The Patient-Rated Tennis Elbow Evaluation (PRTEE)©
User Manual

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Introduction

What is the Patient-Rated Tennis Elbow Evaluation (PRTEE)?

The PRTEE, formerly known as the Patient-Rated Forearm Evaluation Questionnaire (PRFEQ), is a 15-item questionnaire designed to measure forearm pain and disability in patients with lateral epicondylitis (also known as "tennis elbow"). The PRTEE allows patients to rate their levels of tennis elbow pain and disability from 0 to 10, and consists of 2 subscales:

1) PAIN subscale (0 = no pain, 10 = worst imaginable)
   - Pain - 5 items

2) FUNCTION subscale (0 = no difficulty, 10 = unable to do)
   - Specific activities - 6 items
   - Usual activities - 4 items

In addition to the individual subscale scores, a total score can be computed on a scale of 100 (0 = no disability), where pain and functional problems are weighted equally (see "How to Score the PRTEE" for detailed scoring instructions).

Instrument Development

Designing the PRTEE

Formerly known as the Patient-Rated Forearm Evaluation Questionnaire (PRFEQ), the PRTEE was developed so that tennis elbow braces could be evaluated for a master's project. The PRTEE was based on the Patient-Rated Wrist Evaluation (PRWE) and also incorporated information from a previous study that evaluated the psychometric properties of outcome measures for patients with lateral epicondylitis.

The pain subscale consisted of 4 (out of 5) items from the PRWE with the term "arm" replacing "wrist". The "usual activities" items in the PRTEE's function subscale were identical to the PRWE's "usual activities", whereas the PRTEE's "specific activities" were comprised of activities that may be affected by tennis elbow.

To keep the instrument brief and easy to use in a clinic, the questionnaire format was limited to five pain questions and ten function questions. A total score out of 100 can be computed by equally weighting the pain score (sum of five items) and the disability score (sum of ten items, divided by 2).

Testing the PRTEE

To test the PRTEE's test-retest reliability, 47 patients with unilateral lateral epicondylitis completed the PRTEE on two consecutive days. The pain (ICC = 0.89), function (1CC=0.83), and the total (ICC = 0.89) scores all demonstrated excellent reliability. When the reliability was assessed by subgroups (men vs. women; chronic vs. acute; work-related vs. non-work-related), the ICCs were all greater than 0.75.

Concurrent validity was assessed by correlating the PRTEE scores with the pain-free grip strength. The total PRTEE score ($r = -0.36$) and the pain subscale ($r = -0.37$) had a significant moderate correlation with the pain-free grip strength but not the function subscale ($r = -0.30$).

(Reference: Overend et al., 1999 (1))

Recent Revisions

Since calling the instrument the Patient-Rated Forearm Evaluation Questionnaire was misleading, the title was recently changed to the Patient-Rated Tennis Elbow Evaluation to indicate that the measure was specifically designed for tennis elbow.

Minor modifications were also made on the wording of some of the items:

1) "turning a doorknob" is now "turn a doorknob and key"
2) "carry a plastic bag of groceries" is now "carry a grocery bag or briefcase by the handle"
3) "wringing out a facecloth or dishrag" is now "wring out a washcloth or wet towel"

How to Score the PRTEE

*To minimize nonresponse, check forms once patients complete them.

Computing the Subscales

Pain Score = Sum of the 5 pain items (out of 50) → Best Score = 0, Worst Score = 50

Function Score = Sum of the 10 function items, Divided by 2 (out of 50) → Best Score = 0, Worst Score = 50

Computing the Total Score

Total Score = Sum of pain + function scores → Best Score = 0, Worst Score = 100

Note: responses to the fifteen items are totaled out of 100, where pain and disability are equally weighted

Sample Scoring

1. PAIN IN YOUR AFFECTED ARM											
*Rate the average amount of pain in your arm **over the past week** by circling the number that best describes your pain on a scale from 0 to10. A **zero** (0) means that you **did not have any pain** and a **ten** (10) means that you had **the worst pain imaginable.***											
RATE YOUR PAIN:	No Pain										Worst Imaginable
When you are at rest	0	1	**2**	3	4	5	6	7	8	9	10
When doing a task with repeated arm movement	0	1	2	3	4	5	6	7	**8**	9	10
When carrying a plastic bag of groceries	0	1	2	3	4	5	6	**7**	8	9	10
When your pain was at its least	0	1	2	3	4	**5**	6	7	8	9	10
When your pain was at its worst	0	1	2	3	4	5	6	7	8	**9**	10

Pain score = 2 + 8 + 7 + 5 + 9 = 31/50

A. SPECIFIC ACTIVITIES *Rate the **amount of difficulty** you experienced performing each of the tasks listed below, over the past week, by circling the number that best describes your difficulty on a scale of 0–10. A zero (0) means you did not experience any difficulty and a **ten (10)** means it was **so difficult you were unable to do it at all.*** No Difficulty ... Unable to Do	
Turn a doorknob or key	0 **1** 2 3 4 5 6 7 8 9 10
Carry a grocery bag or briefcase by the handle	0 1 2 **3** 4 5 6 7 8 9 10
Lift a full coffee cup or glass of milk to your mouth	**0** 1 2 3 4 5 6 7 8 9 10
Open a jar	0 1 2 3 4 **5** 6 7 8 9 10
Pull up pants	**0** 1 2 3 4 5 6 7 8 9 10
Wring out a washcloth or wet towel	0 1 2 **3** 4 5 6 7 8 9 10
B. USUAL ACTIVITIES *Rate the **amount of difficulty** you experienced performing your **usual** activities in each of the areas listed below, over the past week, by circling the number that best describes your difficulty on a scale of 0–10. By "usual activities," we mean the activities that you performed **before** you started having a problem with your arm. A **zero** (0) means you did not experience any difficulty and a **ten** (10) means it was so difficult you were unable to do any of your usual activities.*	
1. Personal activities (dressing, washing)	0 **1** 2 3 4 5 6 7 8 9 10
2. Household work (cleaning, maintenance)	0 1 2 3 4 **5** 6 7 8 9 10
3. Work (your job or everyday work)	0 1 2 3 **4** 5 6 7 8 9 10
4. Recreational or sporting activities	0 1 2 3 4 5 **6** 7 8 9 10

Function score = (1+ 3 + 0 + 5 + 0 + 3 + 1 + 5 + 4 + 6) / 2 = 14/50

Total score = 31 + 14 = 45/100

Interpretation

- The total PRTEE score rates pain and disability equally.
- Higher score indicates more pain and functional disability (e.g., 0 = no disability).

Common Questions

1) How are missing data treated?

If there is an item missing, you can replace the item with the mean score of the subscale.

2) What if patients leave the question blank because they cannot do it?

Make sure the patients understand that they should have answered "10" for the item and make corrections, if necessary.

3) What if patients rarely perform the task?

If patients are unsure about how to answer a task that is rarely performed, encourage them to estimate their average difficulty. Their estimate will be more accurate than leaving the question blank.

4) What if patients do not do the task?

If patients never do the task, they should leave the question blank.

Instrument Properties and Outcome Studies

Reliability

Test-Retest Reliability: the stability of the instrument over time.

Standard Error of Measurement: the confidence around the value of the score.

Validity

Construct Validity: the extent to which the instrument corresponds to theoretical constructs.

Criterion/Concurrent Validity: the extent to which the instrument relates with a gold standard or more established measure.

Responsiveness

Responsiveness: The ability of the instrument to detect change.

Table 1 – Reliability of the PRTEE in published studies

Study	Population	Type	PRTEE Results	Comparators
Overend et al., 1999 (1)	47 patients (age=45.0; 24M, 23F)	T-R reliability SEM	Pain ICC = 0.89 Function ICC = 0.83 Total ICC = 0.89 Subgroup analyses: ICC > 0.75 Pain = 0.6 Function = 0.9 Total = 0.6 Subgroup analyses: ICC > 0.5	None
Leung et al., 2004 (2)	74 patients (age=28-69) with lateral epicondylitis	 T-R reliability SEM	(Hong Kong Chinese PRFEQ) Pain ICC = 0.99 Function ICC = 0.99 Total ICC = 0.99 Pain = 0.99 Function = 2.38 Total = 3.28	None
Newcomer et al., 2005 (3)	94 patients (age = 45.5; 53.2% F) with lateral epicondylitis	(n=22) T-R reliability (3 days)	(PRFEQ) Pain ICC = 0.96 Function ICC = 0.92 Total ICC = 0.96	None
Rompe et al., 2007 (4)	78 patients with chronic, unilateral, MRI-confirmed lateral elbow tendinopathy that were randomized to: i) treatment (n = 38; age = 45 (23-	T-R reliability (1 week) Internal Consistency	Pain $r^2 = 0.92$ Function: SA $r^2 = 0.87$ Function: UA $r^2 = 0.77$ Total $r^2 = 0.87$ Pain $\alpha = 0.92$ Function: SA $\alpha = 0.90$ Functions UA $\alpha = 0.70$	

	69); 47% F); ii) placebo (n = 40; age = 45 (18-68); 50% F)		Total α = 0.94	
Nilsson et al., 2008 (6)	54 patients (age = 46; 25F, 29M) with unilateral epicondylitis/ epicondylalgia	T-R reliability (30 minutes) SEM Internal Consistency	(Swedish PRTEE) Occasion 1 / Occasion 2 Pain ICC = 0.58 / Pain ICC= 0.60 Function ICC = 0.91 / Function ICC = 0.90 Total ICC = 0.90 / Total ICC = 0.90 Pain = 0.25 / Pain = 0.60 Function = 0.32 / Function = 0.31 Total = 0.27 / Total = 0.27 Pain α = 0.84 / Pain α = 0.83 Function α = 0.93 / Function α = 0.92 Total α = 0.94 / Total α = 0.94	
Altan et al., 2010 (7)	50 patients (age = 47.52 (34-60); 14M, 36F) with lateral epicondylitis	T-reliability (2 hours) Internal Consistency	(Turkish PRTEE) Pain r_s = 0.922 Function: SA r_s = 0.906 Function: UA r_s = 0.907 Overall r_s = 0.920 Pain α = 0.733 Function: SA α = 0.712 Function: UA α = 0.755 Total α = 0.837	
Blanchette et al., 2010 (8)	32 patients (age = 45 (12); 14M, 18F) with lateral epicondylitis	Internal Consistency	Pain α = 0.80 Function α = 0.92 Total α = 0.93 Item-total correlation r = 0.58-0.85	

Legend: ICC = intraclass correlation coefficient; SEM = standard error of measurement; T-R reliability = test-retest reliability; r^2 = coefficient of determination; α = Cronbach's alpha

Abbreviations: F = female; M = male; PRFEQ = Patient-Rated Forearm Evaluation Questionnaire; PRTEE = Patient-Rated Tennis Elbow Evaluation; Function: SA = Functions: Special Activities subscale; Function: UA = Function: Usual Activities

Table 2 – Validity of the PRTEE in Published Studies

Study	Population	Type	PRTEE Results	Comparators
Overend et al., 1999 (1)	47 patients (age=45.0; 24M, 23F)	Criterion r with pain-free grip	 Pain r = -0.36 Function r = -0.30 Total r = -0.30	None
Leung et al., 2004 (2)	74 patients (age=28-69) with lateral epicondylitis	Construct r_s with flexed elbow r_s with extended elbow	(Hong Kong Chinese PRFEQ) Pain r_s = -0.39 Function r_s = -0.38 Total r_s = -0.40 Pain r_s = -0.38 Function r_s = -0.38 Total r_s = -0.40	None
Newcomer et al., 2005 (3)	94 patients (age = 45.5; 53.2% F) with lateral epicondylitis	Concurrent r_s with VAS r_s with PFG r_s with DASH r_s with SF-36 SF r_s with SF-36 RP	(PRFEQ) Pain r_s = 0.62 Function r_s = 0.64 Total r_s = 0.66 Pain r_s = -0.35 Function r_s = -0.45 Total r_s = -0.45 Pain r_s = 0.56 Function r_s = 0.74 Total r_s = 0.72 Pain r_s = -0.33 Function r_s = -0.32 Total r_s = -0.31 Pain r_s = -0.32 Function r_s = -0.37 Total r_s = -0.38	None

		r_s with SF-36 BP r_s with SF-36 PF	Pain r_s = -0.60 Function r_s = -0.62 Total r_s = -0.65 Pain r_s = -0.59 Function r_s = -0.57 Total r_s = -0.61	
Alizadehkhaiyat et al., 2007 (5)	16 patients (age=49 (40-66); 50% F) with lateral epicondylitis; 16 healthy controls (age=40 (26-59); 44% F)	Concurrent r with DASH r with PRWE	(PRFEQ) r = 0.86 r = 0.89	DASH r = 0.73
Rompe et al., 2007 (4)	78 patients with chronic, unilateral, MRI-confirmed lateral elbow tendinopathy that were randomized to: i) treatment (n = 38; age = 45 (23-69); 47% F); ii) placebo (n = 40; age = 45 (18-68); 50% F)	Construct r^2 with Thomsen test r^2 with UEFS r^2 with Roles and Maudsley r^2 with DASH	 Pain r^2 = 0.75 Function: SA r^2 = 0.80 Function: UA r^2 = 0.55 Total r^2 = 0.84 Pain r^2 = 0.05* Function: SA r^2 =0.02* Function: UA r^2 = 0.01* Total r^2 = 0.03* Pain r^2 = 0.01* Function: SA r^2 = 0.02* Function: UA r^2 = 0.00* Total r^2 = 0.02* Pain r^2 = 0.67 Function: SA r^2 = 0.69 Function: UA r^2 = 0.45 Total r^2 = 0.75	
Nilsson et al., 2008 (6)	54 patients (age = 46; 25F, 29M) with unilateral epicondylitis/ epicondylalgia	Construct/ Concurrent r_s with DASH (symptoms)	(Swedish PRTEE) Pain r_s = 0.79 Function r_s = 0.83	German PREE r_s = 0.61

			Total $r_s = 0.84$	
		r_s with DASH (function)	Pain $r_s = 0.82$ Function $r_s = 0.90$ Total $r_s = 0.91$	$r_s = 0.83$
		r_s with DASH (total)	Pain $r_s = 0.78$ Function $r_s = 0.90$ Total $r_s = 0.88$	$r_s = 0.73$
		r_s with Roles & Maudsley	Pain $r_s = 0.67$ Function $r_s = 0.79$ Total $r_s = 0.78$	
Altan et al., 2010 (7)	50 patients (age = 47.52 (34-60); 14M, 36F) with lateral epicondylitis	Concurrent	(Turkish PRTEE)	
		r_s with DASH	Pain $r_s = 0.501$ Function: SA $r_s = 0.622$ Function: UA $r_s = 0.568$ Total $r_s = 0.676$	
		r_s with Quick-DASH	Pain $r_s = 0.403$ Function: SA $r_s = 0.523$ Function: UA $r_s = 0.554$ Total $r_s = 0.589$	
		Construct		
		r_s with Tenderness	Pain $r_s = – 0.411$ Function: SA $r_s = – 0.204^{*}$ Function: UA $r_s = – 0.423$ Total $r_s = – 0.441$	
		r_s with maximum group strength	Pain $r_s = – 0.356$ Function: SA $r_s = – 0.366$ Function: UA $r_s = – 0.352$ Total $r_s = – 0.427$	
Blanchette et al., 2010 (8)	32 patients (age = 45 (12); 14M, 18F) with lateral epicondylitis	Construct	(Canadian French PRTEE)	
		Baseline r with VAS	Pain r = 0.65 Function r = 0.73	

			Total r = 0.72	
		r with pain-free grip	Pain r = - 0.39 Function r = - 0.35* Total r = - 0.38	
		12 weeks r with VAS	Total r = 0.77	
		r with pain-free grip	Total r = - 0.49	
		3 months r with VAS	Total r = 0.64	

Legend: r = Pearson correlation coefficient; r_s = Spearman's correlation coefficient; * = not statistically significant, $p > 0.05$

Abbreviations: DASH = Disabilities of the Arm, Shoulder, Hand; F = female; M = male; PFG = Pain-Free Grip; PRFEQ = Patient-Rated Forearm Evaluation Questionnaire; PRTEE = Patient-Rated Tennis Elbow Evaluation; SF-36 BP = SF=36 Bodily Pain; SF-36 PF = SF-36 Physical Function; SF-36 RP = SF-36 Role Physical; SF-36 SF = SF-36 Social Function; VAS = Visual Analogue Scale; UEFS = Upper Extremity Functions Scale; PREE = Patient-rated elbow evaluation

Table 3 - Responsiveness to Change (or Longitudinal validation) of the PRTEE in published studies

Study	Population	Type	PRTEE Results	Comparators			
Newcomer et al., 2005 (3)	94 patients (age = 45.5; 53.2% F) with lateral epicondylitis	6 weeks SRM	(PRFEQ) Pain = 1.2 Function = 0.8 Total = 1.0	PFG 0.8	VAS 1.0	DASH 0.9	SF-36 BP 0.7
		ES	Pain = 1.3 Function = 0.8 Total = 1.0	0.6	1.1	0.9	0.8
		12 weeks SRM	Pain = 1.8 Function = 1.6 Total = 1.9		1.3	1.5	
		ES	Pain = 1.8 Function = 1.4 Total = 1.6		1.4	1.3	
Rompe et al., 2007 (4)	78 patients with chronic, unilateral, MRI-confirmed lateral elbow tendinopathy that were randomized to: i) treatment (n = 38; age = 45 (23-69); 47% F); ii) placebo (n = 40; age = 45 (18-68); 50% F)	3 months SRM	(treatment group, n = 38) Pain = 2.01 Function = 2.01	Thomsen Test 1.73	UEFS 1.58	Roles and Maudsley 1.52	DASH 1.60
		ES	Pain = 33.67 (16.67) Function = 50.00 (24.88)	3.50 (2.02)	23.37 (14.83)	1.39 (0.92)	32.15 (20.05)
		Posttreatment – pretreatment changes					
		r^2 with Thomsen test	Pain $r^2 = 0.73^*$ Function: SA $r^2 = 0.84^*$ Function: UA $r^2 = 0.25^*$ Total $r^2 = 0.84^*$				
		r^2 with UEFS	Pain $r^2 = 0.36^*$ Function: SA $r^2 = 0.25^*$				

			Function: UA $r^2 = 0.15^*$ Total $r^2 = 0.33^*$		
		r^2 with Roles and Maudsley	Pain $r^2 = 0.39^*$ Function: SA $r^2 = 0.23^*$ Function: UA $r^2 = 0.09$ Total $r^2 = 0.31^*$		
		r^2 with DASH	Pain $r^2 = 0.80^*$ Function: SA $r^2 = 0.92^*$ Function: UA $r^2 = 0.52^*$ Total $r^2 = 0.66^*$		
Blanchette et al., 2010 (8)	32 patients (age = 45 (12); 14M, 18F) with lateral epicondylitis	6 weeks SRM ES 3 months SRM ES Longitudinal Construct Validity Baseline to 6 weeks r with VAS r with PFG Baseline to 3 months R with VAS	(Canadian French PRTEE) 0.9 (95% CI = 0.5, 1.3) 0.8 (95% CI = 0.4, 1.2) 1.0 (95% CI = 0.6, 1.4) 1.0 (95% CI = 0.6, 1.4) 0.68 - 0.26* 0.88	VAS 1.0 (95% CI = 0.6, 1.5) 1.0 (95% CI = 0.6, 1.4) 1.0 (95% CI = 0.5, 1.3) 1.0 (95% CI = 0.6, 1.5)	PFG -0.5 (95% CI = -0.9, -0.1) -0.2 (95% CI = -0.3, 0.0)

Legend: ES = effect size; SRM = standardized response mean; * = statistically significant, $p < 0.05$, 95% CI = 95% confidence intervals

Abbreviations: DASH = Disabilities of the Arm, Shoulder, Hand; F = female; M = male; PFG = Pain-Free Grip; PRFEQ = Patient-Rated Forearm Evaluation Questionnaire; PRTEE = Patient-Rated Tennis Elbow Evaluation; SF-36 BP = SF=36 Bodily Pain; VAS = Visual Analogue Scale

Table 4 - Comparative Scores for the PRTEE

Study	Population	Follow-up Time	PRTEE Results Mean (SD)	Comparators
Overend et al., 1999 (1)	47 patients (age=45.0; 24M, 23F)	Day 1 Total (n=47) Males (n=24) Females Acute (n=35) Chronic (n=12) Work-related (n=21) Non-work-related (n=26)	 Pain = 4.1 (1.8) Function = 3.4 (2.1) Total = 3.8 (1.8) Pain = 3.5 (1.4) Function = 2.8 (1.9) Total = 3.1 (1.6) Pain = 4.7 (1.9) Function = 4.1 (2.1) Total = 4.4 (1.9) Pain = 4.2 (1.6) Function = 3.6 (2.0) Total = 3.9 (1.7) Pain = 3.6 (2.1) Function = 3.1 (2.2) Total = 3.3 (2.0) Pain = 4.5 (1.6) Function = 4.2 (2.3) Total = 4.4 (1.8) Pain = 3.7 (1.9) Function = 2.8 (1.7) Total = 3.3 (1.7)	None
Leung et al., 2004 (2)	74 patients (age=28-69) with lateral epicondylitis		(Hong Kong Chinese PRFEQ) Pain = 27.96 (9.39) Function = 47.50 (23.49) Total = 75.46 (32.10)	None
Van der Streek et al., 2004 (9)	43 patients with lateral epicondylitis		(PRFEQ)	Maximal grip strength (kg_f)

Study	Population	Follow-up Time	PRTEE Results Mean (SD)		Comparators	
	randomized to wear: i) elbow band (n=20; age=43.50 (9.39); 70% F); ii) forearm/hand splint (n=23; age=42.30 (9.88); 70% F)		Group I	Group II	Group I	Group II
		Baseline Acute symptoms (group I: n = 11; group II: n = 11)	Pain = 25.5 (7.5) Function = 56.3 (21.6) Total = 81.8 (28.0)	Pain = 25.2 (8.0) Function = 47.5 (18.5) Total = 72.7 (24.0)	37.4 (13.7)	26.3 (11.8)
		Chronic symptoms (group I: n = 8; group II: n = 10)	Pain = 28.2 (5.5) Function = 55.1 (12.6) Total = 83.4 (12.9)	Pain = 28.0 (8.1) Function = 54.7 (21.4) Total = 82.7 (28.9)	31.6 (10.3)	26.7 (5.2)
		Total symptoms (group I: n = 19; group II: n = 21)	Pain = 26.7 (6.7) Function = 55.8 (17.7) Total = 82.5 (22.0)	Pain = 26.6 (8.0) Function = 50.9 (19.7) Total = 77.5 (26.3)	29.2 (12.2)	26.5 (9.0)
		6 weeks Acute symptoms	Pain = 19.0 (7.7) Function = 40.4 (18.3) Total = 59.3 (25.4)	Pain = 18.7 (11.4) Function = 31.9 (18.1) Total = 50.6 (28.0)	27.9 (12.3)	31.3 (16.0)
		Chronic symptoms	Pain = 18.6 (6.7) Function = 34.6 (17.6) Total = 53.3 (23.4)	Pain = 233 (13.4) Function = 43.4 (28.5) Total = 66.7 (41.3)	34.4 (8.6)	29.4 (6.4)

Study	Population	Follow-up Time	PRTEE Results Mean (SD)		Comparators			
		Total symptoms	Pain = 18.8 (7.0) Function = 37.8 (17.7) Total = 56.6 (24.0)	Pain = 20.9 (12.3) Function = 37.4 (23.5) Total = 58.3 (35.1)	30.6 (11.1)		30.4 (12.2)	
Martinez-Silvestrini et al., 2005 (10)	94 patients (50M; age=45.5) with chronic lateral epicondylitis treated with one of: stretching; concentric strengthening with stretching; eccentric strengthening with stretching	Baseline Six weeks	(PRFEQ) Stretching Total = 3.7 (1.7) Concentric Total = 3.8 (1.7) Eccentric Total = 3.3 (1.5) Stretching Total = 1.5 (1.6) Concentric Total = 1.3 (1.8) Eccentric Total = 1.2 (1.7)		DASH Stretching = 27 (14) Concentric = 26 (13) Eccentric = 25 (13) Stretching = 15 (14) Concentric = 17 (14) Eccentric = 16 (15)	VAS Stretching = 48 (21) Concentric = 49 (21) Eccentric = 46 (20) Stretching = 25 (24) Concentric = 35 (25) Eccentric = 24 (24)	Pain-Free Grip Stretching = 23 (15) Concentric = 17 (9.7) Eccentric = 22 (12) Stretching = 30 (17) Concentric = 25 (12) Eccentric = 26 (14)	
Faes et al., 2006 (11)	63 patients with lateral epicondylitis received: extensor brace (n=30; age=46; 63% F) or no brace treatment (n=33; age=48; 48% F)	Baseline	(PRFEQ) Brace = 5.2 (1.9) Control = 4.6 (1.7)		VAS Brace = 4.3 (2.1) Control = 4.3 (1.8)			
Alizadehkhaiyat et al., 2007 (5)	16 patients (age=49 (40-66); 50% F) with lateral epicondylitis; 16 healthy controls (age=40 (26-59); 44% F)		(PRFEQ) Patient Pain = 31 (8) Function = 29 (11) Total = 60 (19)	Control Pain = 1 (2) Function = 0 (1) Total = 1 (3)	DASH Patient Symptom= 54 (20) Work = 46 (22)	Control Symptom = 2 (4) Work = 2 (7)	PRWEQ Patient Pain = 30 (16) Function = 26 (15) Total = 56 (31)	Control Pain = 1 (4) Function = 0 (1) Total = 2 (4)
Radpasand, 2007 (12)	Patient (age = 57, F) with lateral epicondylitis who underwent 10-week sequential multimodal treatment	Baseline End of treatment	Pain = 28 Function: SA = 48 Function: UA = 32 Total = 68 Pain = 2 Function: SA = 0 Function: UA = 1					

Study	Population	Follow-up Time	PRTEE Results Mean (SD)	Comparators
		3 weeks	Total = 2 Pain = 4 Function: SA = 1 Function: UA = 1 Total = 5	
Nilsson et al., 2008 (6)	54 patients (age = 46; 25F, 29M) with unilateral epicondylitis/ epicondylalgia	Occasion 1 Occasion 2 (after 30 minutes)	(Swedish PRTEE) Pain = 4.18 (1.81) Function = 3.90 (2.38) Total = 4.04 (2.00) Pain = 3.77 (1.80) Function = 3.70 (2.29) Total = 3.74 (1.97)	
Connell et al., 2009 (13)	12 patients (age = 39.1 (29-48); 5M, 7F) with refractory lateral epicondylitis treated with injection of collagen-producing cells into sites of intrasubstance tears and fibrillar discontinuity	Pre-treatment Post-treatment (6 weeks) (3 months) (6 months)	78 (IQR =71- 88) 47 (IQR =17.5-80) 35 (IQR = 0-42) 12 (IQR = 9-25)	Ultrasonography Assessment Thickness (mm) / Hypoechogenicity / Neovascularity/ hypervascularity / Tears (mm) 4.35 (IQR = 4 -4.5) / 7 (IWR = 6 -8) / 3 (IQR = 2.75 - 4.25) / 5 (IQR = 3-6) 4.2 (ICR = 4 - 4.4) / 3 (IQR = 2.75 - 4.5) / 1 (IQR = 0 - 1.25) / 2 (IQR = 0 -5)
Grewal et al., 2009 (14)	36 patients (age = 45.3 (7; 29-61); 20M, 16F) with chronic lateral epicondylitis treated with arthroscopic release	42 months (19-74 months) Worker's Compensation claim (n = 23) No worker's compensation claim (n = 13)	 36.7 7.6	MEPI / ASES-e / SF-12 71.8 / Pain = 21.0 Function = 24.1 Satisfaction = 7.0 / Mental = 47.7 Physical = 41.4 90.0 / Pain = 6.8 Function = 34.3 Satisfaction = 9.8 / Mental = 54.3 Physical =51.3

Study	Population	Follow-up Time	PRTEE Results Mean (SD)		Comparators		
		Heavy/ repetitive work (n = 25)	31.2		75.1	Pain = 18.6 Function = 25.9 Satisfaction = 7.7	Mental = 48.6 Physical =42.2
		No heavy/ repetitive work (n = 11)	13.1		85.7	Pain = 8.1 Function 33.0= Satisfaction =9.9	Mental = 55.1 Physical = 54.0
		r with WLQ: Scheduling demands	Pain r = 0.530 Function r = 0.560 Total r = 0.530		r = - 0.375*	Pain r = 0.320* Function r = 0.516	Mental r =- 0.724 Physical r =- 0.530
		Mental demands	Pain r = 0.558 Function r = 0.646 Total r = 0.638		r = - 0.412*	Pain r = 0.598 Function r = - 0.607	Mental r = - 0.914 Physical r = - 0.660
		Output demands	Pain r = 0.390* Function r = 0.405* Total r = 0.401*		r = - 0.324*	Pain r = 0.287* Function r = - 0.532	Mental r = - 0.436* Physical r = - 0.412*
		Social demands	Pain r = 0.326* Function r = 0.436 Total r = 0.410*		r = - 0.195*	Pain = 0.431 Function = - 0.448	Mental r = - 0.760 Physical r = - 0.599
		Physical demands	Pain r = 0.560 Function r = 0.612 Total r = 0.589		r = - 0.436	Pain r = 0.484 Function r = - 0.696	Mental r = - 0.741 Physical r = - 0.706
Radpasand et al., 2009 (15)	5 patients with chronic lateral epicondylitis randomized to 1 of 2 multimodal therapy groups: i) Group A (n=3; age = 38.0 (9.0); 3M); ii) Group	Baseline	Group A Pain = 19.0 (8.5) Function: SA = 22.5 (17.7) Function: UA = 11.0 (5.7) Total = 35.8	Group B Pain = 17.0 (2.9) Function: SA = 12.0 (4.2) Function: UA = 11.0 (1.4) Total = 28.5	VAS Group A Least pain = 9.0 (4.3) Worst pain = 34.0 (25.5)	Group B Least pain = 23.0 (9.9) Worst pain = 56.0 (5.7)	Pain-free grip strength Group A 56.2 (18.0) Group B 16.0 (16.0)

Study	Population	Follow-up Time	PRTEE Results Mean (SD)		Comparators			
	B (n = 2; age = 44.5 (7.0); 1M, 1F)	Post-treatment (12 weeks)	(20.1) Pain = 8.0 (2.9) Function: SA = 6.5 (2.1) Function: UA = 7.0 (2.8) Total = 14.8 (5.3)	(1.4) Pain = 7.5 (5.0) Function: SA = 6.5 (0.8) Function: UA = 6.5 (0.7) Total = 14.2 (28.1)	Least pain = 7.5 (5.0) Worst pain = 21.5 (16.3)	Least pain = 10.5 (19.7) Worst pain = 19.5 (22.0)	58.0 (34.4)	19.5 (22.0)
Clarke et al., 2010 (16)	62 patients (age = 43 (25-61); 30M, 32F) with lateral elbow tendinopathy who underwent 6 months of non-operative standardized treatment	Pre-treatment Post-treatment Mean change	78 (10.8; 51-97) 28 (35.0; 0-91) – 49 (33.6, – 91-20)					

Legend: r = Pearson's correlation coefficient; * = statistically insignificant, $p > 0.05$
Abbreviations: DASH = Disabilities of the Arm, Shoulder, Hand; F = Female; M = Male; PRFEQ = Patient-Rated Forearm Evaluation Questionnaire; PRTEE = Patient-Rated Tennis Elbow Evaluation; VAS = Visual Analogue Scale; Function: SA = Functions: Special Activities subscale; Function: UA = Function: Usual Activities; IQR = interquartile range; MEPI = Mayo Elbow Performance Index; ASES-e = American Shoulder and Elbow Surgeons Elbow score; SF-12 = Short-Form 12

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