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Comparison of Emotion-Focused Therapy and Acceptance and Commitment Therapy on Quality of Life, Pain Perception, and Trunk Muscle Endurance in Women with Hand Osteoarthritis

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A B S T R A C T

Objective: The present study aimed to compare the effects of Emotion-Focused Therapy (EFT) and Acceptance and Commitment Therapy (ACT) on quality of life, pain perception, and trunk muscle endurance in women with hand osteoarthritis.

Methods and Materials: This research employed a quasi-experimental design with pretest, posttest, follow-up stages, and a control group, with a follow-up period of three months. The research population consisted of all women diagnosed with hand osteoarthritis during 2024–2025. A total of 45 individuals were selected from the research population using purposive sampling and randomly assigned to experimental and control groups (15 participants in each group). Data were collected using the World Health Organization Quality of Life Questionnaire, the Melzack Pain Perception Questionnaire (Melzack, 1975), and a trunk muscle endurance test. Participants in the experimental groups received either Emotion-Focused Therapy over 12 sessions or Acceptance and Commitment Therapy over 8 sessions; the control group did not receive any therapeutic intervention. Data analysis was conducted using mixed-design repeated measures analysis.

Findings: The results showed that, after controlling for the pretest effects, there were significant differences between the experimental and control groups in the posttest scores of quality of life, pain perception, and trunk muscle endurance at the 0.05 significance level ($p < .05$). Moreover, the findings indicated that there were differences between Emotion-Focused Therapy and Acceptance and Commitment Therapy in their effects on quality of life, pain perception, and trunk muscle endurance in women with hand osteoarthritis.

Conclusion: It can be concluded that Emotion-Focused Therapy and Acceptance and Commitment Therapy differently impact quality of life, pain perception, and trunk muscle endurance in women with hand osteoarthritis.

Keywords: *Emotion-Focused Therapy, Acceptance and Commitment Therapy, Quality of Life, Pain Perception, Trunk Muscle Endurance, Hand Osteoarthritis.*

1. Introduction

Arthritis is one of the most common chronic inflammatory diseases, particularly prevalent among women (Kim et al., 2025). This condition leads to reduced functionality and increased pain due to joint destruction (Tang et al., 2025). Among various types of arthritis, hand osteoarthritis holds particular importance due to the critical role of the hands in daily activities, especially among women. Women, compared to men, face greater challenges when dealing with this disease because their social, emotional, and family commitments can exacerbate the severity of their problems (Mao et al., 2025).

The quality of life of women with hand osteoarthritis is significantly affected by motor disabilities and chronic pain. Quality of life in patients with hand osteoarthritis refers to a comprehensive measure of their daily experiences, influenced by physical, psychological, and social factors (Romano et al., 2025). These patients encounter serious challenges in daily activities such as writing, cooking, and even performing simple tasks like opening a bottle cap, and these limitations alone can foster feelings of helplessness and dependency (Al-Jabi et al., 2021).

Pain perception in patients with hand osteoarthritis is a complex, multidimensional phenomenon influenced by physical, psychological, and social factors (Prior et al., 2022). Arthritis, especially in the hand joints, can lead to chronic pain and diminished quality of life (Babbs et al., 2021). This pain typically results from inflammation and destruction of joint tissues, leading to discomfort and limited movement (Malange et al., 2022). Patients often describe sensations of burning, shooting, or intense pain, which may intensify during daily activities or with weather changes (Slagter et al., 2022). Besides physical factors, psychological conditions such as stress, depression, and anxiety can also influence pain perception and exacerbate pain experiences (Gavin et al., 2024). In other words, pain perception in these patients is a multifactorial process that involves individual interpretations of pain, previous experiences, and social reactions (Tang et al., 2025).

Trunk muscle endurance in patients with hand osteoarthritis is one of the key factors in improving their motor abilities and quality of life (Sarac et al., 2022). Arthritis can lead to reduced muscle strength and endurance due to pain and movement restrictions (Farrow et al., 2021). The trunk muscles, including the muscles of the lower back, abdomen, and spine, play a crucial role in maintaining balance, stability, and the ability to perform daily activities (Burgess et al., 2022). Weakness in trunk muscle endurance can result in undesirable changes in movement patterns and increased stress on the damaged joints, which in turn may intensify pain and raise the risk of future injuries (Jia et al., 2025).

Emotion-Focused Therapy (EFT), as one of the therapeutic approaches that appears effective in managing arthritis, emphasizes the exploration and processing of negative emotions (Lo et al., 2021). This type of therapy helps patients identify feelings associated with pain and cope with them in a healthier manner (Marren et al., 2022). Studies have shown that Emotion-Focused Therapy can reduce stress, anxiety, and depression in patients with hand osteoarthritis, thus improving their quality of life (Löfstrand et al., 2024). By utilizing techniques from Emotion-Focused Therapy, patients can process their emotions more effectively and enhance their pain management and physical endurance (Shareh et al., 2022).

In contrast, Acceptance and Commitment Therapy (ACT) is another approach that emphasizes the importance of accepting negative experiences and emotions (Ma et al., 2023). Acceptance and Commitment Therapy helps patients focus on their life values and goals rather than struggling against their pain and discomfort (Ma et al., 2023). This approach can assist individuals in building greater psychological resilience and improving their quality of life through the acceptance of pain and limitations (Abow et al., 2023).

Comparing the effectiveness of these two therapeutic approaches in women with hand osteoarthritis can help identify optimal strategies for enhancing quality of life, pain perception, and trunk muscle endurance. Since arthritis is a chronic condition, selecting a therapeutic method with the greatest impact on quality of life is crucial. Ultimately, this study may contribute to identifying effective strategies for improving the lives of individuals struggling with this disease and emphasize the importance of integrated care for patients with arthritis.

Emotion-Focused Therapy and Acceptance and Commitment Therapy are both considered effective approaches for managing the psychological and physical challenges of individuals with arthritis. However, limited research has directly examined the effects of these two approaches on quality of life, pain perception, and trunk muscle endurance in women with hand osteoarthritis. This research gap highlights the need for further investigation into the relationships between these therapies and improvements in patients' psychological and physical capacities. In the

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rapidly advancing field of health research, understanding the mechanisms of these therapies can assist physicians and therapists in selecting more effective approaches to enhance patients' quality of life. Research in this area could offer new perspectives in arthritis treatment and, furthermore, address the specific needs of women in this field. Therefore, a comparative examination of these two approaches could serve as a scientific foundation for innovative strategies in arthritis treatment. Accordingly, the present study aimed to compare the effects of Emotion-Focused Therapy and Acceptance and Commitment Therapy on quality of life, pain perception, and trunk muscle endurance in women with hand osteoarthritis.

2. Methods and Materials

2.1. Study design and Participant

The present study was a quasi-experimental design with pretest, posttest, control group, and follow-up stages. The statistical population consisted of all middle-aged women with hand osteoarthritis who attended physiotherapy clinics in the city during 2024–2025. From this population, 30 participants were selected using a non-random convenience sampling method (based on the sample size determination software G*Power 3, considering the parameters of effect size = 0.36, alpha coefficient = 0.05, and test power = 0.95). The sample size for each of the experimental and control groups was set at 15 participants, resulting in a total sample size of 30 participants who were randomly assigned to two groups of 15 each. Inclusion criteria were at least three months of hand pain and an average pain intensity during activity greater than 3 units (on the Visual Analog Scale, VAS). Exclusion criteria included hand surgery, history of neurological disorders, intra-articular corticosteroid injections in the past six months, and participation in physiotherapy exercise programs during the past six months. Initially, after obtaining informed consent and assuring participants that their information would remain confidential, the confidentiality and security of participants' data were maintained.

2.2. Measures

2.2.1. Quality of Life

The Quality of Life Questionnaire was developed by the World Health Organization (1996) and consists of 26 items (World Health Organization, 1996), covering four domains: physical health, psychological health, social relationships, and environmental health. This tool is scored using a five-point Likert scale ranging from one to five. The total score is obtained by summing the item scores and calculating the mean, with higher scores indicating a better quality of life. Psychometric evaluations showed high internal consistency, with Cronbach's alpha coefficients ranging from 0.80 to 0.90. Test-retest reliability was reported at 0.75 after two weeks and 0.71 over three years, indicating acceptable stability. Exploratory and confirmatory factor analyses confirmed the validity of the scale, showing that the test consists of four dimensions with factor loadings above 0.40 for each item on its respective factor (World Health Organization, 1996). In a study by Nejat et al. (2006), the Cronbach's alpha values were 0.73 for physical health, 0.84 for psychological health, 0.74 for social relationships, and 0.60 for environmental health, indicating the adequacy of the questionnaire. The validity correlations between physical health and quality of life (r = 0.765), psychological health and quality of life (r = 0.751), social relationships and quality of life (r = 0.871), and environmental health and quality of life (r = 0.844) also confirmed its validity (Rostamnezhad et al., 2021). Reported Cronbach's alpha values were 0.872 for physical health, 0.822 for psychological health, 0.744 for social relationships, 0.793 for environmental health, and 0.921 for the total scale.

2.2.2. Pain Perception

This questionnaire was developed by Melzack (1975). It contains 20 sets of descriptors and aims to measure individuals' perceptions of pain. Scoring is done as 0 or 1; if the respondent does not relate any description to their pain, the score is zero; otherwise, the score is one. Exploratory and confirmatory factor analyses revealed four subscales: sensory pain perception, affective pain perception, evaluative pain perception, and miscellaneous pain experiences. Cronbach's alpha coefficients for these subscales were reported as 0.87, 0.87, 0.83, and 0.86, respectively. Melzack (1975) estimated the overall Cronbach's alpha of the questionnaire at 0.95. In a study by Dworkin (2009), the validity coefficient was reported as 0.61, which was confirmed. In research by Taraghi and Masoudi (2019), reliability using Cronbach's alpha ranged from 0.83 to 0.87 for all dimensions. In this study, the Cronbach's alpha coefficient for the questionnaire was reported as 0.88 and its validity as 0.87 (Yusefi et al., 2022). The Cronbach's alpha coefficient in the present study was 0.87.

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2.2.3. Trunk Muscle Endurance

Trunk muscle endurance was measured using the sit-up test. In this test, the individual lies on their back with bent knees on the ground while another person holds their feet. Hands are placed beside the body with markers near each hand, and a distance of 10 centimeters from the fingertips toward the feet is marked. During the movement, the participant lifts the trunk so that the fingertips move beyond the 10-centimeter mark. The number of correct sit-ups performed within one minute was recorded. This test has high validity, and its reliability has been reported at 98% (Beazley et al., 2017; Diener et al., 1995).

2.3. Interventions

2.3.1. Emotion-Focused Therapy

This program was conducted over 12 sessions, each lasting 90 minutes. The sessions included introductions, presentation of related domains, and introduction to Emotion-Focused Therapy (Shokrollahi et al., 2021).

The Emotion-Focused Therapy program was conducted over 12 sessions, each lasting one and a half hours. The first session focused on introducing the therapy, creating a safe therapeutic environment, clarifying treatment goals and methods, addressing client expectations and concerns, practicing empathy, and reflecting emotions. In the second session, the psychological status of clients was assessed, and key concepts of Emotion-Focused Therapy, such as emotional cycles, the function of emotions, emotional schemas, and body-focused awareness, were introduced. Sessions three to five encouraged clients to narrate their experiences of pain and disorder, facilitated deep emotional exploration, worked on painful core emotions, maladaptive emotions, self-criticism, and unfinished emotional business. Sessions six to eight introduced and practiced the two-chair technique to address self-criticism and self-limitation, fostering self-compassion, self-soothing, and inner organization. Sessions nine to eleven employed the empty-chair technique to address unfinished emotional tasks, enhancing self-compassion and emotional processing. Finally, the twelfth session involved administering post-treatment assessments, summarizing the therapy process, discussing emotional experiences compared to previous stages, strengthening self-compassion and self-regulation, constructing new meaning from emotional experiences, stabilizing treatment effects, and scheduling a two-month follow-up session.

2.3.2. Acceptance and Commitment Therapy

An eight-session protocol of Acceptance and Commitment Therapy was applied (Sheikh Mohammadi et al., 2022).

The Acceptance and Commitment Therapy program consisted of eight sessions. The first session introduced group members, discussed confidentiality, explained the goals and structure of the therapy, introduced the concept of the mind (thoughts, feelings, bodily sensations, urges, and memories), assigned homework, and administered a pretest. In the second session, reactions to the previous session were reviewed, and members were helped to identify behaviors aimed at reducing or avoiding internal events and anxiety, followed by related homework. The third session continued with a review, introduced the concept of control as a problem, and explained the rules of the external and internal worlds using metaphors, with homework focused on identifying control strategies. The fourth session reviewed previous content and introduced the concepts of acceptance and experiential willingness, explaining the distinction between clean and dirty pain and encouraging clients to increase willingness toward internal experiences rather than reducing their intensity. In the fifth session, the focus shifted to understanding that thoughts, feelings, memories, urges, and bodily sensations are not necessarily reality, introducing the concept of self-as-context or transcendent self, helping clients detach from unpleasant internal experiences. The sixth session emphasized mindfulness practices, acting as an observer of internal experiences, and focused on clarifying personal values, assigning homework on identifying and specifying values. In the seventh session, after resolving ambiguities and reviewing assignments, clients identified actions aligned with their values, set short- and long-term goals, explored obstacles, and committed to value-based actions using the "planting a tree" metaphor. The eighth session reviewed progress, reinforced commitment to values, and finalized plans for pursuing personally meaningful goals and actions aligned with clients' identified values.

2.4. Data Analysis

For data analysis, repeated measures analysis of variance (ANOVA) and SPSS version 26 software were used, and the significance level was set at 0.05.

3. Findings and Results

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The mean and standard deviation of the reported ages for the research sample, separated by groups, were as follows: for the Emotion-Focused Therapy group, 55.7 ± 6.51; for the Acceptance and Commitment Therapy group, 54.3 ± 6.81; and for the control group, 56.9 ± 7.32. The minimum reported age of participants was 45 years and the maximum was 65 years. Additionally, considering the p-value greater than 0.05, there was no significant difference between the three groups in terms of age, indicating homogeneity across the groups. The descriptive findings of the study across the three research stages in the three groups are presented in Table 1.

Table 1

Mean and Standard Deviation of Pretest, Posttest, and Follow-up Scores for Quality of Life, Pain Perception, and Trunk Muscle Endurance in the Experimental and Control Groups

Dependent Variable	Group	Pretest Mean	Pretest SD	Posttest Mean	Posttest SD	Follow-up Mean	Follow-up SD
Quality of Life	Emotion-Focused Therapy	66.05	4.47	84.8	5.93	84.9	5.84
	Acceptance and Commitment Therapy	65.5	5.65	93.7	7.29	93.8	7.27
	Control	66.2	7.86	65.8	7.66	65.5	7.43
Pain Perception	Emotion-Focused Therapy	16.8	2.93	5.65	1.63	6.85	1.72
	Acceptance and Commitment Therapy	15.9	2.88	10.9	2.15	11.02	1.99
	Control	16.2	2.09	15.2	2.07	14.6	2.11
Trunk Muscle Endurance	Emotion-Focused Therapy	53.7	38.2	72.7	34.9	71.8	33.5
	Acceptance and Commitment Therapy	52.8	36.9	68.5	30.3	67.9	29.6
	Control	49.8	31.9	51.4	29.8	48.9	28.7

As shown in Table 1, the mean scores of the studied variables are presented for the intervention and control groups. It can be observed that the means of these variables do not show considerable differences between the two groups in the pretest stage; however, after the intervention, the experimental groups demonstrate a substantial improvement compared to the control group, and these differences are also observable in the follow-up stage.

To examine the assumption of the equality of covariance matrices, Box's M test was used. The results for the study variables (Box's M = 88.8, F = 13.06, $p < .01$) indicated that the significance level was less than 0.05. This result means that the assumption of homogeneity of the covariance matrices was not confirmed; however, considering the equality of group sizes, this assumption can be disregarded.

Additionally, Mauchly's test of sphericity for the study variables (Mauchly's W = 0.055, $\chi^2 = 78.1$, $p < .01$) showed that because the test significance level was lower than 0.05, the Greenhouse-Geisser conservative correction was used for repeated measures ANOVA. Also, the homogeneity of variance for quality of life (F = 0.449, $p > .05$), pain perception (F = 0.249, $p > .05$), and trunk muscle endurance (F = 0.123, $p > .05$) was confirmed, indicating the validity of variance homogeneity across groups.

Subsequently, the results of repeated measures ANOVA (3 × 2 design) comparing the two experimental groups and the control group across the pretest, posttest, and follow-up stages for the study variables are presented (Table 2).

Table 2

Results of Multivariate Analysis of Variance (MANOVA) Significance Test Across the Study Groups

Test Name	Sum of Squares	Degrees of Freedom	Mean Squares	F	Significance Level	Eta Squared
Sphericity Assumed	17.5	11	0.915	33	.001	0.915
Greenhouse-Geisser	17.5	11	0.085	33	.001	0.915
Huynh-Feldt	17.5	11	10.7	33	.001	0.915
Upper Bound	17.5	11	10.7	33	.001	0.915

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The results in Table 2 show that there is a significant difference in at least one of the dependent variables among the study groups. The Eta squared value indicates that the overall difference between the groups regarding the dependent variables is statistically significant, with an effect size of 91.5%, which is considered substantial and generalizable. Therefore, the detailed reporting of simple and interaction effects is provided in Table 3.

Table 3

Results of 3×2 Repeated Measures ANOVA to Examine the Effectiveness of Life Therapy Techniques Training on Quality of Life, Pain Perception, and Trunk Muscle Endurance

Variable	Type of Effect	Source of Variation	Sum of Squares	Degrees of Freedom	Mean Squares	F	Significance Level	Effect Size
Quality of Life	Between-Subjects	Group	2092.8	1	2092.8	44.5	.001	.614
		Error	1315.6	43	46.9			
	Within-Subjects	Factor	95.3	1.10	86.06	103.3	.001	.787
		Factor × Group	78.8	1.10	71.1	85.4	.001	.753
		Error (Factor)	25.8	31.02	0.832			
Pain Perception	Between-Subjects	Group	68.4	1	68.4	4.64	.04	.142
		Error	412.9	43	14.7			
	Within-Subjects	Factor	2146.9	1.54	1393.3	45.4	.001	.619
		Factor × Group	1123.5	1.54	729.1	23.7	.001	.459
		Error (Factor)	1322.8	43.1	30.6			
Trunk Muscle Endurance	Between-Subjects	Group	1292.01	1	1292.01	11.04	.002	.283
		Error	3274.9	43	116.9			
	Within-Subjects	Factor	793.4	1.08	734.4	34.6	.001	.553
		Factor × Group	728.02	1.08	673.8	31.7	.001	.532
		Error (Factor)	641.1	30.2	21.1			

The simple results of repeated measures ANOVA based on the Greenhouse-Geisser correction show that the main effect of the factor is significant at the 0.01 level (p = .001, F = 103.3, Greenhouse-Geisser = 95.3). This result means that there is a significant difference between the factor scores (pretest, posttest, and follow-up) for quality of life, regardless of group. Furthermore, the interaction effect between group and factor (measurement stages) is significant at the 0.01 level (p = .001, F = 85.4, Greenhouse-Geisser = 78.8). In other words, there is a significant difference between at least two stages of quality of life scores between the intervention and control groups.

Similarly, the simple results of repeated measures ANOVA based on the Greenhouse-Geisser correction show that the main effect of the factor is significant at the 0.01 level (p = .001, F = 45.4, Greenhouse-Geisser = 2146.9) for pain perception. This result indicates that there is a significant difference between the factor scores (pretest, posttest, and follow-up) for pain perception, regardless of group. Moreover, the interaction effect between group and factor (measurement stages) is significant at the 0.01 level (p = .001, F = 23.7, Greenhouse-Geisser = 1123.5). In other words, there is a significant difference between at least two stages of pain perception scores between the intervention and control groups.

Additionally, the simple results of repeated measures ANOVA based on the Greenhouse-Geisser correction demonstrate that the main effect of the factor is significant at the 0.01 level (p = .001, F = 34.6, Greenhouse-Geisser = 793.4) for trunk muscle endurance. This result means that there is a significant difference between the factor scores (pretest, posttest, and follow-up) for trunk muscle endurance, regardless of group. Furthermore, the interaction effect between group and factor (measurement stages) is significant at the 0.01 level (p = .001, F = 31.7, Greenhouse-Geisser = 728.02). In other words, there is a significant difference between at least two stages of trunk muscle endurance scores between the intervention and control groups.

To investigate the difference in the effectiveness of the two interventions on the study variables, a pairwise

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comparison was conducted using the Bonferroni test, the results of which are described below.

Table 4

Bonferroni Test for Comparing the Three Groups on the Study Variables

Research Stage	Variable	Group	Group	Mean Difference	Significance Level
Pretest	Quality of Life	Emotion-Focused Therapy	Control	-0.2	1
		Emotion-Focused Therapy	Acceptance and Commitment Therapy	0.466	1
		Acceptance and Commitment Therapy	Control	-0.666	1
	Pain Perception	Emotion-Focused Therapy	Control	-0.333	1
		Emotion-Focused Therapy	Acceptance and Commitment Therapy	-1.66	0.789
		Acceptance and Commitment Therapy	Control	1.33	1
	Trunk Muscle Endurance	Emotion-Focused Therapy	Control	-0.133	1
		Emotion-Focused Therapy	Acceptance and Commitment Therapy	2.86	1
		Acceptance and Commitment Therapy	Control	2.73	1
Posttest	Quality of Life	Emotion-Focused Therapy	Control	*5.8	0.014
		Emotion-Focused Therapy	Acceptance and Commitment Therapy	*11.3	0.01
		Acceptance and Commitment Therapy	Control	-8.4	0.037
	Pain Perception	Emotion-Focused Therapy	Control	*-10.6	0.001
		Emotion-Focused Therapy	Acceptance and Commitment Therapy	*8.91	0.001
		Acceptance and Commitment Therapy	Control	*-11.2	0.001
	Trunk Muscle Endurance	Emotion-Focused Therapy	Control	*-8.86	0.001
		Emotion-Focused Therapy	Acceptance and Commitment Therapy	*-14.1	0.003
		Acceptance and Commitment Therapy	Control	*-11.2	0.001
Follow-up	Quality of Life	Emotion-Focused Therapy	Control	*5.66	0.019
		Emotion-Focused Therapy	Acceptance and Commitment Therapy	*-4.73	0.001
		Acceptance and Commitment Therapy	Control	2.20	0.550
	Pain Perception	Emotion-Focused Therapy	Control	*-8.66	0.001
		Emotion-Focused Therapy	Acceptance and Commitment Therapy	4.53	0.202
		Acceptance and Commitment Therapy	Control	*-13.4	0.001
	Trunk Muscle Endurance	Emotion-Focused Therapy	Control	*14.2	0.001
		Emotion-Focused Therapy	Acceptance and Commitment Therapy	**10.1	0.001
		Acceptance and Commitment Therapy	Control	*9.66	0.001

Based on the results of the Bonferroni test, no significant differences were observed among the three groups in the pretest phase for the study variables ($p > 0.05$). In the posttest phase, significant differences were reported between the intervention groups and the control group across all variables ($p < 0.05$). Additionally, significant differences were found between Emotion-Focused Therapy and Acceptance and Commitment Therapy in the posttest and

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follow-up stages for quality of life, pain perception, and trunk muscle endurance ($p < 0.01$). In the variables of pain perception and trunk muscle endurance, Emotion-Focused Therapy was more effective, whereas in quality of life, Acceptance and Commitment Therapy showed better outcomes. In the follow-up phase, significant differences were also reported between the intervention groups and the control group across all study variables ($p < 0.05$). Therefore, it can be concluded that a significant difference was only observed in trunk muscle endurance between the two intervention groups, whereas no significant differences were found between the two interventions regarding quality of life and pain perception.

4. Discussion and Conclusion

The present study was conducted to compare Emotion-Focused Therapy and Acceptance and Commitment Therapy on quality of life, pain perception, and trunk muscle endurance in women with hand osteoarthritis. The findings revealed that Emotion-Focused Therapy had a significant effect on quality of life, pain perception, and trunk muscle endurance in women with hand osteoarthritis. This result aligns with the prior findings (Lo et al., 2021; Löfstrand et al., 2024; Marren et al., 2022; Shareh et al., 2022). Various factors contributed to this effectiveness, which can be analyzed from physical, psychological, and social perspectives.

First, one of the main outcomes of Emotion-Focused Therapy was the improvement in patients' quality of life. Hand osteoarthritis usually leads to significant limitations in daily activities. Emotion-Focused Therapy, by emphasizing core emotions, enabled clients to confront hidden emotions such as despair, anxiety, and worry associated with disease-related limitations and focus on more positive life meanings. This process resulted in a change in patients' attitudes toward their condition and provided hope for better disease management, ultimately enhancing their quality of life (Löfstrand et al., 2024).

The second significant aspect of the study was the reduction in pain perception. Emotional and psychological mechanisms play a critical role in the intensity and experience of pain. Emotion-Focused Therapy, by providing a platform for identifying and processing dysfunctional emotions and transforming unhealthy emotions into more adaptive alternatives, helped clients alter their relationship with physical pain. Techniques such as body-focused attention, focusing on primary emotional experiences of pain, and emotional stabilization strategies enabled clients to perceive pain as less threatening and integrate it more readily into their sense of self. This process not only influenced emotional responses but also had a direct impact on reducing the sensation of pain by lowering emotional tension and stress.

Besides psychological effects, Emotion-Focused Therapy also had positive physical effects on trunk muscle endurance in women with hand osteoarthritis. Stress and negative emotions resulting from pain and movement limitations can impair patients' physical strength (Lo et al., 2021). Emotion-Focused Therapy, by facilitating emotional regulation and promoting positive mental processes, disrupted this negative cycle (Marren et al., 2022). As a result, patients were better able to focus on their inner strengths and engage in rehabilitation activities and physical exercises appropriate to their condition. This improvement not only enhanced trunk muscle endurance but also led to better body control and hand function.

Socially, observations showed that Emotion-Focused Therapy strengthened the social interactions of women with hand osteoarthritis. A major challenge for these patients is the feeling of isolation and reduced social participation due to physical limitations. Emotion-Focused Therapy helped patients achieve greater social adjustment by processing emotions such as shame and guilt resulting from physical incapacity. Enhancing self-compassion and developing self-awareness enabled participants to establish more meaningful social relationships and experience greater self-worth, thereby contributing to their overall improved quality of life.

The findings also indicated that Acceptance and Commitment Therapy had a significant effect on quality of life, pain perception, and trunk muscle endurance in women with hand osteoarthritis. These results are consistent with the prior findings (Abow et al., 2023; Lai et al., 2023; Ma et al., 2023). Acceptance and Commitment Therapy, as a mindfulness-based psychotherapy approach, has shown numerous positive outcomes in improving quality of life, reducing pain perception, and strengthening physical capabilities, including trunk muscle endurance. The present findings suggest that this type of therapy, through promoting acceptance of current conditions and commitment to changing maladaptive behaviors, significantly impacted different aspects of patients' lives.

The first major impact of Acceptance and Commitment Therapy was observed in patients' quality of life. This approach, by enhancing acceptance skills, helps patients embrace physical limitations and pain instead of resisting

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them. Such active acceptance reduces the psychological stress associated with uncontrollable conditions and motivates patients to focus on life aspects they can influence, leading to greater life satisfaction (Lai et al., 2023). Emphasis on commitment to personal values enables women with hand osteoarthritis to seek meaningful and high-quality lives despite physical challenges, improving social interactions, family relationships, and overall satisfaction (Lai et al., 2023).

The second significant effect was the reduction of pain perception. Pain is a complex, multidimensional experience influenced by psychological, emotional, and behavioral factors. Acceptance and Commitment Therapy uses mindfulness and cognitive defusion techniques to help patients observe pain as a natural and transient experience rather than an overwhelming threat (Abow et al., 2023). This change in approach enables patients to shift their focus from pain to more positive aspects of life, thereby reducing perceived pain intensity (Lai et al., 2023).

In the physical domain, Acceptance and Commitment Therapy positively influenced trunk muscle endurance. Psychological and emotional stress related to the disease often leads to reduced physical activity and muscle strength. Acceptance and Commitment Therapy encourages a positive attitude toward safe physical activity, motivating patients to integrate trunk-strengthening exercises into their daily routines. This process ultimately enhances trunk muscle endurance, improves posture, and reduces negative impacts of muscle weakness (Lai et al., 2023).

Emotionally and psychologically, Acceptance and Commitment Therapy reduced self-criticism and increased psychological flexibility. Women with hand osteoarthritis often struggle with feelings of guilt, despair, and shame resulting from physical limitations. This therapy teaches that negative thoughts and emotions are temporary aspects of human experience, helping patients respond to them with greater resilience (Ma et al., 2023).

The present findings further revealed that in terms of pain perception and trunk muscle endurance, Emotion-Focused Therapy outperformed Acceptance and Commitment Therapy. No previous studies comparing these two therapies directly in these domains were found. This superiority may be explained by the distinct mechanisms of each approach. Emotion-Focused Therapy, by deeply addressing emotional experiences and using techniques such as identifying, expressing, and restructuring maladaptive emotions, directly reduces emotional stress associated with pain (Marren et al., 2022; Shareh et al., 2022). Given that pain is a psychosomatic experience closely linked to emotional tension, reducing maladaptive emotions leads to lower pain intensity.

In addition, Emotion-Focused Therapy enhances the connection between emotional awareness and the body, encouraging patients to strengthen trunk muscles—an important outcome, particularly in women suffering from muscle atrophy and reduced physical strength (Löfstrand et al., 2024). Acceptance and Commitment Therapy, while effective in promoting value-based behavior and acceptance, places less direct emphasis on emotional processing, possibly explaining its lesser effectiveness in improving pain perception and trunk endurance compared to Emotion-Focused Therapy.

Finally, the results showed that quality of life improvement was greater in the Acceptance and Commitment Therapy group than in the Emotion-Focused Therapy group. No studies comparing the two therapies on quality of life in hand osteoarthritis patients were found. This advantage likely stems from the foundational features of Acceptance and Commitment Therapy, which focuses directly on acceptance, commitment to values, and living meaningfully despite limitations (Abow et al., 2023; Lai et al., 2023; Ma et al., 2023). Acceptance and Commitment Therapy equips patients with mindfulness and cognitive defusion tools, allowing them to process negative thoughts and emotions in healthier ways, thereby enhancing their perceived life control and creating more positive life experiences.

In contrast, while Emotion-Focused Therapy enhances emotional processing, its primary focus is on emotions and their psychological and physical effects rather than broader life adaptation and value-based living. Therefore, Acceptance and Commitment Therapy's emphasis on acceptance, value clarification, and meaning-making better promotes long-term improvements in quality of life.

5. Limitations and Suggestions

One of the main limitations of the present study was the use of convenience sampling, which may limit the generalizability of the findings to broader populations. Additionally, the sample consisted exclusively of female patients with hand osteoarthritis, which restricts the ability to generalize the results to male patients or mixed-gender groups. Furthermore, the reliance on self-report measures may have introduced subjective biases in participants' responses. The relatively small sample size and the absence

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of long-term follow-up beyond two months after the intervention also limit the extent to which the durability of the treatment effects can be assessed. Finally, the study did not control for potential confounding variables such as the severity of osteoarthritis, medication use, or engagement in other concurrent therapies, which could have influenced the outcomes.

Future research is recommended to use random sampling methods to enhance the representativeness and generalizability of the results. It is also suggested to include both male and female participants to examine potential gender differences in treatment outcomes. Expanding the sample size and implementing longer follow-up periods would provide deeper insights into the long-term effectiveness of Emotion-Focused Therapy and Acceptance and Commitment Therapy. Additionally, future studies should consider controlling for variables such as disease severity, medication intake, and participation in other therapeutic activities to better isolate the effects of the psychological interventions. Comparative studies examining these therapies in different chronic conditions or incorporating objective clinical measures alongside self-reports would further strengthen the evidence base.

Authors' Contributions

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.

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