
11. Kim J, Kim B, Choi J. Preliminary Study on the Comparison of Calcaneus Taping and Arch Taping Methods for Flexible Flatfoot Subjects. *Physical Therapy Korea*. **2023**;30(4):281-7. doi:10.12674/ptk.2023.30.4.281.
12. Lee M-S. Effects of kinesio taping on muscle strength improvement, and the blood markers of muscle fatigue and damage: The Graduate School of Yonsei University; **2007**.
13. Yam ML, Yang Z, Zee BC, Chong KC. Effects of Kinesio tape on lower limb muscle strength, hop test, and vertical jump performances: a meta-analysis. *BMC Musculoskeletal Disorders*. **2019**;20(1):212. doi:10.1186/s12891-019-2564-6.
14. Joo H-S, Park S-H, Lee M-M. The Comparision of the Static Balance, Contact Area, and Plantar Pressure of Flexible Flat Foot According to Elastic Taping. *Physical Therapy Rehabilitation Science*. **2022**;11(4):421-9. doi:10.14474/ptrs.2022.11.4.421.

15. An B-K, Lee S-H, Kim S-J, Park D-H. Effects of Kinesio Taping on Jumping Performance and Blood Lactate in Elite Male Volleyball Athletes. *Exercise Science*. **2017**;26(1):69-76. doi:10.15857/ksep.2017.26.1.69.
16. Di Domenico F, Esposito G, Aliberti S, D'Elia F. Determining the Relationship between Squat Jump Performance and Knee Angle in Female University Students. *Journal of Functional Morphology and Kinesiology*. **2024**;9(1):26. doi:10.3390/jfmk9010026.
17. Gheller RG, Dal Pupo J, Ache-Dias J, Detanico D, Padulo J, dos Santos SG. Effect of different knee starting angles on intersegmental coordination and performance in vertical jumps. *Human Movement Science*. **2015**;42:71-80. doi:10.1016/j.humov.2015.04.010.
18. Yam ML, Yang Z, Zee BC-Y, Chong KC. Effects of Kinesio tape on lower limb muscle strength, hop test, and vertical jump performances: A meta-analysis. *BMC Musculoskeletal Disorders*. **2019**;20(1):212. doi:10.1186/s12891-019-2564-6.
19. Huang C-Y, Hsieh T-H, Lu S-C, Su F-C. Effect of the Kinesio tape to muscle activity and vertical jump performance in healthy inactive people. *BioMedical Engineering OnLine*. **2011**;10:70. doi:10.1186/1475-925X-10-70.
20. Liu Q, Wang L, Dai F, Wang G, Chen P. Effects of ankle Kinesio taping on knee and ankle joint biomechanics during unanticipated jumps in collegiate athletes. *PLOS ONE*. **2024**;19(8):e0305480. doi:10.1371/journal.pone.0305480.
21. Kümmel J, Mauz D, Blab F, Vieten M. Effect of kinesio taping on performance in countermovement jump. *ISBS-Conference Proceedings Archive***2011**.
22. Farris DJ, Lichtwark GA, Brown NAT, Cresswell AG. The role of human ankle plantar flexor muscle–tendon interaction and architecture in maximal vertical jumping examined in vivo. *Journal of Experimental Biology*. **2016**;219(4):528-34. doi:10.1242/jeb.126854.
23. Shadmehr A, Hejazi SM, Olyaei G, Talebian S. Effect of countermovement and arm swing on vertical stiffness and jump performance. *Journal of Contemporary Medical Sciences*. **2016**;2(5):25-7. doi:10.22317/jcms.v2i5.66.