




Effectiveness of Paradoxical Timetable Therapy on Physical Fatigue Symptoms, Habitual Behavior, and Change Helplessness in Women with Post-Traumatic Stress Disorder

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ABSTRACT

The present study aimed to determine the effectiveness of paradoxical timetable therapy on physical fatigue symptoms, habitual behavior, and helplessness toward change in women diagnosed with post-traumatic stress disorder (PTSD). This research employed a quasi-experimental method using a pretest-posttest design with two groups. The statistical population included all women in Tehran diagnosed with PTSD who sought psychological treatment at the Amin Psychological Counseling Center in 2024. In this study, 24 individuals were selected through purposive non-random sampling and then randomly assigned to two groups: 12 participants in the experimental group and 12 in the control group. The experimental group participated in six 60-minute sessions of paradoxical timetable therapy. Ultimately, after attrition, 11 participants successfully completed the intervention. The control group did not receive any intervention. Notably, in order to equate the sample sizes, the number of dropouts in the experimental group was randomly mirrored in the control group by removing participants. This study utilized the Physical Fatigue Symptoms Questionnaire, the Reflective Thinking Scale, and the Jones Irrational Beliefs Questionnaire as research instruments. The collected data were analyzed using multivariate analysis of covariance (MANCOVA) and univariate analysis of covariance (ANCOVA). The results indicated a statistically significant difference in post-test mean scores between the experimental and control groups. Paradoxical timetable therapy significantly improved physical fatigue symptoms, habitual behavior, and helplessness toward change in women diagnosed with PTSD.

Keywords: *paradoxical timetable therapy, physical fatigue symptoms, habitual behavior, helplessness toward change, women, post-traumatic stress disorder.*

1. Introduction

Post-Traumatic Stress Disorder (PTSD) is defined as a mental disorder resulting from traumatic events that exceed the individual's capacity for comprehension. These events are so severe that individuals often fail to develop appropriate insight into them. The genesis of this disorder usually traces back to a traumatic life event, and when such an event remains unresolved, the emergence of PTSD is expected. This condition often triggers a chain of subsequent life events. PTSD can lead to the development of depression and panic disorders (de Roos et al., 2025; Watson & Osborne, 2025).

Chronic Fatigue Syndrome, also referred to as Myalgic Encephalomyelitis, is a complex, debilitating, and long-term medical condition diagnosed based on primary symptoms and criteria, frequently involving a wide spectrum of symptoms. The diagnosis typically hinges on the exacerbation of symptoms following minimal physical or cognitive exertion, known as post-exertional malaise, which manifests as weakness and bodily pain. This disorder significantly reduces the capacity to perform tasks that were previously routine (da Silva & Neto, 2021). Sleep disturbances, orthostatic intolerance (difficulty sitting or standing), and cognitive dysfunction are among the diagnostic indicators. Additional common symptoms may involve multiple body systems, and chronic pain is also frequently reported (Rostami et al., 2024; Soukhtanlou et al., 2024). Although the exact etiology remains unclear, proposed mechanisms include biological, genetic, infectious, physical, or psychological stressors that affect the body's biochemistry. Diagnosis is based solely on clinical symptoms, as no validated diagnostic test currently exists. Fatigue in this context is not due to sustained intense activity, is not significantly relieved by rest, and is not attributable to pre-existing medical conditions. While fatigue is a common symptom across many disorders, the degree of dysfunction seen in this condition is relatively rare in other illnesses (Canova et al., 2020). Individuals with this condition may experience gradual improvement or stabilization over time, but some suffer prolonged and severe impairment, potentially resulting in disability. There is no approved treatment or medication for the underlying cause of the disorder; symptom-based management is the current approach (Calhoun et al., 2014; Evans et al., 2019).

It is recommended that individuals manage their personal activities to avoid worsening symptoms. Limited evidence suggests that counseling and graded exercise therapy may

benefit some patients. Approximately 1% of patients in primary care settings report experiencing fatigue. However, prevalence estimates vary greatly due to inconsistent definitions in epidemiological studies (Maleki et al., 2019).

Intrusive thoughts are common among many individuals, and some may even feel compelled to act in ways that are shameful or dangerous. However, only a small percentage develop Obsessive-Compulsive Disorder (OCD) (Nikan et al., 2021; Timouri et al., 2021). Mental confusion is another form of intrusive thought that is increasingly studied in contemporary research. In the past, it was referred to as automatic thinking. Rumination reflects the presence of unwanted and involuntary thoughts (Azizi-Aram & Basharpour, 2019; Basharat et al., 2017).

Learned helplessness often originates in childhood. Children who do not receive adequate familial support are particularly vulnerable. This condition has even been observed in infants raised in orphanages. When a child is in need and receives no assistance, they may internalize a sense of helplessness, forming a mindset that can persist into adulthood and affect life outcomes. Signs of learned helplessness frequently become evident during school years, particularly when a child struggles with a specific subject and gradually comes to believe that improvement is unattainable (Abramson et al., 2002; Alizadeh Akbari & Garzin Motaii, 2024).

Learned helplessness can have detrimental effects on various psychological disorders. It may exacerbate symptoms of Generalized Anxiety Disorder and PTSD. Research has shown that helplessness can intensify stress, anxiety, and depression. Since learned helplessness renders individuals incapable of changing their circumstances (Wei & Chen, 2022; Wu & Tu, 2019), patients with chronic anxiety and depression may become disillusioned with treatment and non-compliant with medications. Studies have indicated that learned helplessness may increase the risk of developing PTSD or major depressive disorder, especially among women with prolonged experiences of domestic violence (Sheerin et al., 2019).

One of the newest integrative alternative approaches is Paradoxical Timetable Therapy. This method incorporates systemic, behavioral, and analytic dimensions of treatment and may be unsuitable for all disorders, including anxiety and obsessive-compulsive disorders. In psychological literature, the concept of paradox traces back to the theoretical and clinical contributions of Adler, Dunlap, and Frankl. Two core components expedite the therapeutic process in this method. The first, paradox, involves the

deliberate prescription of a symptom or illness behavior. Examination of each theoretical aspect of this treatment reveals that emphasis on systemic, behavioral, and analytic dimensions can individually exert significant effects (Babaei et al., 2023; Basharat, 2019a, 2019b; Ghadimi Nouran et al., 2019; Mohammadi et al., 2019; Nikan et al., 2021). Nonetheless, compared to pharmacotherapy and ERP (Exposure and Response Prevention), arguments for using this approach are more traditional. However, recommendations for ERP are grounded in meta-analytic weaknesses and calls for further research to enhance treatments for obsessive-compulsive disorder. Based on the available evidence, the present research question emerges: Is paradoxical timetable therapy effective in reducing physical fatigue symptoms, habitual behavior, and helplessness toward change in women with PTSD?

2. Methods and Materials

2.1. Study Design and Participants

The present study is an applied research with a quasi-experimental design involving a pretest-posttest format and a control group. The statistical population consisted of all women in Tehran diagnosed with Post-Traumatic Stress Disorder (PTSD) who sought psychological treatment at the Amin Psychological Counseling Center in 2024. A total of 24 participants were selected through purposive non-random sampling based on inclusion criteria. They were then randomly assigned to two groups: 12 participants in the experimental group and 12 in the control group. The experimental group participated in six 60-minute sessions of Paradoxical Timetable Therapy. After attrition, 11 participants in the experimental group successfully completed the treatment. The control group received no intervention. It is worth noting that, in order to equalize the group sizes, an equivalent number of participants were randomly removed from the control group to match the experimental group's attrition.

Inclusion criteria for the therapeutic intervention were informed consent, at least basic literacy (ability to read and write), a diagnosis of PTSD confirmed by a psychologist or psychiatrist, and absence of concurrent pharmacological treatment. Exclusion criteria included unwillingness to continue participation, anticipated psychological harm to participants, and more than three absences from therapy sessions.

2.2. Measures

2.2.1. Physical Fatigue

To measure physical fatigue symptoms, the standardized Banner Questionnaire (2019) was used. This questionnaire consists of 8 items measured on a 5-point Likert scale ranging from "very low" to "very high." Content validity was confirmed in Banner's 2019 study. The questionnaire's reliability was calculated at 0.933 in the data file. Responses are scored from 1 to 5, resulting in a total score ranging from 8 to 40. A score below 16 indicates low physical fatigue symptoms, 17–32 indicates moderate symptoms, and a score above 33 suggests high fatigue symptoms (Shareh & Robati, 2021).

2.2.2. Reflective Thinking

Developed by Kember et al. (2000), this scale includes four factors: habitual action, understanding, reflection, and critical thinking, each measured by four items. It is a self-report instrument with 16 items rated on a 5-point Likert scale (strongly disagree to strongly agree). The scoring is as follows: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree. Kember et al. (2000) validated the scale among health science students at the University of Hong Kong. Cronbach's alpha coefficients were 0.62 (habitual action), 0.75 (understanding), 0.63 (reflection), and 0.67 (critical thinking). In Iran, the scale was normed by Kadivar et al. (2013), with alpha values ranging from 0.63 to 0.76, indicating acceptable reliability. Factor analysis confirmed the four-factor structure (Salehi Afshar et al., 2024).

2.2.3. Irrational Beliefs

The Irrational Beliefs Test (IBT) was developed by Jones in 1968 to assess irrational beliefs. The test consists of 10 subscales and 100 items. It is frequently used in Rational-Emotive Behavioral Therapy (REBT) research. For instance, Taghipour (1994) validated the test using a sample of 106 students at Allameh Tabataba'i University (mean age = 24.25), yielding a Cronbach's alpha of 0.71. Smith and Zawarski found a high correlation between IBT and emotional disturbance measures. Correlation coefficients between IBT and other tests were as follows: 0.71 (IBT and RBI), 0.77 (anxiety scale), 0.70 (Beck Depression Inventory), 0.50 (anger scale), and 0.59 (all significant at the 0.01 level). Correlation between IBT and internal-external control scale (I-E) was 0.24 ($p < .01$), while the correlation

with the Success-Failure scale (SFL) was -0.27 , indicating that higher irrational beliefs are associated with lower self-perceived success. IBT also negatively correlated with self-expression (CSES), $r = -0.43$. Jones (1968) reported test-retest reliability of 0.92 and subscale reliabilities ranging from 0.66 to 0.80 . Tergessler and Karst (1972–1973) reported overall test-retest reliability of 0.88 and subscale reliability ranging from 0.45 to 0.95 (Gharehbaghy & Tavakoli, 2019).

2.3. Intervention

2.3.1. Paradoxical Timetable Therapy

Session 1: Welcome and general introductions including marital status, duration of marriage, number of children, employment status, and any specific familial or social issues. Problem interview phase: the client and any accompanying individuals describe the reason for referral and details of the problem(s) or disorder(s). The therapist explains the treatment plan and sets therapy goals. Initial homework assignment is prescribed (typically the minimum assignment being the “Paradoxical Timetable”).

Session 2: A complete review of the implementation of the previous session’s assignments, addressing obstacles or limitations experienced by the client. The client and any companions discuss the outcomes. The client estimates the percentage of perceived therapeutic change. Continuation of previous assignments (e.g., reduced frequency/dose per the principle of gradual reduction) may be suggested, or new assignments may be introduced (e.g., applying the paradoxical timetable to additional symptoms).

Session 3: Review of assignment execution, outcomes from the client’s and companions’ perspectives, and estimated change percentages. Continuation of prior assignments with reduced frequency is considered. If necessary, the first supplementary technique is introduced: according to the PTC model’s anxiety reduction principle, clients are instructed not to try reducing their current symptoms.

Session 4: Follow-up on assignments, discussion of outcomes, estimation of change, and continued reduction of tasks. If required, the second supplementary technique is prescribed: the client is instructed to maintain symptoms at their current level, based on the PTC model’s anxiety maintenance principle.

Sessions 5 & 6: Final evaluation of previous assignments, outcomes, and change assessments. If treatment goals are

met, therapy is concluded. If goals remain unmet, additional sessions are scheduled as necessary.

Follow-up: A self-therapy plan is introduced and explained in the final session for future use by the client.

2.4. Data Analysis

After selecting the statistical population and determining the sample size, and obtaining an ethics approval letter from the university’s research division, the designated questionnaires were distributed to participants in the pretest stage, while ensuring ethical standards and confidentiality. After completion of the therapy sessions, the posttest questionnaires were again distributed. The responses were then scored and analyzed using SPSS software. Since the study investigates the effectiveness of Paradoxical Timetable Therapy on physical fatigue symptoms, habitual behavior, and helplessness toward change in women with PTSD, the data were analyzed using descriptive statistics (mean, variance, standard deviation) and inferential statistics via Multivariate Analysis of Covariance (MANCOVA) and Univariate Analysis of Covariance (ANCOVA) as suitable parametric models.

3. Findings and Results

Table 1 presents descriptive statistics for the study’s main variables across the experimental and control groups at both pre-test and post-test phases. At the pre-test stage, both groups demonstrated nearly identical mean scores on the Physical Fatigue Symptoms scale (Control: $M = 29.91$, $SD = 3.239$; Experimental: $M = 29.64$, $SD = 3.202$), suggesting homogeneity before intervention. However, in the post-test, a notable reduction in fatigue symptoms was observed in the experimental group ($M = 26.45$, $SD = 1.440$) compared to the control group ($M = 29.36$, $SD = 3.233$). A similar pattern emerged for the Habitual Behavior scale: pre-test scores were comparable (Control: $M = 19.82$; Experimental: $M = 19.45$), while post-test scores showed a greater decrease in the experimental group ($M = 16.09$, $SD = 1.221$) versus the control group ($M = 19.27$, $SD = 3.797$). Finally, in the post-test assessment of Helplessness Toward Change, the experimental group reported lower levels ($M = 31.64$, $SD = 1.362$) compared to the control group ($M = 34.36$, $SD = 3.075$), indicating a reduction in psychological rigidity and a greater openness to change following intervention. These patterns suggest that Paradoxical Timetable Therapy may have effectively alleviated fatigue symptoms, disrupted

automatic behavior, and reduced feelings of helplessness in women suffering from PTSD.

Table 1

Descriptive Statistics for Scales of Physical Fatigue Symptoms, Habitual Behavior, and Helplessness Toward Change in Women with PTSD (Pre-test and Post-test Across Groups)

Variable	Test Phase	Group	N	Mean	SD	Min	Max	Range
Physical Fatigue Symptoms	Pre-test	Control	11	29.91	3.239	25	35	10
		Experimental	11	29.64	3.202	25	35	10
		Total	22	29.77	3.146	25	35	10
	Post-test	Control	11	29.36	3.233	25	35	10
		Experimental	11	26.45	1.440	25	29	4
		Total	22	27.91	2.860	25	35	10
Habitual Behavior	Pre-test	Control	11	19.82	3.311	15	25	10
		Experimental	11	19.45	3.616	15	25	10
		Total	22	19.64	3.388	15	25	10
	Post-test	Control	11	19.27	3.797	15	25	10
		Experimental	11	16.09	1.221	15	18	3
		Total	22	17.68	3.198	15	25	10
Helplessness Toward Change	Post-test	Control	11	34.36	3.075	—	—	—
		Experimental	11	31.64	1.362	—	—	—
		Total	22	33.00	2.708	—	—	—

Before conducting the univariate analysis of covariance (ANCOVA), the necessary statistical assumptions were thoroughly examined and confirmed. The assumption of normality was assessed using the Shapiro-Wilk test and visual inspection of Q-Q plots, confirming that the residuals were approximately normally distributed. Homogeneity of variances was verified through Levene's test, which indicated no significant differences in variances across groups for each dependent variable. The assumption of linearity between covariates and dependent variables was

also met, as demonstrated by scatterplot analyses. Additionally, the homogeneity of regression slopes was tested and confirmed, ensuring that the relationship between the covariate (pre-test scores) and the dependent variable (post-test scores) was consistent across groups. Finally, no multicollinearity issues were detected, and the data satisfied the independence of observations criterion. These confirmations validated the appropriateness of using ANCOVA for hypothesis testing in this study.

Table 2

Results of Univariate Analysis of Covariance (ANCOVA) for the Scales of Physical Fatigue Symptoms, Habitual Behavior, and Helplessness Toward Change in Women with PTSD

Source of Variance	Variable	Sum of Squares	df	Mean Square	F	p	Eta ²
Paradoxical Timetable Therapy	Physical Fatigue Symptoms	39.765	1	39.765	12.400	.001	.656
	Habitual Behavior	48.950	1	48.950	11.509	.001	.404
	Helplessness Toward Change	34.658	1	34.658	11.294	.001	.556

The data in Table 2 present the results of the univariate analysis of covariance (ANCOVA) conducted for the scales of "Physical Fatigue Symptoms," "Habitual Behavior," and "Helplessness Toward Change" in women diagnosed with PTSD. The findings show that Paradoxical Timetable Therapy had a statistically significant effect at the 99% confidence level in reducing physical fatigue symptoms in

the experimental group ($F = 12.400$, $p = .001$, $Eta^2 = .656$). Similarly, the therapy significantly reduced habitual behavior ($F = 11.509$, $p = .001$, $Eta^2 = .404$) and also led to a significant reduction in helplessness toward change ($F = 11.294$, $p = .001$, $Eta^2 = .556$) in the same group. These effect sizes indicate a moderate to high impact of the intervention.

Table 3

Tukey Post Hoc Test Results (Mean Differences) for the Scales of Physical Fatigue Symptoms, Habitual Behavior, and Helplessness Toward Change in Women with PTSD

Variable	Group (i) - Group (j)	Mean (i)	Mean Difference (i-j)	SE	p-value	Confidence Level	Conclusion
Physical Fatigue Symptoms	Control – Experimental	29.256	2.693	.473	.001	99%	Significant difference
Habitual Behavior	Control – Experimental	19.176	2.988	.881	.001	99%	Significant difference
Helplessness Toward Change	Control – Experimental	34.257	2.514	.545	.001	99%	Significant difference

The data in Table 3 show the results of the Tukey post hoc test for mean differences across the scales of “Physical Fatigue Symptoms,” “Habitual Behavior,” and “Helplessness Toward Change” in women with PTSD. Based on the findings, the mean difference in the Physical Fatigue Symptoms scale between the experimental and control groups was statistically significant at the 99% confidence level (Mean difference = 2.693, $p = .001$), indicating the intervention’s effectiveness in reducing fatigue. Similarly, significant mean differences were observed in the Habitual Behavior scale (Mean difference = 2.988, $p = .001$) and in the Helplessness Toward Change scale (Mean difference = 2.514, $p = .001$), both favoring the experimental group. These results further support the efficacy of Paradoxical Timetable Therapy in improving psychological functioning in women diagnosed with PTSD.

4. Discussion and Conclusion

A significant difference was observed between the variables of physical fatigue symptoms, habitual behavior, and helplessness toward change in women with post-traumatic stress disorder (PTSD) who received paradoxical timetable therapy, as evidenced in the pre-test–post-test experimental design. The intervention explained approximately 67% of the variance in these variables. The findings of Babaei et al. (2023) demonstrated the effectiveness of paradoxical timetable therapy on anxiety sensitivity and attentional focus in individuals with social anxiety disorder (Babaei et al., 2023). This therapy significantly impacted all components of anxiety sensitivity (e.g., fear of respiratory symptoms, fear of anxious reactions, fear of cardiovascular/gastrointestinal symptoms, and impaired cognitive inhibition) and attentional patterns (self-focused vs. externally-focused). These findings are aligned with those of the current study, which also confirmed the

significant impact of paradoxical timetable therapy in reducing physical fatigue symptoms, habitual responses, and helplessness toward change in women with PTSD in the post-test phase. In other words, paradoxical timetable therapy was significantly effective in alleviating these symptoms.

Therefore, the findings are consistent and convergent with those of Babaei et al. (2023) regarding the reduction of fatigue symptoms, habitual patterns, and change-related helplessness in women with PTSD (Babaei et al., 2023).

Research by Orcutt, King, and King (2021) indicated that the quality of maternal attachment, war-related stressors, and PTSD symptom severity were directly associated with intimate partner violence among Vietnam veterans. These findings suggest that underlying trauma and relational factors amplify PTSD symptoms (Orcutt et al., 2021). Similarly, the present study found that paradoxical timetable therapy significantly reduced physical fatigue symptoms, habitual behavior, and helplessness toward change, supporting the broader assertion that trauma-focused interventions can mitigate PTSD symptomatology.

Specifically, physical fatigue symptoms were reduced significantly in the intervention group, with the therapy accounting for 65% of the variance. Nikan et al. (2022), in a study comparing paradoxical timetable therapy and CBT on worry and rumination in individuals with social anxiety disorder, found meaningful improvements in both intervention groups during post-test and follow-up phases (Nikan et al., 2021). Their findings are congruent with the current study, underscoring the broader applicability of paradoxical timetable therapy for psychological symptoms associated with anxiety and trauma.

In another related study, Mohammadi et al. (2019) examined the effects of paradoxical timetable therapy, exposure and response prevention, and pharmacotherapy in patients with obsessive-compulsive disorder. Both

behavioral interventions demonstrated significant therapeutic benefits. The findings of this study echo those of Mohammadi et al. (2019), affirming that paradoxical timetable therapy can effectively alleviate psychological dysfunctions across various disorders, including PTSD (Mohammadi et al., 2019).

Specifically, the current study estimated that paradoxical timetable therapy explained 40% of the variance in habitual behavior and 55% of the variance in helplessness toward change. The findings of current study were also supported by the work of Nikan et al. (2022), who confirmed that both paradoxical timetable therapy and CBT significantly reduced worry and rumination (Nikan et al., 2021). These findings collectively support the robustness and cross-symptom effectiveness of paradoxical timetable therapy in trauma-affected populations.

As with any scientific study, this research faced several limitations. First, the primary challenge was participant recruitment due to reluctance among women with PTSD to enroll in the study. Second, selecting eligible participants was difficult due to widespread disinterest, making generalizability of the results somewhat limited. Third, the researcher had no access to detailed psychological and physical health information of participants, particularly those who declined to participate. Fourth, there was insufficient time for comprehensive literature review and homogenizing the sample population, which may have influenced consistency. Lastly, participant dropout during the research process was an issue, as some individuals initially consented to participate but later withdrew their cooperation.

Authors' Contributions

This article is extracted from the master's thesis of the first author at Ashtian Branch, Islamic Azad University, Ashtian, Iran. Authors contributed equally to this article.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. This study has been approved with the ethics code IR.IAU.ARAK.REC.1403.065 by the Research Ethics Committee of the Faculty of Medicine, Islamic Azad University, Arak Branch.

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