The Effect of Rational Emotive Behaviour Therapy on Post-Traumatic Growth: Evidence from a Pilot Study on Anterior Cruciate Ligament Injured Football Players

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Abstract

Sports injuries often lead to significant psychological distress, often affecting athletes' mental health and influencing how they perform in the future. This piolet research explored the impact of Rational Emotive Behaviour Therapy (REBT) on post-traumatic growth (PTG) in eight ACL-injured football players (aged 19–24). Data were collected from SAIFIT Rehab and High-Performance Center showed significant improvements in PTG domains, highlighting REBT's effectiveness in fostering resilience and adaptive coping in sports injury rehabilitation. Participants received a REBT intervention, and data collected using the Post-Traumatic Growth Inventory (PTGI) to assess changes in their post-traumatic growth levels. A paired-samples t-test revealed significant improvements across multiple PTG domains, including personal strength ($p = .002$), new possibilities ($p = .038$), improved relationships ($p = .014$), and appreciation for life ($p = .032$). The overall PTG score showed a highly significant increase ($p < .001$), indicating the effectiveness of REBT in facilitating positive psychological adaptation post-injury. These preliminary findings suggest that REBT can play a crucial role in fostering PTG among injured athletes, emphasizing its potential integration into sports rehabilitation programs. Future research with larger sample sizes and longitudinal follow-ups is recommended to strengthen these findings and establish the long-term efficacy of REBT in sports injury recovery.

Keywords: *Rational Emotive Behaviour Therapy, Post-Traumatic Growth, Sports Injury, Psychological Rehabilitation*

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Introduction

Sports injuries are a significant challenge for athletes, particularly in high-impact sports like football (soccer). Among these injuries, Anterior Cruciate Ligament (ACL) injuries are particularly common among these injuries and can have serious consequences for athletes (Sandon et al., 2021). The plays a vital role in maintaining knee stability and facilitating movement, rendering it susceptible during the rapid directional changes and physical contact inherent in football. These injuries often necessitate surgical intervention and extensive rehabilitation, resulting in prolonged absences from the sport and potentially impacting an athlete's career and performance levels. (Bisciotti et al. 2019). Recovery from an ACL injury can take six months to over a year, during which athletes may experience not only physical limitations but also psychological challenges.

Psychologically, ACL injuries can lead to a spectrum of adverse effects. Athletes frequently experience pain that contributes to anxiety and a fear of reinjury, diminishing their confidence and affecting their readiness to return to play. Research indicates that individuals recovering from ACL injuries may exhibit heightened levels of depression, mood disturbances, and reduced self-esteem, particularly in the initial stages post-injury. This emotional challenges can adversely affect self-esteem, mood changes, and heightened anxiety about physical performance and the rehabilitation process (Piussi, et.al. 2022).

Understanding the psychological impact of sports injuries on athletes is essential, as it directly affects their mental health, well-being, and readiness to return to sport. Injuries can lead to emotional disturbance and mental health issues which may influence the overall recovery process. Research by Brewer (2007) highlights a bidirectional relationship between mental health and sports injuries, emphasizing that psychological distress can both result from and contribute to injury risk. Stress plays a crucial

role in injury occurrence and rehabilitation, potentially exacerbating conditions such as depression, anxiety, suicidal ideation, disordered eating, and substance abuse (Putukian, 2016). Furthermore, athletes with pre-existing depressive symptoms are more susceptible to post-injury mental health challenges, which can delay their recovery and future performance (Yang et al., 2015; Haugen, 2022). Providing psychological support and education on effective coping strategies is vital to helping athletes navigate these challenges and enhance their recovery outcomes by shifting the perspective from post-traumatic injury to growth after injury.

Post-traumatic growth (PTG) refers to the positive psychological transformation occur following the struggle with challenging life events, such as severe sports injuries. In the athletic context, PTG may manifest as enhanced personal relationships, a renewed sense of purpose, increased personal strength, and a deeper appreciation for life despite the adversity faced (Vann, et. al 2019; Putri, & Hartini, 2021). Athletes who view injuries as opportunities for self-discovery, rather than as career-ending events, are more likely to experience PTG. This perspective shift often involves redefining one's identity beyond athletic performance and exploring new roles, such as mentoring teammates or coaching (Vann et al., 2019; Putri & Hartini, 2021). Cognitive reappraisal, by changing irrational beliefs with rational beliefs, which involves interpreting stressors from a growth-oriented perspective, is closely associated with autonomy and social connection during recovery (Robazza et al., 2023). Research indicates that athletes who employ cognitive reappraisal strategies tend to experience reduced negative emotions and increased confidence during rehabilitation. Furthermore, a healthy support system is crucial in fostering PTG by fulfilling psychological needs for competence, autonomy, and relatedness. Encouragement from coaches, medical professionals, and peers, when coupled with respect for the athlete's independence, enhances resilience, and the biopsychosocial model underscores the significance of social support in moderating stress and boosting self-efficacy throughout the rehabilitation process (Calhoun et al., 2022).

Rational Emotive Behavior Therapy, developed by Albert Ellis in the 1950s, is focuses on identifying and altering irrational beliefs to rational beliefs to reduce the emotional distress and maladaptive behaviors. The idea of REBT is that not external events that directly cause emotional responses, but rather an individual's beliefs about those events (Turner, 2016). By challenging and altering irrational beliefs with rational alternatives, REBT fosters emotional resilience and healthier coping mechanisms. REBT structures its core philosophy within the ABC framework, where A represents the activating event or adversity, B refers to the beliefs about the event, and C denotes the resulting emotional and behavioral consequences (David, Schnur, & Belloiu,2002). In Rational Emotive Behavior Therapy (REBT), the ABC model illustrates how an Activating event (A) leads to Beliefs (B), which then result in emotional and behavioral Consequences (C). Therapists assist clients in Disputing (D) these irrational beliefs, encouraging the development of Effective new beliefs (E) to foster healthier emotional responses (Dryden, 2009; Ellis, & Dryden, 2007).

REBT is increasingly utilized in sports psychology to help athletes manage the psychological demands inherent in competitive sports (Tóth, et.al, 2023).Which helps athletes to reframe their thoughts about stressors, reducing unhealthy emotional responses like anger or frustration (Turner, 2016). Irrational beliefs, including fear of failure and perfectionism, can cause significant anxiety among athletes (Tóth, et.al, 2023), REBT enables athletes to challenge these beliefs, fostering confidence and focus during performance. Injuries can trigger negative emotions and irrational thoughts like "My career is over." REBT supports athletes in reframing these thoughts, aiding emotional

recovery and maintaining motivation during rehabilitation (Turner, 2016). Beyond performance, REBT is used to promote overall mental well-being by addressing maladaptive behaviors and emotions linked to irrational beliefs (Tóth, Resperger, & Tóth, 2024).

There is a scarcity of studies exploring the role of REBT to facilitate PTG in ACL-injured athletes. While REBT has been effective in managing stress and irrational beliefs in sports settings, its role in promoting positive adaptation post-injury remains underexplored. Given the psychological challenges associated with ACL injuries, therefore a pilot study is necessaryto assess the feasibility and impact of REBT on PTG. This study will provide preliminary insights that can inform future research and rehabilitation strategies. The objective of the present study to assess how REBT influences post-traumatic growth in athletes recovering from ACL injuries.

Method

Participants

This study was conducted after obtaining approval from sports rehabilitation center and informed consent from the participants. Eight male football players (Mage = 21.5 years, SDage = 1.78 years; age range = 19–24 years) with full anterior cruciate ligament (ACL) injuries participated in the research. All participants were undergoing rehabilitation at the SAIFIT Rehab and High-Performance Center, Kerala. The participants had sustained ACL injuries within the past six months and were in different stages of rehabilitation. The inclusion criteria required participants to have taken a break from athletic activity for at least one month, have no prior experience with psychological training or therapy, and be actively engaged in their recovery process.

Design

The quasi experimental design, pre-test post-test experimental design was utilized to evaluate the effect of Rational Emotive Behaviour Therapy (REBT) on post-traumatic growth (PTG). Participants underwent an REBT intervention program consisting of structured sessions aimed. The study did not include a control group due to the small sample size, making it a pilot investigation into the feasibility and effectiveness of REBT in sports rehabilitation. The Post-Traumatic Growth Inventory (PTGI) was administered before and after the intervention to measure changes in PTG levels.

Measure

Post-traumatic growth

The Post-Traumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996) is a widely used tool that measures positive psychological changes following adversity. The inventory consists of 21 items distributed across five domains: New Possibilities, Relating to Others, Personal Strength, Spiritual Change, and Appreciation of Life (Tedeschi & Calhoun, 1996). Responses are rated on a 6-point Likert scale ranging from 0 (“I did not experience this change”) to 5 (“I experienced this change to a very great degree”). The scale has strong internal consistency, with a Cronbach’s alpha of .89.

Procedure

Participants were introduced to the study’s purpose and provided informed consent before data collection. Pre-intervention assessments were conducted using the PTGI. The REBT intervention was delivered across seven structured sessions focusing on disputing irrational beliefs. Following the completion of the intervention, post-test assessments were conducted to measure changes in PTG levels. The paired-samples t-tests, were performed to determine significant differences between pre and post timepoint scores across PTG domains

Intervention Procedure

The intervention comprised a structured seven-session Rational Emotive Behavior Therapy (REBT) program, conducted weekly, with three assigned homework exercises designed to enhance participants' awareness of their beliefs and emotional responses. Each 30-minute session focused on specific themes, including psychoeducation on REBT principles, identification and analysis of activating events and irrational beliefs, exploration of emotional responses, and training in mindfulness

techniques to increase self-awareness. Participants engaged in activities such as the inference chaining technique to assess beliefs, disputation exercises to challenge irrational thoughts, and rehearsals of rational beliefs through real-life and hypothetical scenarios. Homework assignments encouraged self-reflection on personal experiences, identification of belief-emotion connections, and application of rational thinking strategies in daily life. The intervention concluded with a summarization session, reinforcing the ABCDE model of REBT and incorporating role-play exercises to consolidate learning and promote the practical application of rational beliefs in managing emotional challenges.

Statistical Analysis

The data were systematically organized in alignment with the study's objectives, and appropriate statistical analyses were utilized. The paired samples t-tests used to evaluated pre- and post-test differences and pearson correlation coefficient is used and examined variable relationships throughout the intervention.

Results

The paired-samples t-test was conducted to evaluvate the impact of Rational Emotive Behaviour Therapy (REBT) on post-traumatic growth (PTG) among ACL-injured football players. The findings revealed significant improvements across multiple PTG domains after the REBT intervention.

Table 1: Pearson Correlation between Post-Traumatic Growth Dimensions and Irrational Beliefs

	Personal Strength	New Possibilities	Improved Relationship	Spiritual Growth	Appreciation for life	Post Traumatic Growth	Demandingness	LFT	Awfulizing	Depreciation	Irrational Beliefs
Personal Strength	1										
New Possibilities	.470	1									
Improved Relationship	.466	.675*	1								
Spiritual Growth	-.283	-.195	-.454	1							
Appreciation for life	.167	.106	.262	-.378	1						
Post Traumatic Growth	.718*	.831**	.824**	-.216	.402	1					
Demandingness	-.634*	-.171	-.718*	.437	.026	-.486	1				
LFT	-.176	-.223	.018	-.672*	.493	-.181	.005	1			
Awfulizing	.459	-.388	.042	-.028	-.269	-.051	-.676*	-.046	1		
Depreciation	.589	.454	.362	-.294	.183	.519	-.321	-.283	-.150	1	
Irrational Beliefs	.429	-.218	-.138	-.572	.384	-.036	-.194	.512	.229	.444	1

*. Correlation is significant at the 0.05 level (1-tailed).

**. Correlation is significant at the 0.01 level (1-tailed).

Table II: Descriptive Statistics of Irrational Belief at different time points

Variables	Time Points	Mean	Std. Deviation	Std. Error Mean
Demandingness	Pre-test	4.3250	.35355	.12500
	Post-test	3.5000	.32071	.11339
Low Frustration Tolerance	Pre-test	4.4750	.36936	.13059
	Post-test	3.7500	.69076	.24422
Awfulizing	Pre-test	4.3500	.42426	.15000
	Post-test	3.4750	.39911	.14111
Depreciation	Pre-test	4.3750	.47132	.16664
	Post-test	2.7250	.42678	.15089
Irrational Belief	Pre-test	17.5250	.42678	.15089
	Post-test	13.4500	.64807	.22913

Table III: Paired t test of Irrational Belief pre-and post-intervention

Variables	Mean Difference	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
Demandingness	.82500	.42003	.14850	5.555	7	.001
Low Frustration Tolerance	.72500	.80667	.28520	2.542	7	.039
Awfulizing	.87500	.58493	.20680	4.231	7	.004
Depreciation	1.65000	.78376	.27710	5.954	7	.001
Irrational Belief	4.07500	.82765	.29262	13.926	7	.000

Table 1V: Descriptive Statistics of post traumatic growth at different time points

Variables	Time Points	Mean	Std. Deviation	Std. Error Mean
Personal Strength	Pre-test	10.00	4.840	1.711
	Post-test	16.63	2.669	.944
New Possibilities	Pre-test	14.00	5.210	1.842
	Post-test	19.00	3.586	1.268
Improved relationship	Pre-test	21.88	6.010	2.125
	Post-test	27.50	5.292	1.871
Spiritual Growth	Pre-test	3.25[a]	3.655	1.292
	Post-test	3.25[a]	3.655	1.292
Appreciation for life	Pre-test	7.75	3.882	1.373
	Post-test	11.25	2.121	.750
Total	Pre-test	56.88	13.527	4.783
	Post-test	77.63	9.149	3.235

Table V: Paired t test of post traumatic growth pre-and post-intervention

Variables	Mean Difference	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
Personal Strength	-6.625	3.998	1.413	-4.687	7	.002

New Possibilities	-5.000	5.529	1.955	-2.558	7	.038
Improved relationship	-5.625	4.897	1.731	-3.249	7	.014
Appreciation for life	-3.500	3.703	1.309	-2.673	7	.032
Post Traumatic growth	-20.750	9.543	3.374	-6.150	7	.000

Pearson correlation analysis (Table 1) was conducted to examine the relationships between irrational beliefs and various components of post-traumatic growth (PTG). When examining irrational beliefs, Demandingness showed a significant negative correlation with Personal Strength (r = –.634, $p < .05$) and Improved Relationships (r = –.718, $p < .05$), suggesting that higher levels of demandingness are associated with lower levels of resilience and relational growth after trauma and Depreciation showed a significant positive correlation with Personal Strength (r = .589, $p < .05$), indicating mixed roles of different irrational beliefs in the PTG process. Low Frustration Tolerance (LFT) was significantly negatively correlated with Spiritual Growth (r = –.672, $p < .05$), indicating that difficulty in tolerating frustration may hinder one's ability to find deeper meaning or spiritual insight after trauma. Meanwhile, Irrational Beliefs (total) were negatively associated with Spiritual Growth (r = –.572, $p < .05$), and positively correlated with Depreciation (r = .444, $p < .05$), indicating that higher irrational belief tendencies may obstruct transformative growth.

Table II displays the descriptive statistics of the different components of irrational beliefs at pre-test and post-test intervals. A consistent decrease was observed in the mean scores across all components following the intervention. The total mean score of irrational beliefs reduced from 17.525 (SD = 0.42678) in the pre-test to 13.450 (SD = 0.64807) in the post-test, indicating a noticeable improvement. Table III further supports these findings using paired t-tests to determine the significance of pre- and post-intervention differences. All subscales of irrational beliefs showed statistically significant reductions after the intervention. *Demandingness* (M = .825, t = 5.555, p = .001), *Low Frustration Tolerance* (M = .725, t = 2.542, p = .039), *Awfulizing* (M = .875, t = 4.231, p = .004), and *Depreciation* (M = 1.650, t = 5.954, p = .001) each demonstrated significant change. The overall change in irrational beliefs was highly significant (M = 4.075, t = 13.926, p < .001).

As shown in Table 1V, the mean scores for all PTG subscales increased post-intervention and Table V shows paired t test values. Table clearly shows that, Personal Strength improved from M = 10.00 (SD = 4.840) to M = 16.63 (SD = 2.669), with a statistically significant difference, $t(7) = -4.687$, $p = .002$. New Possibilities also showed significant enhancement, increasing from M = 14.00 (SD = 5.210) to M = 19.00 (SD = 3.586), $t(7) = -2.558$, $p = .038$. Improved Relationships exhibited a notable positive shift from M = 21.88 (SD = 6.010) to M = 27.50 (SD = 5.292), $t(7) = -3.249$, $p = .014$. Similarly, Appreciation for Life significantly increased from M = 7.75 (SD = 3.882) to M = 11.25 (SD = 2.121), $t(7) = -2.673$, $p = .032$. Most importantly, the total PTG score demonstrated a highly significant rise from M = 56.88 (SD = 13.527) to M = 77.63 (SD = 9.149), $t(7) = -6.150$, $p < .001$. These results suggest that the REBT intervention contributed to substantial improvements in PTG, reinforcing its potential as an effective psychological strategy for athletes recovering from sports injuries.

Discussion

The results of this pilot study emphasize the effectiveness of REBT in facilitating post-

traumatic growth and reducing irrational beliefs among ACL-injured football players. The results of this study shows that psychological mechanisms that may support or inhibit post-traumatic growth among individuals who experience significant life stressors, such as sports injuries or major setbacks. The strong positive correlations between PTG and its subdomains, particularly personal strength and improved relationships, reinforce existing literature that identifies social and internal resilience as key components of recovery (Tedeschi & Calhoun, 2004). Crucially, the findings underscore the detrimental impact of irrational beliefs, especially demandingness, LFT, and awfulizing on PTG dimensions. These beliefs are central components in Rational Emotive Behaviour Therapy (REBT), and their inverse relationship with PTG supports the theoretical proposition that irrational thinking hinders adaptive psychological outcomes (Turner & Barker, 2014). The negative association between LFT and spiritual growth suggests that individuals who struggle with emotional tolerance may be less likely to derive meaning or growth from adversity, which aligns with findings by Szentágotai-Tătar and Miu (2016) that cognitive flexibility and emotional regulation facilitate PTG.

The intervention has positive impact on reducing irrational beliefs among the participants. Notably, all four components of irrational thinking showed statistically significant decreases. These findings are supported previous studies highlighting the efficacy REBT in reducing maladaptive belief systems (Turner & Barker, 2014; Deffenbacher, 2011).

The significant improvements observed in multiple PTG domains align with existing literature indicating that cognitive-behavioral interventions, including REBT, enhance resilience and adaptive coping in injured athletes (Turner & Barker, 2014). By addressing irrational beliefs and fostering rational thinking patterns, REBT may have helped participants reinterpreting their injury experience, leading to a more constructive outlook on personal growth.

One of the notable enhancement in Personal Strength observed in this study suggests that athletes perceived themselves as more capable and resilient following the intervention. This finding aligns with existing literature suggest that Rational Emotive Behavior Therapy (REBT) effectively reduces self-depreciation and fosters unconditional self-acceptance, thereby bolstering personal strength (Ellis, 1994; Cunningham & Turner, 2016). Additionally, the observed increase in the New Possibilities domain implies that participants became more receptive to exploring alternative roles, goals, or perspectives post-injury, a fundamental aspect of post-traumatic growth (Tedeschi & Calhoun, 2004).

Athletes often encounter challenges following adversity, which can lead to social withdrawal. The significant improvement in the domain of Improved Relationships observed in this study highlights the effectiveness of psychological interventions in enhancing social support and connectedness among athletes undergoing rehabilitation. This finding aligns with previous research suggesting that cognitive restructuring techniques, such as those employed in Rational Emotive Behavior Therapy (REBT), encourage athletes to seek and value social relationships as vital coping resources (Podlog & Eklund, 2007). Additionally, the observed increase in Appreciation for Life indicates that the intervention facilitated a shift in perspective, enabling athletes to recognize and cherish aspects of life beyond their athletic pursuits. This broader appreciation can contribute to overall well-being and a more balanced outlook during the recovery process. There is no mean difference in spirituality subscale in pre and post assessment.

The overall PTG increase is particularly noteworthy, as it indicates that REBT facilitated a holistic positive transformation in participants' psychological adaptation to injury. This aligns with past findings demonstrating that REBT is effective in managing stress and enhancing psychological well-being in sports

settings (Turner & Davis, 2019). Given the small sample size, these results should be interpreted with caution, yet they provide compelling preliminary evidence for integrating REBT into sports injury rehabilitation programs.

The overall increase in post-traumatic growth observed in this study indicates that the effectiveness of REBT in facilitating comprehensive psychological adaptation to injury among athletes. This result aligns with previous studies showing that REBT contributes to improved psychological well-being in athletic contexts. For example, Davis and Turner (2019) found that REBT interventions led to increased self-determined motivation and improved psychological health among triathletes. Although the small sample size, and the current pilot study necessitates careful interpretations, these initial findings suggest that incorporating Rational Emotive Behavior Therapy (REBT) into sports injury rehabilitation programs may effectively support athletes' comprehensive recovery and personal growth.

Limitations and Future Directions

While the results are promising, this study has certain limitations to be addressed. The findings can't be generalized because of the small sample size and this study only focusing on ACL injuries. Future studies should replicate these research with larger and more diverse athlete populations. Additionally, the study employed a pre-post design without a follow-up period, making it difficult to evaluvate the long-term impact of REBT on PTG. Longitudinal studies examining sustained effects over time are recommended.

Conclusion

This pilot study offers initial evidence that Rational Emotive Behavior Therapy may effectively promote post-traumatic growth and reduce irrational beliefs among ACL injured athletes. The notable improvements across various PTG domains suggest that REBT could be a valuable psychological intervention, assisting injured athletes in building resilience. Given the study's limited scope, further research with larger and more diverse participant groups is recommended to validate these findings and explore the broader application of REBT in sports injury rehabilitation.

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