



The Healer Journal of Physiotherapy and Rehabilitation Sciences



Journal homepage: www.thehealerjournal.com

Effects of Kinesio Taping and Core Strengthening on Pain, Menstrual Symptoms, and Physical Activity among Nulligravida Women with Primary Dysmenorrhea

Aiman Waris¹, Mehwish Khalid^{1*}, Adeela Khan¹, Hassan Bin Akram²

¹Faculty of Rehabilitation Sciences, Lahore University of Biological and Applied Sciences, Lahore, Pakistan ²Ghurki Trust and Teaching Hospital, Lahore, Pakistan

KEYWORDS

Core strengthening
Dysmenorrhea
Kinesio taping
Nulligravida
Physical activity

DECLARATIONS

Conflict of Interest: None
Funding Source: None

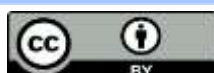
CORRESPONDING AUTHOR

Mehwish Khalid
Faculty of Rehabilitation
Sciences, Lahore University
of Biological and Applied
Sciences, Lahore, Pakistan
mehwish.khalid@ubas.edu.pk

ABSTRACT

Background: Dysmenorrhea is the most prevalent gynaecological issue among teenage and young adult females. Severe pain and discomfort can significantly impact a person's overall health and quality of life. **Objective:** To determine the effects of Kinesio taping and core strengthening on pain, menstrual symptoms, and physical activity among nulligravida women with primary dysmenorrhea. **Methodology:** A single-blinded controlled trial was conducted from June to December 2024 at the Department of Physical Therapy, Ghurki Trust Teaching Hospital. The Lahore College of Physical Therapy issued an ethical approval letter. Written informed consent was obtained before the initiation of treatment. A total of 50 nulligravida women aged 16–24 years with regular menstrual cycles were enrolled via non-probability consecutive sampling. The inclusion criteria consisted of nulligravida females aged 16–24 years with regular menstrual cycles. Exclusion criteria included females with pelvic pain of musculoskeletal origin, multigravida females, and those with any other gynaecological conditions. The experimental group received Kinesio taping and core strengthening; the control group received core strengthening only. The Menstrual Distress Questionnaire, the International Physical Activity Questionnaire, and the Numeric Pain Rating Scale were used to measure the menstrual symptoms, physical activity, and pain, respectively. Normality was assessed using the Kolmogorov–Smirnov test. Wilcoxon, t-tests, and Mann–Whitney U tests were used for between and within-group differences. **Results:** The Wilcoxon signed-rank test demonstrated a significant reduction in pain and increased physical activity in both groups ($p < 0.001$). The Mann–Whitney U test revealed significantly better outcomes in pain and physical activity in the experimental group post-intervention. The independent t-test showed significant improvements in menstrual symptoms, distress scores, and menstrual symptom distress in the experimental group ($p \leq 0.01$), but no significant difference in the Menstrual Symptom Index between groups. **Conclusion:** Combined Kinesio taping and core strengthening are more effective than core strengthening alone in improving pain, menstrual symptoms, and physical activity in nulligravida women with primary dysmenorrhea.

How to cite the article: Waris A, Khalid M, Khan A, Akram HB. Effects of Kinesio Taping and Core Strengthening on Pain, Menstrual Symptoms, and Physical Activity among Nulligravida Women with Primary Dysmenorrhea. The Healer Journal of Physiotherapy and Rehabilitation Sciences. 2025;5(2):250–255.



Copyright©2025. The Healer Journal of Physiotherapy and Rehabilitation Sciences.
This work is licensed under [Creative Commons Attributions 4.0 International license](https://creativecommons.org/licenses/by/4.0/).

INTRODUCTION

Dysmenorrhea is the most prevalent gynaecological issue among teenage and young adult females. Severe pain and discomfort can significantly impact a person's overall health and quality of life.^{1,2} During menstruation, the hormone prostaglandin causes the uterus to contract, resulting in dysmenorrhea, a painful period marked by painful cramps. Primary dysmenorrhea (PD), which is characterised by menstrual pain without an underlying pelvic pathology or organic disease, and secondary dysmenorrhea (SD), which is characterised by monthly pain along with an underlying pelvic pathology, are the two pathophysiological variants of dysmenorrhea.³ For PD, both pharmaceutical and non-pharmacological treatment options are available.

Pharmacological treatments such as NSAIDs and oral contraceptives are commonly prescribed but may lead to side effects like nausea, dizziness, and gastrointestinal discomfort.⁴ Consequently, non-pharmacological interventions such as exercise therapy, TENS, acupuncture, and Kinesio Taping (KT) are gaining popularity.⁵ A cross-sectional study conducted among 550 female university students in Lebanon reported a PD prevalence of 80.9%, highlighting its global impact.⁶ Lifestyle modifications, including reduction in caffeine and salt intake, cessation of smoking, and use of heat therapy, are also reported to offer symptomatic relief. Relaxation techniques, which reduce muscle spasm and enhance myometrial perfusion, are particularly beneficial. However, empirical evidence supporting their effectiveness remains limited.⁷

Kinesio tape is a thin elastic band that supports fascia and soft tissue, increases blood and lymphatic circulation, reduces pain, and provides kinesthetic awareness. It can stay on the skin for three days and is used to stabilise muscles and joints without limiting the range of motion. Its elastic characteristics resemble human skin, and it is commonly used by physiotherapists and athletes for treating musculoskeletal conditions like Plantar Fasciitis, Tennis Elbow, knee and shoulder discomfort, and ankle injuries.⁸ Exercise, particularly core strengthening (CS), promotes endorphin release and improves posture and trunk stability. Exercises like planks and pelvic bridges strengthen the rectus abdominis, obliques, and pelvic floor, alleviating PD

symptoms.⁹ Despite the known benefits of KT and CS independently, few studies have investigated their combined effect on PD. This study aimed to bridge this gap by evaluating the effects of Kinesio taping and core strengthening on pain, menstrual symptoms, and physical activity among nulligravida women with primary dysmenorrhea.

METHODOLOGY

A single-blinded randomised controlled trial was conducted from June to December 2024 at the Department of Physical Therapy, Ghurki Trust Teaching Hospital. The Lahore College of Physical Therapy (LCPT, LMDC) issued an ethical approval letter. Written informed consent was obtained before the initiation of treatment. A total of 50 nulligravida women aged 16–24 years with regular menstrual cycles were enrolled via non-probability consecutive sampling. Four participants were excluded, and 46 were randomly assigned to two groups (23 in each) using a computer-generated randomisation method.² The inclusion criteria consisted of nulligravida females aged 16–24 years with regular menstrual cycles. Exclusion criteria included females with pelvic pain of musculoskeletal origin, multigravida females, and those with any other gynaecological conditions.¹⁰

The experimental group received KT and CS; the control group received CS only. KT was applied using elastic K-Active tape during the first three days of menstruation across two consecutive cycles in a cross pattern over the lower abdomen and an additional strip over the L5 region, using the copula technique.¹¹ CS exercises, including plank, curl-up, pelvic bridging, cat, and camel, were performed for 10 minutes, 4 times per week, over 8 weeks.⁹ The Menstrual Distress Questionnaire, the International Physical Activity Questionnaire (IPAQ), and the Numeric Pain Rating Scale (NPRS) were used to measure the menstrual symptoms, physical activity, and pain, respectively. Statistical analysis was conducted using SPSS version 26. Normality was assessed using the Kolmogorov–Smirnov test. Wilcoxon, t-tests, and Mann–Whitney U tests were used for between and within-group differences. Significance was set at $p < 0.05$.

RESULTS

Table 1 shows that the baseline characteristics of the experimental and control groups were

Table 1: Descriptive statistics of baseline characteristics

Variables	Experimental Group	Control Group
	Mean±SD	Mean±SD
Age	21.55±2.21	22.15±1.78
Duration of menstruation	4.65±1.63	5.25±1.55
Weight	58.60±8.80	59.60±7.69
Cycle days	27.30±2.02	27.60±1.93

comparable. The mean age was 21.55±2.21 years. In the intervention group, and 22.15±1.78 years in the control group. Menstrual duration averaged 4.65±1.63 and 5.25±1.55 days/week, weight was 58.60±8.80 kg and 59.60±7.69 kg, and cycle length was 27.30±2.02 and 27.60±1.93 days/month for

the experimental and control groups, respectively. As mentioned in Table 2, most variables in both groups appear to be normally distributed, based on p-values greater than 0.05. However, Pre-NPRS is not normally distributed in both groups. Pre-IPAQ is not normal in the control group.

Table 2: Kolmogorov Smirnov test

Variables	Mean±SD		Skewness		p-value	
	Experimental	Control	Experimental	Control	Experimental	Control
Pre-NPRS	7.9(0.96)	7.95(1.05)	-0.55	-1.40	0.00	0.00
Pre-IPAQ	56.85(11.84)	50.3(9.41)	0.32	1.11	0.20	0.02
Pre-DS	27.45(19.87)	23.65(17.07)	0.39	0.41	0.20	0.20
Pre-MS	41.65(14.08)	38.00(12.15)	-0.06	0.32	0.20	0.20
Pre-MESI	2.36(2.12)	0.37(0.42)	-0.88	-0.96	0.07	0.59
Pre-MSD	0.7(0.16)	0.67(0.22)	0.12	1.49	0.20	0.14

In Table 3, the Wilcoxon Signed-Rank test showed significant within-group improvements, with a reduction in pain and an increase in physical activity (IPAQ) scores following the intervention ($p<0.001$), indicating the treatment's effectiveness. Table 4 shows that the Mann-

Whitney U test revealed no baseline differences between groups. Post-intervention, the experimental group showed significantly greater improvements in pain and physical activity ($p=0.01$ and 0.00), indicating the intervention's effectiveness.

Table 3: Within-group mean differences of pain and physical activity

Variable	Mean ranks		Sum of ranks	z-value	p-value
Pain Pre-Post	Negative Ranks	19.12	650.0	-5.06	0.00
	Positive Ranks	8.00	16.00		
IPAQ Pre-Post	Negative Ranks	10.00	60.00	-4.60	0.00
	Positive Ranks	21.82	720.00		

In Table 5, the mean difference of menstrual symptoms between groups was calculated by using an independent t-test showed improved results for the experimental group as compared to the control group. Distress scores (DS) ($t=-2.42$, $p=0.02$), Menstrual symptoms (MS) ($t=-3.09$,

$p=0.00$), and Menstrual Symptom Distress (MSD) ($t=-2.74$, $p=0.00$) were significantly decreased in the experimental group, demonstrating the efficacy of the intervention. The Menstrual Symptoms Index (MESI) did not, however, show any significant changes between groups either

Table 4: Between-group mean differences of pain and physical activity

Variable	Group	Mean rank	Sum of ranks	p-value	z-value
Pre-Pain	Experimental	19.95	399	0.751	-0.31
	Control	21.05	421		
Post-Pain	Experimental	16	320	0.01	-2.5
	Control	25	500		
Pre-IPAQ	Experimental	23.488	469.5	0.1	-1.61
	Control	17.53	350.5		
Post-IPAQ	Experimental	26.55	531	0	-3.27
	Control	14.45	289		

Table 5: Between-group mean differences of menstrual symptoms

Independent Samples T-Test for Equality of Means						
Variables	Group	Mean±SD	T	df	Sig. 2-tailed	Mean difference
Pre-DS	Experimental	21.70 ± 16.28	-1.33	38	0.18	-7.70
	Control	29.40 ± 19.94				
Post-DS	Experimental	13.05 ± 8.01	-2.42	38	0.02	-7.85
	Control	20.90 ± 12.04				
Pre-MESI	Experimental	2.23 ± 0.37	1.97	38	0.05	0.24
	Control	2.12 ± 0.42				
Post-MESI	Experimental	1.79 ± 0.31	0.14	38	0.88	0.01
	Control	1.77 ± 0.45				
Pre-MS	Experimental	38.70 ± 12.37	-0.53	38	0.59	-2.25
	Control	40.95 ± 14.05				
Post-MS	Experimental	22.75 ± 7.03	-3.09	38	0.00	-7.75
	Control	30.50 ± 8.69				
Pre-MSD	Experimental	1.13 ± 0.21	6.56	38	0.00	0.45
	Control	0.67 ± 0.22				
Post-MSD	Experimental	0.57 ± 0.22	-2.74	38	0.00	-0.28
	Control	0.85 ± 0.39				

before or after the intervention ($t=0.14$, $p=0.88$) However, there was no significant difference in DS before and after the intervention.

DISCUSSION

This study aimed to compare the efficacy of KT and CS exercises in alleviating pain, improving menstrual symptoms, and enhancing physical activity levels among nulligravida women with PD. The findings demonstrated that both interventions were effective in reducing pain severity; however, the combined approach (KT + CS) yielded superior results compared to core

strengthening alone. Between-group comparisons further revealed that improvements in physical activity and menstrual symptoms were statistically significant in both groups, with no notable differences between them. Although KT and CS have been studied for pain relief in PD, their effects on menstrual symptoms and physical activity remain under-explored. The findings from this study also align with those of previous research examining a link between Kinesio tape and reducing pain intensity. Our observed pain reduction (mean NPRS decrease of 2.15 points in the KT+CS group versus 1.05 in CS alone) aligns closely with Boguszewski et al., who reported a

1.8-point NPRS decrease following KT in primary dysmenorrhea ($p=0.004$).²

A study published by Hanife Dogan in 2020 also showed a significant decrease in pain intensity as our study ($p<0.05$). The study revealed that there was a reduction in pain within 24 hours after the application of Kinesio tape, and pain intensity was diminished by approximately 50%.¹² Similarly, a study was done to examine the Effect of Kinesio Tape on Quality of Life and Functional Independence in Nulligravida Women with PD also reported significant improvements ($p<0.001$), particularly following two months of consecutive taping. These findings reinforce the notion that KT not only reduces pain but also contributes positively to functional independence and overall quality of life, which are consistent with our study findings.¹³

Another study conducted to compare the effectiveness of core strengthening exercises for phase I and phase II of the menstrual cycle in primary dysmenorrhea reported similar outcomes. Using paired t-tests, the authors found a significant difference between pre- and post-test scores in both groups ($p<0.0001$), suggesting that core strengthening exercises are highly effective in alleviating dysmenorrhea-related symptoms.⁹ In our study, significant post-intervention improvements were observed in the MSI, MS, and DS, with p-values of 0.000, 0.00, and 0.01, respectively.

CONCLUSION

Combined Kinesio taping and core strengthening are more effective than core strengthening alone in improving pain, menstrual symptoms, and physical activity in nulligravida women with primary dysmenorrhea.

DECLARATIONS

Consent to participate: Written consent had been obtained from patients. All methods were performed following the relevant guidelines and regulations.

Availability of Data and Materials: Data will be made available upon request. The corresponding author will submit all dataset files.

Competing interests: None

Funding: No funding source involved.

Authors' contributions: All authors had read and approved the final manuscript.

CONSORT Guidelines: All methods were performed following the relevant guidelines.

REFERENCES

1. Harel Z. Dysmenorrhea in adolescents and young adults: etiology and management. *Journal of Pediatric and Adolescent Gynecology* 2006; 19(6): 363–71.
DOI: 10.1016/j.jpog.2006.09.001
2. Boguszewski D, Borowska J, Szymańska A, Adamczyk JG, Lewandowska M, Białoszewski D. Effectiveness of kinesiotaping for the treatment of menstrual pain. *Physiotherapy Quarterly* 2020; 28(4): 20–4.
DOI:10.5114/pq.2020.96230
3. Guimarães I, Póvoa AM. Primary dysmenorrhea: assessment and treatment. *Revista Brasileira de Ginecologia e Obstetrícia* 2020; 42: 501–7.
DOI: 10.1055/s-0040-1712131
4. Elverişli GB, Armağan N, Atilgan E. Comparison of the efficacy of pharmacological and nonpharmacological treatments in women with primary dysmenorrhea: randomised controlled parallel-group study. *Ginekologia Polska* 2023; 94(9): 687–97.
DOI: 10.5603/GP.a2022.0009
5. Zapała B, Ząber A, Gacoń E, et al. The non-pharmacological treatment of primary dysmenorrhea-efficiency and safety. *Journal of Education, Health and Sport* 2023; 30(1): 79–86.
DOI:10.12775/JEHS.2023.30.01.007
6. Karout S, Soubra L, Rahme D, Karout L, Khojah HM, Itani R. Prevalence, risk factors, and management practices of primary dysmenorrhea among young females. *BMC Women's Health* 2021; 21: 1–14.
DOI: 10.1186/s12905-021-01532-w
7. Agustin Y, Afrina R, Rukiah N. Giving warm compresses with progressive muscle relaxation techniques can reduce pain intensity in dysmenorrhea. *Journal of Complementary Nursing* 2022; 1(3): 99–105.
DOI:10.53801/jcn.v1i3.51
8. Gürşen C, İnanoğlu D, Kaya S, Akbayrak T, Baltacı G. Effects of exercise and Kinesio taping on abdominal recovery in women with cesarean section: a pilot randomised controlled trial. *Archives of Gynecology and Obstetrics* 2016; 293: 557–65.
DOI: 10.1007/s00404-015-3862-3
9. Zainab S, Nithyashree P, Jumanah R, Kamalakannan M, Prathap S, Kumaresan A. A study to compare the effectiveness of core

strengthening exercises for phase I and phase II of menstrual cycle in primary dysmenorrhea subjects. *Biomedicine* 2021; 41(2): 315–7.

DOI: 10.51248/.v41i2.804

10. Adil R, Zaigham U. Prevalence of primary dysmenorrhoea and its effect on instrumental activities of daily living among females from Pakistan. *Physiotherapy Quarterly* 2021; 29(4): 65–9.

DOI:10.5114/pq.2021.105754

11. Patel F, Dhupkar A. Effect of Kinesiotaping and Pelvic Tilts on Menstrual Symptom Questionnaire and Visual Analogue Scale in Primary Dysmenorrhoea in Females Aged 18-30 Years. *International Journal of Medical Research & Health Sciences* 2020; 10(11):168-176.

DOI: 10.15621/ijmrhs/2020/v10i11.2721

12. Doğan H, Eroğlu S, Akbayrak T. The effect of kinesio taping and lifestyle changes on pain, body awareness and quality of life in primary dysmenorrhea. *Complementary Therapies in Clinical Practice* 2020; 39: 101120.

DOI: 10.1016/j.ctcp.2020.101120

13. Kumar S, Kanti V, Potturi G, Kumar P. Effect of Kinesio tape application on quality of life and functional independence among Nulligravida women with Primary dysmenorrhea: A randomised control trial. *Journal of Disability Studies* 2023; 9(1): 13–6.