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EFFECTS OF AEROBIC EXERCISE VERSUS CONNECTIVE TISSUE MASSAGE ON SLEEP, MOTHER BABY BONDING AND PSYCHOLOGICAL STATUS IN POSTPARTUM WOMEN: A PRELIMINARY STUDY

Yasemin Karaaslan¹, Ayse Guler Okyay², Seyda Toprak Celenay³

1. Hatay Mustafa Kemal University, Health Sciences Faculty, Department of Physiotherapy and Rehabilitation, Hatay, Turkey,
2. Hatay Mustafa Kemal University, Faculty of Medicine, Department of Gynecology and Obstetrics, Hatay, Turkey,
3. Ankara Yildirim Beyazit University, Health Sciences Faculty, Department of Physiotherapy and Rehabilitation, Ankara, Turkey

Hypothesis / aims of study

The postpartum period is a critical period for women and can significantly impact mothers' mental and physical health. During this period, most women experience significant changes and problems in their sleep patterns due to hormonal changes and newborn care responsibilities. The psychological state of women may deteriorate during this period due to reasons such as new roles added to postpartum women, body changes, sleep disorders, and insufficient physical and spousal support. With all these factors, negativities may arise in mother-baby bonding (1).

Some physiotherapy approaches such as exercise and massage can be used to reduce the problems that may occur in postpartum women. It has been documented that physical activity and exercise are necessary and beneficial in reducing women's body weight in the postpartum period, increasing lactation, improving psychological status, and regulating general health (2). However, there is a need for studies examining the effects of aerobic exercise on postpartum women's sleep, mother-infant bonding and psychological state. Connective tissue massage (CTM) also restores the balance between the sympathetic and parasympathetic components of the autonomic nervous system, regulates the endocrine system and increases circulation. Thus, CTM can help general body relaxation, reduce muscle spasm, increase plasma β -endorphins and sleep quality (3). To the best of our knowledge, there was no study examining the effects of CTM on the negative symptoms such as sleep or psychological disorders of postpartum women.

In this context, this study aims to compare the effects of aerobic exercise and CTM on sleep, mother-infant bonding and psychological state in postpartum women.

Study design, materials and methods

This randomized clinical study was conducted between February 2023 and February 2024. Literate women between the ages of 18-45 years and in the 6th week-1 year postpartum were included in the study. Those with orthopedic, neurologic, rheumatologic, psychiatric, mental or any systemic chronic disease, those with cardiac problems that may prevent exercise, those with suspicion of pregnancy, those with malignancy, those with infection, those who did not regularly participate in the treatment program were not included in the study. Women were randomly divided into 2 groups: Aerobic exercise group (aerobic exercise program) and CTM group (CTM application).

The aerobic exercise program was determined as a home program in the form of a walking program. As part of the warm-up and cool-down periods, 5 minutes of light intensity walking was recommended. Exercise intensity was performed according to the rating of perceived exertion based on the Borg Scale (12-14 and 14-16). The exercise program was applied for 20-30 minutes, 3 days a week for 8 weeks. It was followed with exercise charts.

The CTM application started in the lumbosacral area, and progressed to the lower thoracic area, the scapular area, the interscapular area and the cervical area according to the vascular response of the cutaneous tissue. During the application, patients were sitting with the thigh and foot supported with 90° hip and knee flexion. The back was unclothed and straight for optimal tension of the connective tissue. Both short and long tissue strokes with the distal interphalangeal joint at approximately 45° flexion of the middle finger of the physiotherapist were performed. One session of the application took about 20-30 minutes. CTM was applied 3 days per week for 8 weeks.

At pre and post interventions, postpartum sleep quality with the "Postpartum Sleep Quality Scale (PSQS)", the bonding between mother and baby with the "Mother to Infant Bonding Scale (MIBS)", and the depression level in the postpartum period with the "Edinburgh Postnatal Depression scale (EPDS)" were evaluated.

For statistical analysis, the SPSS 26.0 program was used. Chi-square analysis for categorical variables and t-tests for continuous variables were used in demographic and physical parameters comparisons of the two groups. PSQS, MIBS, EPDS values of pre and post interventions were compared within each group (Aerobic exercise group and CTM group) using the Paired sample t-test. Within each group, the magnitudes of change scores between pre and post interventions were computed. Comparisons of scores indicating improvements in PSQS, MIBS, EPDS were carried out using an independent sample t-test, contrasting the two groups. P values less than 0.05 were considered statistically significant.

Results and interpretation

A total of 30 women with postpartum were included in this study. Demographic and physical characteristics of women with postpartum were shown in Table 1. No side effects were observed in any of the women during the applications.

Table 1. Demographic and Physical Features

	Aerobic Exercise Group (n=15)	CTM Group (n=15)	p value
Age (years) (mean±SD)	29.8±5.41	3.46±5.97	0.751*
BMI (mean±SD)	25.56±2.53	25.63±2.90	0.945*
Educational status			0.301†
Secondary school	2 (13.3)	4 (26.7)	
High school	6 (40)	6 (40)	
University	7 (46.7)	5 (33.3)	
Working status			0.011†
Yes	3 (20)	5 (33.3)	
No	12 (80)	10 (66.7)	
Type of birth			0.003†
Vajinal birth	4 (26.7)	5 (33.3)	
Cesarean birth	10 (66.7)	8 (53.3)	
Both of them	1 (6.7)	2 (13.37)	
Number of birth	1.60±0.74	1.80±0.77	0.457*
Number of pregnancies	1.66±0.89	1.86±0.91	0.471*

BMI; Body Mass Index

Values expressed as mean±SD or n (%).

p < 0.05, SD: Standard Deviation,

* Independent t-tests for between-group comparison

† Chi-square test for between-group comparison

In the intergroup comparison, a greater improvement was found only in the PSQS in the aerobic exercise group compared to the CTM group (p<0.05) (Table 2). In intra-group comparisons, improvement was achieved in PSQS, MIBS and EPDS scores at post intervention in both groups (p<0.05). PSQS and MIBS effect sizes were larger in the aerobic exercise group compared to CTM, while the effect size of MIBS was found to be larger in the CTM group (Table 2).

Table 2. A comparison of PSQS, MIBS AND EPDS within groups and between groups

Assesment	Group	Baseline	End of Treatment	Within-group score change	Effect Size	P ^a within-group	P ^b between-group
		Mean (95% CI)	Mean (95% CI)	Mean (95% CI)			
PSQS	Aerobic Exercise Group	31.86 (27.22-36.50)	20.60 (17.12-24.07)	11.26 (9.01-13.51)	1.367	<0.001	0.037
	CTM Group	29.86 (26.44-33.28)	25.46 (22.20-28.72)	4.40 (2.10-6.69)	0.594	0.001	
MIBS	Aerobic Exercise	7.00 (3.76-10.23)	5.33 (2.94-7.72)	1.66 (0.43-2.89)	1.082	0.012	0.927
	CTM	6.26 (4.23-8.30)	5.20 (3.22-7.17)	1.06 (0.49-1.63)	1.523	0.001	
EPDS	Aerobic Exercise	14.66 (11.47-17.85)	9.60 (6.85-12.34)	5.06 (0.40-6.12)	0.729	<0.001	0.475
	CTM	12.80 (9.89-15.70)	10.93 (8.09-13.76)	1.86 (1.11-2.62)	0.325	<0.001	

p < 0.05; CTM; Connective tissue massage, PSQS: Postpartum Sleep Quality Scale, MIBS: Mother to Infant Bonding Scale; EPDS: Edinburgh Postnatal Depression scale,

P^a; within-group (Paired Sample T-test),

P^b; between-group (Independent Sample T-test)

Conclusions

Aerobic exercise and CTM may be considered within protective and preventive approaches in the improvement of sleep quality, mother-infant bonding and psychological status in postpartum women. Since this study is a preliminary study, it should be developed with long-term follow-up and larger samples.

References

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