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The Science of REBT as it Relates to Performance: Are We in the Starting Blocks or Near the Finish Line?

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The Science of REBT as it Relates to Performance: Are We in the Starting Blocks or Near the Finish Line?

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Abstract

Rational Emotive Behavior Therapy (REBT) has a long history of application and scholarly work in support of its efficacy. The logical extension of the scientific application of REBT to the area of performance is one that makes sense but has lagged relative to the science of clinical applications. While the majority of the research has been with more clinical treatment applications (e.g., depression) the science of REBT to improve performance has been increasing in frequency and demonstrating efficacy. Insights as to the current status and future directions of the science of REBT as it relates to performance settings can guide both scholarly work as well as clinical applications. To this end, this paper solicited opinions from REBT researchers who have done scholarly work in performance settings (i.e., sport) to answer three questions pertaining to the science of REBT as it relates to performance. Researchers were asked to respond to the following questions: 1) How would you describe the current status of the research on REBT within the realm of performance psychology?; 2) What would be an important future scientific application of REBT with regards to sport/ performance psychology?; and 3) From what you have learned about conducting REBT research, what three main factors should researchers consider before undertaking REBT research? Responses are collected and presented by researcher in an effort to inform as to the status of the science of REBT in performance settings as well as to guide future researchers who may be considering scientific applications of REBT in performance psychology.

Keywords: REBT; Effectiveness; performance psychology; reflections;

The Science of REBT as it Relates to Performance: Are We in the Starting Blocks or Near the Finish Line?

Rational Emotive Behavior Therapy (REBT) is a clinical therapeutic approach developed by Albert Ellis in 1955 and is considered to be one of the original approaches of cognitive behavioral therapy (CBT; David et al., 2018). While developed for clinical work, the use of REBT has been expanded to a number of related domains with applications seen in high performance settings (e.g., business, creativity, and sport). While the techniques often used in these domains involve some level of self-talk with a cognitive-behavioral theme (Turner, 2019), the science of REBT in these applications is relatively lacking in comparison with more clinical applications. In high performance settings, while important prerequisites to performance may involve physical and skill proficiency, the cognitive mechanisms at play may help distinguish the elite performers, and help distinguish subpar and superior performances (e.g., Saint-Martin et al., 2020) however more research is required to understand the role of beliefs in translation to behavior in high performance settings. REBT may be in a unique position to enhance psychological performance within high performance settings (Young et al., 2022). We have seen a recent emerging literature of REBT research within high performance settings (see Jordana et al., 2020 for a systematic review) but most of this has been in the context of sport (Turner, 2019; 2022; Young et al., 2022). As such, below we present the accounts of six REBT performance psychology researchers as to their views pertaining to the current and future status of the science of REBT as it relates to performance. These are the three questions that they were each asked to respond to:

1. How would you describe the current status of the research on REBT within the realm of performance psychology?
2. What would be an important future scientific application of REBT with regards to sport/ performance psychology?

3. From what you have learned about conducting REBT research, what three main factors should researchers consider before undertaking REBT research?

The above questions were developed in consideration of the current status of best practices in conducting research on REBT (David et al., 2019) as well as to provide a roadmap for future scholarly work on the application of REBT in the area of performance psychology. The responses of the scholars are organized below by question so that the reader can hear common and unique themes across responses as it relates to the scientific application of REBT for performance. We then offer insights as to and major themes to guide the next generation of scholarly work in this exciting area.

How would you describe the current status of the research on REBT within the realm of performance psychology?

Murat Artiran, Head of Psychology Department, Istanbul University

REBT is a therapy approach originally created for clinical settings. In the past, it has also been used in school settings, in the business world, and in life coaching. REBT has few replicated studies on nonclinical populations. Replicable data is the crux of any scientific research. The primary aim of Albert Ellis's best-selling books is to prove that the philosophy and practice of REBT can provide benefits for the non-clinical population. REBT is a psychoeducational form of therapy. Thus, it is suitable for supporting preventive applications of various psychological sub-fields such as health psychology, educational psychology, and of course sport psychology.

In the world of sport and performance, the research into REBT is growing, but well-controlled field and laboratory studies are more sparse. For instance, diet might be the foundation for optimal training and performance. Elite athletes are often viewed as healthy individuals. But, the eating behaviors of some athletes can be unhealthy. Researchers should

build on the work of Outar et al. (2020) to understand how REBT can be used with dietary and body image concerns.

Further, performance psychology is related to motivation and positive psychology. For instance, self-determination theory is a leading theory in motivation. While we have studies on performance anxiety and irrational beliefs, motivational aspects of human performance and REBT's theoretical foundations do not seem to match. Turner (2016) notes that there may be some consilience between irrational beliefs and functional types of motivation in the performance moment. Indeed, the number of studies on irrational beliefs are quite insufficient in performance psychology, although this is growing. What is the role of rational beliefs in performance? We should do more research on rational beliefs in terms of their effects on sports and performance, as very few studies have measured this component (see Cunningham & Turner, 2016 for an exception).

James Claffey, Sport Psychologist, University of Dublin

In one word; paradoxical. The use of REBT in performance psychology is growing and has some rigorous research conducted, but it is not yet as visible as other psychological interventions. REBT is paradoxical because although it is underrepresented in Irish literature, we can see how it manifests itself in almost every performance setting of every day. Performance psychology research can be lost in the cracks because it only refers to the performance pertaining to the sports industry, states Aoyagi (2013). Hoendervanger et al. (2019) suggests that multiple papers describe the controllable and uncontrollable variables of performance which connects to an understanding of dealing with the extremes of winning and losing. These extremes of sport are intertwined with irrational beliefs often represented by claims of "I must win" or "I must score", but it is worth noting that this is counterproductive because it is something that we cannot control (see Turner, 2022 for a protracted discussion). These statements/beliefs are inflexible and do not allow for cognitive alternatives.

Over the past 12 years, while working with professional athletes, I have provided training for companies across Ireland to increase employee performance and well-being. I found that employees hold many of the same irrational beliefs that athletes have regarding performance outcomes they are inspiring to achieve. REBT and performance psychology in Ireland need further research exploring evidence-informed and evidence-based approaches to gain more respect across the wider psychological community. However, I wholeheartedly believe that using REBT in taming those automatic negative thoughts is vital to all performance psychology subdisciplines.

Oana David, Associate Professor, Babes-Bolyai University Cluj-Napoca

The interest has increased during the past decades in translating REBT for performance improvement as well as in investigating its impact. The growth of this field was fueled by the market request for performance support, be it in the organizational, sports or educational filed. The designs of the studies published improved during the time, from the initial case studies and within subjects (e.g., Turner & Barker, 2013) to between subject designs (Turner et al., 2019) that allow better generalization of results. We now know that REBT can bring significant medium size improvements in terms of behavioral change (*d*=.56; computed based on eight studies) and high-level improvements for school performance (*d*=.86, computed based on eight studies; see David et al., 2018), that are maintained in the long run.

While we know that REBT is effective in improving performance and behavioral change, much less is known in terms of its documented mechanisms of change. Both irrational and rational beliefs show medium to high improvements after REBT, but only few studies used adequate methodologies to document that they work as mechanisms for performance improvements (e.g., Mesagno et al., 2020; Nejati et al., 2022). This is unfortunate but it also illustrates the difficulties of conducting well controlled and powered

studies in high performance settings and the specificities of the non-clinical field. The lack of valid measures for the assessment of cognitive mechanisms in these settings might also be to blame for the limited knowledge regarding important mechanisms.

The current research status can be illustrated with a few contributions to the literature in the recent years, in which we aimed to test the effectiveness of REBT based programs on organizational settings. We investigated the efficacy of using ABC model for students enrolled in a Rational Emotive Behavioral Coaching (REBC) course (David et al., 2014) for monitoring and change purposes. We found that participants using the form reported improved work performance after the course. Changes in their irrational beliefs and the quality of their homework tasks were documented as predictors for their outcomes. In two other studies (David & Matu, 2013; David et al., 2016) we investigated the effectiveness of the Rational Leadership Program, which is an REBC program, including group training and executive coaching, for leaders. Both studies found positive effects on performance, affect and abilities such as improving transformational leadership and managerial coaching; we documented that approaching irrational beliefs based on the ABC forms mediated changes from pre to post-test. We have also developed and validated measures for the assessment of specific irrational and rational beliefs (Employee and Manager rational and Irrational Beliefs Scale; David, 2013) that allowed as to also attempt at investigating the predictors of performance improvements after REBT.

Anna Jordana, Research Group Sport Psychology and Physical Activity, Department of Psychology, Universitat Autònoma de Barcelona

The demandingness that characterizes the elite sport context, and the growing concern for athletes' wellbeing results in a need for professionals and researchers to promote, maintain and restore the performance and mental health of athletes. This concern has gone together with an increase in empirical studies that show the positive effects of REBT

interventions with athletes (Turner, 2016). This evolution places us in the moment of reflecting on the current research status. In this sense, the systematic mapping review that I developed with colleagues (Jordana et al., 2020) allows us to observe the snapshot of the situation, in addition to analyzing trends and gaps in this field.

In relation to publication trends, we found about 40 empirical investigations, most of them published between 2016 and 2020 and in peer-reviewed journal. In addition, there is also a growing tendency in book chapters and doctoral theses focused on this topic. These REBT interventions have been developed with athletes from all over the world, however most of these studies were developed in Europe and, specifically, in the United Kingdom. The most typical intervention studies tend to adopt single case designs, where quantitative resources are plentiful, and where social validation is often a great complement to examine the efficacy of the intervention. These studies are often developed with adult male elite soccer players, with the aims of (a) functionalizing irrational beliefs, (b) improving performance, and/or (c) reducing competitive anxiety.

Leon Outar, Psychologist, Staffordshire University, United Kingdom

At present there remains a sparsity of scholarly publications and research attention in the area of REBT and exercise psychology. Since, Ellis's (1994) seminal piece highlighting the role of irrational beliefs in the uptake, overindulgence, and avoidance of exercise behaviour there have been a hand full of articles, book chapters and one additional publication (Outar et al, 2018). With that said, Ellis's initial postulations of the role of irrational and rational beliefs in exercise are theoretically plausible and have been demonstrated in proximal CBT approaches such as cognitive therapy (CT) into which there have been a little more research within exercise settings. Moreover, much of the primary theories of exercise such as transtheoretical model (TTM) of behaviour change and other social-cognitive approaches allude to and apply much of the methods used in REBT.

Methods such as cognitive reconstructing, role playing, behavioural conditioning and stimulus control. Therefore, there remains a vast array of areas that warrant research exploration to further our understanding on how REBT can be applied to exercise psychology.

Stephen Palmer, Professor of Practice, Wales Academy for Professional Practice and Applied Research

Research on REBT within the realm of performance psychology is limited especially in the area of high-performance settings. In recent years research has largely focused on REBT in sport related performance settings. This research has been mainly led by Martin Turner, a sport psychologist. Different aspects of rational emotive behavioural performance psychology have been researched including irrational and rational beliefs (Turner & Barker, 2013; Turner, 2016a), cognitive appraisals (Chadha et al, 2019), self-talk (Turner et al., 2019; Kirkman, & Wood, 2018), social anxiety (Turner et al., 2018b), Athlete Rational Resilience Credo (Turner, 2016b) and Unconditional Self-Acceptance (Cunningham & Turner, 2016). In addition, the development of the irrational performance beliefs inventory (Turner & Allen, 2018) can assist in research and interventions.

However, looking beyond sport-related settings, there is a dearth of REBT research in the performing and creative arts such as acting, dancing, musicians, painting and those involved with creative activities such as writing, composing and choreography.

Overall, to help people encountering difficulties working high performance settings there is a desperate need for more research focusing on REB theory and its application to enhancing performance.

What would be an important future scientific application of REBT with regards to sport/ performance psychology?

Murat Artiran, Head of Psychology Department, Istanbul University

Research on sports performance requires interacting cognitive, emotional, physiological, biomechanical dimensions. The physiological and biomechanical aspects of healthy and unhealthy negative emotions among athletes warrants further investigation. It would be an excellent subject to conduct research. REBT describes unhealthy emotions, but they generally apply to clinical cases. What do these unhealthy negative emotions mean for athletes? Can healthy negative emotions really be used to improve physiological and biomechanical performance?

Considering that the sports profession is a goal-oriented activity, the goals can be included in the ABCDEF model, as written about in detail by Turner (2022). For example, extending the ABCDEF model to 'G'. The 'G' are goals. I call this 'elegant goals'. Elegant goals differ from practical goals (e.g., winning the game). The goals point to the need to further investigate the relationship between motivation and REBT in sports. Thanks to REBT techniques, the athlete can strengthen the meaning of the sports activity she has done for herself. Goals would be best to be elegant rather than practical goals. For example, to love the sport athlete does, to be happy with herself, to attribute more motivating meanings to the sport he does. It is like ensuring that sports are used as a tool to provide inner peace rather than doing a stressful thing. This can be true not only for the athlete but also for the fans and sport-club managers. Further, research on sport should not be narrowed by only athletes. Research in REBT can be conducted on fans, club managers, and coaches. Issues such as violence in sports, ethical issues (e.g., doping) and moral values in sports warrant greater scientific inquiry. Betting habits in the world of sports can be investigated in the light of REBT's theoretical essentials.

Another important issue what warrants scientific inquiry is that of racism in sports. Racism in sport can be studied with elements originating from REBT. For example, the pathological factors behind racism in sport can be examined with other-depreciation irrational

beliefs. Such as devaluing others and using the aims of sports to discriminate against people can be evaluated from the perspective of REBT.

We may assume many young athletes struggle with their irrational beliefs. In particular, frustration intolerance irrational beliefs. They lose their interest because of their irrational beliefs, more specifically they hold frustration intolerance beliefs. Some even quit sports. Considering that performance is related to physical, cognitive, and emotional resilience, empirical research can be conducted on these irrational beliefs and attitudes. Frustration tolerance rational beliefs will affect stability and willpower. A strong will and consistency of performance depends on the athlete's mental and physical stamina.

Most sport-club managers, coaches and athlete-managers are interested in skills and strengths of an athlete. They want to find and work with such skillful and talented young athletes. For example, in some of my interactions with professional football clubs, whilst key stakeholders understand REBT and its potential effects on performance, they are more interested in finding talented players and increasing their skills. They are not so interested in their emotional problems. So, it will be more interesting to conduct research in REBT on the elite athlete mind set.

James Claffey, Sport Psychologist, University of Dublin

I would hope to use some more objective measurement tools in line with the already available questionnaires. Using some physiological metrics to supplement the self-report scales. Dr Lisa Feldman-Barrett recently spoke about the crisis in psychology with the difficulty or lack of repeatably to replicate studies, and perhaps this has an element of truth. I do not subscribe to the mainstream belief that sporting psychological interventions, nor psychology as a whole, needs to chase down membership within the "hard sciences". The softer sciences also allow for that niche portion academia in those hard-to-reach places that the hard science do not allow for and that's why if more scientific objective instruments are

forthcoming, we maintain the part for self-exploration that we now benefit from within the REBT framework.

I would always be cognizant that when we examine any research, data is logical and human beings are biological, so in this researcher's opinion, the objective is excellent, subjective equally so but combining the two gets us closer to the gold standard we want from our research. For example, Wood et al. (2018) utilized self-report measures of irrational beliefs, but also objective markers of blood pressure and performance to examine the effects of REBT on paralympic archers. Repeating methods such as this should be a key focus.

Oana David, Associate Professor, Babes-Bolyai University Cluj-Napoca

One of the important future scientific applications of REBT in related to performance is in the coaching field, or more specifically the relatively newly developed Rational Emotive Behavioral Coaching (REBC) or Cognitive Behavioral Coaching (CBC). From the beginning, REBT is very suitable for this field since Albert Ellis explained how the RE & CBT philosophy can be applied to the business world in the'70s when he wrote about executive leadership from a rational approach (Ellis, 1972). Now coaching is a flourishing industry that facilitates performance related goals and REBC seems to bring the most well researched theory that can contribute to its development on scientific grounds. Indeed, applications of REBC in the sports, education and organizational fields have been developed (e.g., Jones et al., 2022). Organizational REBT includes various types of coaching, such as executive coaching when the support is provided to the executive management of a company for attaining performance related goals. Whilst these types of REBT based applications are considered promising, most of the studies to date investigated their impact through in within subject designs. Thus, future research needs to overcome these limitations and use rigorous research methods that attempt to delineate both changes in performance but also their mechanisms following REBC.

Another important direction is to enrich the performance applications of REBC with the advances in relevant fields, such as technology, behavioral and clinical cognitive sciences or positive psychology. Indeed, new models of REBT-based performance coaching have been developed, integrating REBT theory with positive psychology, resulting in models that capitalize on concepts such as rational principles in organizations, internal individual resources, rational mindset and character strengths of the individual (e.g., development REBC, the high performance mindset at work model; Bernard & David, 2018).

Anna Jordana, Research Group Sport Psychology and Physical Activity, Department of Psychology, Universitat Autònoma de Barcelona

This snapshot of the current state of REBT in sport reveals gaps in research. For instance, there are underrepresented populations in the literature, whose study should be addressed in future research (e.g., female athletes, LGTBIQ + population, migrants during the cultural transition process, refugee athletes, at-risk youth).

Furthermore, in terms of design, single-case studies offer many advantages over internal validation. However, this type of design is limited in terms of external validation since it is difficult to ensure the generalization of the results. In consequence, future studies should develop more traditional experiments in the sport context such as randomized controlled trials (e.g., Nejati et al., 2022) -already existing in clinical psychology - to provide stronger generalizable evidence, and to understand whether there is transferability of results between contexts.

To date, studies have focused on the effects of REBT interventions with athletes in on-the-field situations (e.g., motivation, performance, resilience), while mental health and off-the-field situations have been largely ignored. In addition to including mental health markers in the effectiveness of REBT interventions (e.g., Davis & Turner, 2020), it would be interesting to explore the role of beliefs in the development of healthy, successful, and

sustainable athletic careers. For example, focusing on transitions, defined by Schlossberg (1981) as "an *event or non-event that results in a change of assumptions about oneself and the world and thus, requires a corresponding change in one's behavior and relationships*" (p. 5), it would be interesting to explore the beliefs of different normative moments (e.g., junior to senior, retirement to an alternative professional career), as well as other non-normative transitions (e.g., motherhood in sport context). Reflecting on and exploring the beliefs of athletes and their environment from a prospective approach (before starting the transition process) could help to better understand how to deal with them, besides promoting a decrease in uncertainty about future, avoiding possible negative consequences for both mental health and for the development of healthy, successful, and sustainable athletic careers.

Leon Outar, Psychologist, Staffordshire University, United Kingdom

Exercise psychology is a broad field that explores the brain, cognitions, emotions, and behaviors pertaining to exercise and physical activity settings. Albeit it is in its infancy it is based on old notions, for example, Greek physician Hippocrates recommended the update of exercise for treatment of mental illness and stated "If you are in a bad mood, go for a walk. If you are still in a bad mood, go for another walk". William James farther of American psychology in 1899 remarked "Muscular vigour will always be needed to furnish the background of sanity, serenity, and cheerfulness to life, to give moral elasticity to our dispositions, to round of the wiry edge of our fretfulness, and make us good-humored and easy of approach" (James, 1899, p. 502). Therefore, the salience of physical activity for physical and psychological health is not novel. However, since such notions there have been an influx of research highlighting the benefits and mechanisms that help us to understand the exercise and health relationship. With that said many of us still struggle to uptake exercise and with many of us developing maladaptive relationships with exercise as witnessed in psychiatric conditions such as muscle dysmorphia, and eating disorders (i.e., bulimia,

anorexia). Therefore, given the conclusive health benefits that exercise poses it is key that we usher people not only to engage in a program of regular exercise but prevent them from developing unhealthy exercise practices. REBT presents a promising endeavor to support individuals to deal with challenges within exercise behavior on both sides of the spectrum, by helping people overcome barriers to exercise including motivation, body image, discomfort, anxiety, and preventing unhealthy exercise practices by helping individuals to deal with aspects such as exercise withdrawal and injury.

Stephen Palmer, Professor of Practice, Wales Academy for Professional Practice and Applied Research

Near the start of the development of REBT, Ellis (1957, p. 83) recognized that anxiety '*usually sabotages efficiency*'. And he went on to state that, '*One who is terribly anxious about speaking well, or reading quickly, or playing the piano effectively will invariably devote only a small part of his energy and concentration to the subject he is trying to master*.' Decades later, even though Ellis noted how anxiety can have a negative impact upon musicians, there is still very limited REBT research in this area. A study by Nagel and colleagues (1989) included relaxation, biofeedback techniques and rational coping statements whilst Stanton (1993) used a combination of REBT and hypnosis. Ideally, in research studies the Ellis ABCDE framework of emotional regulation needs to be compared to other techniques/interventions and preferably not integrated with them. In a systematic review Fernholz et al. (2019) found that about one third of musicians reported finding music performance anxiety a serious problem so clearly there is a need to address this problem and REB coaching, training or therapy may be useful intervention.

From what you have learned about conducting REBT research, what three main factors should researchers consider before undertaking REBT research?

Murat Artiran, Head of Psychology Department, Istanbul University

Performance monitoring technologies should be integrated into REBT studies. Irrational beliefs need to be viewed not only as cognitions but also as attitudes and behaviors. In a psychotherapy session, the ABC model is used for clinical purposes. 'A' is evaluated as a stressful event or critical 'A' that disturbs the individual the most. This evaluation of 'A' can often lead to misunderstanding, because some people evaluate their own situation after a stressful event rather than at the moment of 'A'. Some athletes have thoughts such as "I am inadequate and unsuccessful" after 'A', not in the moment. Irrational beliefs follow these inferences. In sports, an athlete does not have to face a stressful event. He may encounter difficulties every time he does sports, anyway. We should consider this as a situation inherent in sports. So, one research point that should be questioned is what 'A' makes the individual think about his/her own performance and abilities? In this way, the individual infers something about himself. And because of this inference, irrational beliefs come into play. Therefore, rather than a concrete event or situation, REBT research should be focused on the effect of 'A' on the self.

An additional area that warrants consideration for the REBT performance researcher results from the fact that REBT research is the limited statistical analysis methods used. Using experiments in laboratory environments (e.g., Wood et al., 2017), some methods frequently used by neuropsychology, control trial designs or structural equation modeling will produce scientific evidence. Such statistical methods should be used more frequently in REBT research.

James Claffey, Sport Psychologist, University of Dublin

Trust the literature: I genuinely believe that our intuition can help us with how we feel when dealing with clients, but in the beginning REBT-performance researcher will want to lean on literature before making decisions. Personally, because of the nature of dealing with irrational thoughts, it is valuable when researching REBT to use a mixed-methods

approach because the Irrational Performance Beliefs Inventory (iPBI; Turner & Allen, 2018) can provide good structure resulting in quantitative empirical research but to gain that rich tapestry of qualitative research, it is imperative to diversify by using *both methods approach*.

Take a risk! Ask yourself what is going to change after I complete the research? Please do not pick a topic that has exhaustively been researched because it may seem more accessible for your literature review. Branch out away from replication studies and try to investigate a new area of research in the fields of sport, exercise, and performance using REBT. Dig deeper, use the material from a practitioners guide to REBT by enhancing your interpretation of the material and how you can relate it to sports and exercise-based settings.

Connect like a neuron. Investigate who the experts in the field are and try to connect with them. Nowadays, social media platforms can make connecting with experts much more accessible. Be sure to keep your contact message as professional and short while also mentioning that you do not wish to take up a substantial amount of the researcher's time. Having a robust research team will give you more authenticity for publication, but it will widen the scope of the research field in which you practice.

Oana David, Associate Professor, Babes-Bolyai University Cluj-Napoca

Three main factors that researchers consider before undertaking REBT research are the following:

1) Making sure they have a solid theoretical understanding of REBT theory and advances.
2) Using sound designs and data analysis procedures. In the meta-analysis of David et al. (2018) it was found that the quality of the studies moderated the outcomes, with studies using more rigorous methodologies reporting lower magnitude of improvements, especially in the long run. Thus, in order to have a realistic view on the effectiveness of REBT performance applications, using rigorous methods is essential.

3) Connection with mainstream interests and methods of delivery such as technology-based interventions that are very suitable for high performing individuals (see the PsyPills app, or online REThink therapeutic game).

Anna Jordana, Research Group Sport Psychology and Physical Activity, Department of Psychology, Universitat Autònoma de Barcelona

Until now a large part of REBT interventions in the sport context tend to ignore the role of the athletes' goals (G). GABC are interconnected elements, so the modification of any aspect of the model affects the others (Turner, 2022). In this sense, exploring what are the objectives of athletes before undertaking research based on the REBT philosophy will allow us to understand what types of situations athletes face and their relevance in achieving their goals. Moreover, this would allow a better interpretation of the consequences to determine if they generate discomfort for the athletes.

Before diving into REBT research, the balance between existing resources should be considered to plan a realistic and proper experimental design (i.e., participants, time of sessions and research, number of sessions). In this sense, the REBT model is an easy process to follow thanks to its simplicity, but it requires cognitive and emotional maturity on the part of the people involved. REBT interventions may not be the most effective approach for young athletes (13 years or younger), especially when there is limited time for the implementation, as spending a long time in the educational phase of the REBT process can diminish overall effectiveness of the investigation.

Finally, position stands on the topics of mental health, performance, and athlete development (e.g., Henriksen et al., 2020), suggest that the demands and pressures of elite sport are a risk factor for athletes' mental health. Before starting a REBT investigation, it is important to consider what topics should be addressed for investigators to respond to current society needs. That is why mental health should not go unnoticed in this type of research.

Exploring the four irrational beliefs separately to understand their short and long-term impact more accurately on the mental health of athletes is an issue that deserves to be addressed to promote and maintain healthy, successful, and sustainable athletic careers.

Leon Outar, Psychologist, Staffordshire University, United Kingdom

My years as a REBT researcher have been informative with several factors and lessons have established, however, the three most salient factors include applied relevance, methodology, and measurement. As with all research one of the primary prerequisites is to add to the field and provide a novel and compelling piece of work that can support the field. Much of the exercise psychology literature reflects to correlational pieces, or wide scale research that often neglects the nuances of case studies. Given the sparsity of applied exercise pieces especially from a CBT perspective I would encourage scholars to consider the immediate applied relevance to the field of REBT, thus, how can sport and exercise psychologist (and other relevant health professionals) learn from this and apply it to support exercisers. Second, methodology, albeit there has been limited research in the area of exercise psychology, this cannot be said to its sibling field area sport psychology in which we can learn much. One particular challenge with the applied studies of REBT is the methodology utilized in most of the studies such as single case experimental SCED's), although this particular method is growing as an accepted and scientifically rigorous approach it still represents a methodological approach that is low on the hierarchy of scientific evidence. Therefore, I encourage scholars to utilize methods of a higher levels of scientific evidence such as randomized control trials (RCT's) to further the efficacy of REBT as an intervention protocol. Finally, measurement is a pertinent aspect of research, as poor measurement can poison the validity of even the most effective intervention protocol. Within REBT there is a measurement crisis of irrational and rational beliefs. A further concern of measurements in REBT is that they lack contextual relevance, often pertaining to general

beliefs which can be poor indicators of specific problematic beliefs in exercise. Indeed, this particular challenge has been addressed within in the performance setting with the development of the irrational performance beliefs inventory (iPBI; Turner et al., 2018), which was a key development is the area of REBT in sports psychology. Thus, in order to further our understanding contextual driven measurements are necessary to broaden and deepen our scope in exercise psychology.

Stephen Palmer, Professor of Practice, Wales Academy for Professional Practice and Applied Research

Factors that burgeoning researchers will want to consider in implementing REBT in performance research would be:

1) Ensure that if a counselling, coaching or training intervention is undertaken, that the researcher undertaking the intervention is suitable trained to deliver the REBT approach. Reading a book, attending a short workshop is insufficient. If the researcher is trained in CBT, then they may experience difficulty just applying REBT. A manualized REBT approach may be helpful.
2) Take a purest approach to ensure one intervention group in the study only uses the REBT ABCDE framework without including other popular techniques such as relaxation, mindfulness etc.
3) The three key research methodologies are Qualitative, Quantitative and Mixed Methods Studies. As there is still a lack of rational emotive behavioural research on the application of REBT theory and practice to high-performance settings especially in areas relating to music then I would recommend mixed methods as the qualitative data can provide useful insight from the participants' perspectives.
4) Last but not least, include a wellbeing scale and it is a good idea to run a pilot study.

Discussion

To begin, the responses from the scientific side as to the status of the REBT research as it relates to performance cannot be separate from the application side. That is, science guides practice and the practice inform science as to what area(s) still warrant investigation. If we are interested in being evidence-based practitioners, which we should be, then we need to be guided by the science. As many of the contributors pointed out, while we do have a robust literature in support of REBT as a clinical intervention (David et al., 2018) the comparative research among athletes and in high performance settings is lacking, but growing (Jordana et al., 2020).

In consideration of the thoughtful responses provided, there are several areas that may be important for of REBT researchers to consider in developing their research to influence the practice of REBT. First, and really this goes back to some of the basic tenets of REBT, we need understand the mechanism of change in the application of REBT in high performance settings. The application of REBT with performers does indicate positive findings, but we do not have a clear idea of *why* and *how* the reduction of irrational beliefs beings about performance benefits. Whilst cognitions and beliefs have been shown to be moderately related to stress (Vîslă et al., 2018), logically most of this work has been done within clinical settings. A logical extension would be to consider more context specific beliefs (e.g., performance) and how do these predict or impact context specific affect and behavior. Development of such measures as the iPBI (Turner & Allen, 2018) are an important move in this direction and the role of beliefs in performance warrants repeated investigation. But measuring beliefs is just one aspect of evaluating the effects of REBT, and researchers should strive to be more objective on their assessment of cognitive, emotional, and behavioral consequences.

Related to the measurement of performance related beliefs, it would be important for the research on REBT as it relates to performance to examine the mechanism of change. That is, if applications of REBT in higher performance settings are shown to be effective, is it because of change in irrational beliefs and if so, more specifically which ones? Is it the reduction in irrational beliefs that lead to performance improvement or is it due to an increase in rational performance related beliefs? It would be important to know if the change from irrational to rational beliefs, the core theory of REBT, is what is leading to the improvement in high performance setting or are there other common factors which may be contributing to performance results (i.e., Castonguay & Hill, 2017; Wampold & Ulvenes, 2019). Some research suggests mediating factors that could explain the relationship between irrational beliefs and emotional outcomes, such as cognitive appraisal (Chadha et al., 2019), maladaptive schema (Turner et al., 2019), self-determined motivation (Turner et al., 2022). But the mediating factors that influence performance are much less well-studied. In consideration of the measurement and mechanism of change factors, we propose that subsequent research on REBT and performance include measures of performance related beliefs, both rational and irrational, in addition to objective measures of performance and examine the mechanism of change. Understanding which beliefs are most predictive of performance and to what degree does change in these beliefs impact change in performance would greatly assist with the efficacy and efficiency of REBT in high performance settings.

Second, the researchers gave their reflections on how and where REBT research with high performance can be extended going forward. One of the main points was to expand the populations with whom the scholarly work is done, beyond the athletic field (e.g., business, creativity, e-sports) as well as to look at REBT and other related factors to performance (i.e., motivation, positive psychology, self-efficacy). While there have been many excellent single-case design applications of REBT within high performance settings, the researchers

encouraged greater diversity of design and analytical approaches as well as replication of findings to further promote the science of REBT in this area. While Ellis (1994) discussed REBT as it relates to sport avoidance, one area that we think the REBT research has neglected when it comes to sport performance is the application of REBT when athletes are recovering from an injury (see Artiran, 2017 and Morris et al., 2017 for exceptions). Research has shown fairly strong effect sizes in this area (Tranaeus et al., 2015), but at present the REBT research is notably lacking. The frustration intolerance ("rehabilitation is TOO difficult") and catastrophizing ("this is the WORST thing that could happen to me") often seen in injury rehabilitation would be beliefs that would warrant addressing.

Conclusions

The aim of the current paper was to provide researchers with an understanding as to the status of REBT in high performance settings and to provide future directions for research Hopefully the information presented in this paper will stimulate debate and future scholarly work that will further develop the science of REBT in this important domain.

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