# Lifting Weight, Lifting Mood:

# Using Resistance Training to Treat Depression and Anxiety

by

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Paper submitted in fulfillment of the requirements for the degree of

Master of Counselling

in the

Division of Arts and Sciences

City University
of Seattle
2025

This paper is accepted as conforming to the required standard

October 22, 2025

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**Abstract**

Rates of depression and anxiety in Canada have been increasing, and thousands of Canadians are finding difficulty in accessing adequate treatment (Stats Canada, 2023). Some barriers to access involve socioeconomic, cultural, and linguistic barriers that psychotherapy may render standard approaches to talk therapy ineffective for some individuals in these underserved populations (Ciccolo et al., 2022; Leung et al., 2024). A positive correlation between sedentary behaviour, anxiety, and depression have also been identified in the literature (Hallgren et al., 2016; Hird et al., 2024; Oftedal et al., 2021). One potential solution, therefore, is to use physical exercise as a form of treatment for anxiety and depression (Ciccolo et al., 2022; Fortier et al., 2020; Hallgren et al., 2016; Helgadóttir et al., 2017; Howlett et al., 2021; Jong et al., 2021; Krogh et al., 2012; Mandolesi et al., 2018; Murray et al., 2022). This study will consider the question of how therapists can use resistance training (RT), a form of physical exercise, to treat anxiety and depression. A literature review was conducted that analyzed ten articles published within the last five years. A biopsychosocial model of treatment (Engel, 1981) and a CBT lens (Beck, 1984) will be adopted to guide therapists to use RT to treat depression and anxiety. The analysis of the literature found that RT principles can be used to develop clinically beneficial outcomes to treat anxiety and depression. RT can be a method for clients to lift physical weights just as it can be a way to lift their emotional moods.

*Keywords*: Anxiety, biopsychosocial, depression, physical activity (PA), physical exercise (PE), resistance training (RT), self-efficacy, resilience

**Acknowledgements**

My successes are the product of my actions and my family and friends' support. From my mother, a love of reading and nurturing my appetite for knowledge; my father, a love of fate and the courage to continue through adversity; Dr. McKenzie instilled a knowledge of how to read and synthesize technical literature; Dr. Panjvani built my knowledge of how to navigate and synthesize nuanced writing; Dr. Zutter enforced the discipline to follow through with larger projects; Janine for giving stable and fair criticism and encouragement throughout my program; Dr. Allen helped me grow into a therapist in my internship; Alisha helped me find focus; Kennedy helped me stay on track; Shayne reminded me of the ineffability of the human spirit; Bianca inspired me to proceed into difficulty despite my lapses in confidence; Bella encouraged me to balance my schedule amidst a demanding work, school, family life balance; Dr. Muller helped me to indulge my curiosity and temper it with keen scholarship; my daughters inspired me to become the capable man that they already see me as. Not least of all, I am indebted to my wife who has been my muse. Without her, I may never have followed my desire to become a counsellor. Every word that is to follow, and every session that is to come is the fruit of her encouragement and her support. May my efforts be worthy of all these fine and beautiful people in my life, that I may pay forward their kindness and their care.

# Table of Contents

## List of Appendices

# Chapter One: Introduction

## Background Information

This study will explore the positive correlation between sedentary behaviour and anxiety and depression that has been observed (Hallgren et al., 2016; Hird et al., 2024; Oftedal et al., 2021). As populations become less physically active, rates of anxiety and depression rise as well. By increasing physical activity (PA), it stands to reason that anxiety and depression could also be decreased. This presumes a causal relationship that will be discussed below. Physical exercise (PE) is one way to decrease sedentary behaviour and to attend to symptoms of anxiety and depression. Resistance training (RT) is a subset of the category of PE that I will be exploring in this study. RT has been studied comparatively less than cardiovascular PE; however, there is a large body of research that corroborates that RT is effective at treating depression and anxiety, and therapists would benefit by being aware of how principles of RT can benefit the treatment of anxious and depressed clients.

According to Statistics Canada, over five million, nearly one in five Canadians, are suffering from a mood disorder or a substance use disorder (Stats Canada, 2023). These types of disorders tend to be comorbid with one another according to the Diagnostics and Statistical Manual of Mental Disorders (DSM; APA, 2022). Traditional psychotherapeutic approaches (talk therapy) to treating mood have been measured to be effective, with many modalities having similar demonstrated efficacies (Cuijpers et al., 2012; Cuijpers et al., 2021). However, in Canada, it is estimated that about one third of those suffering from anxiety and depression have not been able to access sufficient forms of treatment to manage their symptoms (Stats Canada, 2023). There is a growing population of anxious and depressed people that therapists are not adequately serving with talk therapy. There may be ways of supplementing talk therapy to better serve these individuals who are not being adequately treated by traditional psychotherapeutic modalities.

Standard cognitive models of anxiety and depression attend to how thought patterns generate and facilitate anxious and depressive symptoms (Beck, 1991). Patterns of how people think can reinforce behaviours, thoughts, and negative emotions, creating a vicious cycle of anxious and depressive symptoms. CBT focuses on thought patterns to break vicious cycles in depressed and anxious clients (Beck, 1984). By treating anxiety and depression primarily as psychological phenomena, there are potentially beneficial behavioural interventions that may not be presented to clients. This study will provide alternative approaches to treating anxiety and depression for clients who may benefit from behavioural interventions to supplement their traditional psychotherapy. Treating clients through behavioural interventions may be an important tool for clients, especially if there are language and cultural barriers to psychotherapeutic approaches. Behavioural patterns that could reliably elicit positive mental health outcomes could be a vital addition to the standard treatment of anxiety and depression.

There is a growing body of evidence that suggests that PE can increase PA to treat mental disorders like anxiety and depression (Ciccolo et al., 2022; Fortier et al., 2020; Hallgren et al., 2016; Helgadóttir et al., 2017; Howlett et al., 2021; Jong et al., 2021; Krogh et al., 2012; Mandolesi et al., 2018; Murray et al., 2022). There are many forms of PE, which is a subset of PA. I will explore the claim that increasing PA through RT is clinically relevant to treating anxiety and depression. RT has been demonstrated to be an effective treatment for anxiety and depression (Cunha et al., 2021, 2024; Henriksson et al., 2022; Marinelli et al., 2024; Martland et al., 2024; Torelly et al., 2024). I will explore the clinical utility of using RT to treat anxiety and depression. I will consider using RT as a behavioural intervention to treat anxiety and depression and analyze what it is about RT that lends itself to the management of anxious and depressive symptoms. First, a brief introduction into RT may benefit the discussion.

Any pattern of PE that emphasizes adding resistance to bodily movement is a form of RT. A common example of RT is lifting weights. The weights that people lift add resistance to the movement, which people train over time: hence, the resistance component of training. The source of resistance can be from people positioning their body in certain ways to use their own body weight as the source of resistance. Additionally, a wide array of implements can also be used like machines, free weights, and elastic bands to provide other sources of resistance. Practitioners are often drawn into RT regimens to improve their body composition and physical appearance by decreasing body fat and increasing muscle mass. While RT has been found to improve body composition, increase strength, and increase overall health (Ciccolo et al., 2022; Keogh et al., 2022), the psychological dynamics of RT are what will be discussed and analyzed in this study.

What is of interest to this study are some of the neurological and psychological adaptations that accompany RT. RT involves increases in sympathetic neural activation to generate muscular contractions (Lee et al., 2022). RT trains brain cells and muscle cells to work together more efficiently to generate force. There is an effort of body as well as of mind that is cultivated as people engage in RT. Over time, such training can impact the mind in important ways. Grip strength, which is a measurement of global muscular strength and muscle health, has been found to negatively correlate with depression and cognitive decline (Bobos et al., 2020; Fritz et al., 2017; Qiu et al., 2024). As people are better able to coordinate between muscular contraction in their hands for grip strength, their brains also tend to be healthier with regards to anxiety, depression, and cognitive decline. RT's focus on muscle health appears to also coincide with developing the ability to experience healthy brain function and positive emotional regulation. RT obliges people to engage in systemic changes in how their bodies and minds

operate together. It is, by definition, the act of training through increasingly difficult activities, which may extend to other domains of people's lives. Research has been conducted to investigate whether participating in RT can promote clinically beneficial outcomes for people experiencing anxiety and depression.

There have been correlational data that have demonstrated that there is a positive association between muscle mass and health and mental health outcomes. Qiu and others (2024) measured lean muscle mass and found that as muscle mass and physical strength increased, their participants' levels of depression decreased. The presence of muscle tissue appears to be a protective factor for mental health outcomes, and RT is the standard means to increase muscle mass and strength. This research finding underscores the connection between muscular and mental health that this study will attempt to analyze. To make the claim that RT can both promote muscular health as well as mental health would require experimental data to establish a causal relationship between RT and mental health outcomes.

Many randomized control trials (RCTs) have been included in this study for my analysis. This study includes meta-analytical findings that culminate in 45 RCTs (Aumer & Vögele, 2025; Cunha et al., 2024; Marinelli et al., 2024). These studies have collected evidence for the use of RT to treat anxiety and depression, and they have provided insight into how RT can be used by counselling psychologists. Some individual RCTs conducted by Cunha and others (2021), D'Oliveira and others (2022), Keogh and others (2022), and Torelly and others (2022) have also been included, as some of their findings highlight some heterogenous results as to the efficacy of using RT to treat depression and anxiety.

**Research Problem Statement**

Despite the clinical benefits of RT, there is not a clear conception of what role, if any, RT has in psychological counselling for the treatment of anxiety and depression. I believe that principles of RT may enrich the treatment of some anxious and depressed clients. The problem that this study will aim to address is how are therapists supposed to integrate the consensus that RT can benefit the treatment of anxiety and depression in their practice. For example, mental health outcomes are related to various lifestyle behaviours like sleep and nutrition (Oftedal, 2021; Ruf et al., 2024). As a result, there are some basic lifestyle principles that therapists can promote in therapy to enrich their clients' treatment. Promoting PA can be a vital component of treating mental health, and it can be improved through the practice of RT. The aim of this study will be to guide therapists toward a practical conception of how to use RT to increase PA to holistically treat anxiety and depression. This will require a synthesis of the principles of RT and psychological counselling.

To integrate the psychological benefits of RT, the role of mental health professionals must be defined in such a way as to holistically include the interrelated dynamics of how people move their bodies and how they think their thoughts. Both physical and cognitive behaviours can reinforce the presentation of anxiety and depression (Beck, 1984; Beck, 1991; Wright & Beck, 1983), and therapists may benefit their clients' treatment by including cognitive and physical behaviours in therapy. RT can be a form of intervention that can bridge this gap, and this study will critically investigate the topic to provide a practical framework for counsellors to discuss RT to benefit their clients' psychological outcomes. The research question that this study will attempt to answer is how therapists can use RT to treat anxiety and depression. This study will

aim to find important pathways to clinical goals through RT methods so that therapists can use a holistic approach to treating anxious and depressed Canadian populations.

**Rationale of the Study**

This study aims to supplement cognitive interventions with RT as a behavioural intervention to treat anxiety and depression. While standard interventions in CBT focus on identifying and renegotiating unproductive patterns of thinking (Beck, 1984; Beck, 1991; Wright & Beck, 1983), there are many clients whose access to positive outcomes may be limited by that modality. There are thousands of Canadians for whom talk therapy is not treating their anxiety and depression adequately (Stats Canada, 2023). By treating only thought patterns and ignoring PA patterns, there may be important treatment outcomes that are not being reached. Cultural and linguistic barriers may be among the obstacles that these underserved populations face. RT offers therapists and clients an opportunity to engage in a more physical and concrete activity which can supplement talk therapy and help clients towards their treatment goals.

RT, much like CBT, involves developing different patterns of thinking (or a mindset) through goal-setting and problem-solving (Ruf et al., 2024; Zhou et al., 2024). This offers benefits to treatment that can extend beyond the confines of a 50-minute weekly session by focusing on clients' behaviours throughout the week. Treating anxiety and depression with a behavioural intervention like RT can be a tool to entrench beneficial cognitive behaviours to treat anxiety and depression. This study will demonstrate that RT can change not only how clients' bodies can move, but it can also help clients develop their minds, a sense of self efficacy, and resilience. By integrating RT into the treatment of anxiety and depression, therapists can help their clients to form virtuous cycles that can treat their symptoms and enrich their lives.

This study will help therapists deliver more impactful treatment of underserved anxious and depressed Canadian populations. The symptoms can be treated through behavioural interventions like RT which can lend itself to building resilience and healing for anxious and depressed clients. In RT there is a kind of concrete honesty that transcends language and thought, making it potentially more accessible than talk therapy for some clients. By engaging in RT, clients can experience a progressive journey of improvement and resilience that can serve as a microcosm of the hardships and rewards that life has in store (Mason & Asmundson, 2023; Tabibnia & Radecki, 2018). To effectively use RT as a clinical intervention, therapists will require some information to apply principles of RT to treatment goals for psychological counselling. While RT has been demonstrated to be an effective treatment modality for treating anxiety and depression, some alterations in RT to make it more appropriate for treating anxiety and depression may be necessary. This study will aim to equip counsellors with those caveats to help them to use RT to treat anxiety and depression.

**Significance of the Study**

Therapy, at its best, equips clients with the skills necessary to pursue their goals and be resilient in the face of hardship. Symptom management is an important component of this, but by engaging in a behavioural intervention like RT, symptom management can be transcended into the development of adding positive experiences to clients' lives rather than merely trying to subtract negative symptoms. RT can reduce sedentary behaviour and its attending anxiety and depression; therefore, it may contribute to symptom management. Beyond that, however, RT can provide therapy with an opportunity to develop positive traits safely and methodically by embodying otherwise abstract concepts like perseverance and resilience. There are cognitive and behavioural skills that can be emphasized in RT, and these skills can compliment other aspects of

clients' lives and improve treatment outcomes for anxious and depressed populations. Physical movement may enrich the quality of cognitive thought and psychological treatment.

This study will develop the connection between the mind and body as it relates to RT for the treatment of anxiety and depression. This study will add to the interrelation of how clients' bodies move and how their minds think to treat anxiety and depression. There may be many cases when anxious and depressed clients who are struggling to access adequate treatment can be better served with treatment that has been supplemented by RT. While no treatment modality can serve every client in every situation, if this treatment approach does not become more widespread then the underserved anxious and depressed Canadian populations may continue to grow. As anxiety and depression are inadequately treated, there is a severe strain on those individuals within those populations; furthermore, mental health institutions and society more broadly suffer as underserved populations continue to be overwhelmed by their anxiety and depression. By providing RT to sedentary populations, whose anxiety and depression are, in part, a product of their sedentary behaviour, then a large portion of Canadians may be better served in their treatment of anxiety and depression. This study will attempt to provide counsellors with practical information to include RT in the treatment of anxiety and depression.

**Theoretical Framework**

The primary theoretical framework for this study is the biopsychosocial model (Engel, 1981). The importance of this framework cannot be overstated. There are biological, psychological, and sociological aspects of a client and each dynamically impact one another. The psychological symptomology of depression can be impacted by, and impact in turn, biological health markers and interactions with social networks. The biological health markers associated with inflammation, for example, incline individuals to move less. Depressed populations have

been measured to have elevated levels of inflammation (Hird et al., 2024; Kiecolt-Glaser et al., 2014; Mac Giollabhui, 2021; Madison et al., 2022). By moving less, depressed populations interact less within their social networks. Their social withdrawal behaviour reinforces their psychological experiences of low mood, which dynamically reinforces their inflammation and withdrawal behaviour.

PA increases serotonin, endorphins and dopamine levels; increases serotonin sensitivity; reduces neurodegeneration with anti-inflammatory mechanisms—all of which contribute to reducing depression (Pahlavani, 2024). PA improves cognitive function, attention, executive function, memory, and information processing (Chang et al., 2025). The relationship between depression and inflammation can be modulated by anti-inflammatory properties of PA that may offset the severity of depression (Hird et al., 2024; Kiecolt-Glaser et al., 2014; Mac Giollabhui, 2021; Torelly et al., 2022). Psychotherapeutic approaches to treating anxiety and depression could be supplemented by leveraging these underlying biological mechanisms by including RT in treatment to increase PA. By focusing on the dynamic interrelations of these systems, the biopsychosocial model of treatment offers a holistic approach to health whose concern includes social and psychological health in addition to physical health.

A secondary theoretical framework of this study is cognitive-behavioural therapy (CBT). CBT will provide a lens to navigate the psychosocial dynamics of RT. This therapeutic modality can systematically categorize and modify relevant thought and behaviour patterns. The relationship between behaviours and thoughts was linked by cognitive theorists, who posited that cognition is a type of behaviour (Beck, 1984, 1991, 2019; Beck & Flemming, 2021; Hollon, 2010; Wright & Beck, 1983). CBT relates dynamic thought and behavioural patterns to psychological states. The integration of cognitive theory and learning theory in the form of CBT

will provide this paper with a theoretical orientation to navigate the interrelated biopsychosocial phenomena related to using RT to improve mood. The negative thought patterns of depressed and anxious populations are reinforced by subsequent thoughts and behaviours. Thus, depression and anxiety can become self-perpetuating. CBT aims to renegotiate thought patterns to generate more favourable mental health outcomes. How we think and how we act are dynamically related; therefore, beliefs and activities can be fruitful topics for therapists to discuss with their clients to facilitate positive changes.

**Definition of Key Terms**

*Physical activity* (PA) will be the term used to denote any bodily movement that a person undergoes voluntarily. This may include ordinary daily tasks like walking to the refrigerator in the morning for breakfast as well as exercise.

*Physical exercise* (PE) will be used to describe purposeful PA to improve one's health.

*Aerobic* exercise, or *cardiovascular training*, is a form of exercise that uses oxygen as the main energy source and primarily trains the cardiovascular system.

*Resistance training* (RT) uses adenosine triphosphate as the main energy source and primarily trains the musculoskeletal system. RT employs different implements like weights, elastic bands, or body weight. Regardless of the implement, RT trains with adding some form of resistance to make movement more effortful.

*Progressive overload* is the response to RT over time, for a movement at a certain load may become less difficult over time as the practitioner adapts to the training. Progressive overload is the method of gradually increasing the resistance to continue training within the desired level of difficulty (Chertoff, 2020).

*Mood disorder* refers to persistent difficulties in maintaining emotional states that may cause distress and affect the ability to function (APA, 2022).

*Depression* refers to low mood that includes sadness, lack of motivation, and difficulty experiencing positive emotions (APA, 2022).

*Anxiety* refers to a form of mood that is characterized by excessive fear and worry that causes sufficient distress to affect functioning (APA, 2022).

*Treatment* is a term that refers to any systematic attempts by health professionals to alleviate a psychiatric or medical condition.

*Intervention* is the term that refers to the methods of treatment that a therapist will use to facilitate a positive change for the client.

*Successive approximation* is a form of behavioural modification in which a desired behavioural outcome is iteratively developed through operant conditioning (Skinner, 1958).

*Zone of proximal development* (ZPD) is a learning theory concept that describes a balance of difficulty and ease that place an individual in an optimal level of engagement for learning (Vygotsky, 1978).

*Biopsychosocial model* is the model of treatment that recognizes that there is a dynamic interrelatedness between biological, psychological, and social systems (Engel, 1981). This model can help therapists to anticipate and manage how these factors can affect one another over the course of a client's treatment.

*Self-efficacy* is the sense that a client can have a desired impact on their lives. It is a kind of confidence that modulates their experience.

*Resilience* is a client's ability to respond to hardship and trauma in a productive and healthy way.

**Researcher's Position Statement**

Self-care is a requirement for ethical practice of psychology (CPA, II.12, 2017), and RT has been my primary form of self-care. My personal experiences in using RT as a form of emotional regulation and management have, in large part, motivated this inquiry. It is of utmost importance that my preconceptions and conceits are acknowledged and considered to the best of my ability. While personal experience and anecdote are meaningful elements of my intuitive understanding of the world around me, they are in no way substitutions for rigorous research and analysis. I believe strongly that people can psychologically benefit from physically moving more. However, I have resisted the urge to conceive of RT as a panacea. There must be trade-offs and diminishing returns. Some amount of my conceits may well be confirmed by the following analysis; likewise, I have made the effort to seek out information that puts pressure on my preconceptions. In this way, I aim to collect the best information possible for the treatment of my future clients.

I am an able-bodied, heterosexual, middle class, educated male. I grew up with a religious orientation that instilled many features of the Protestant work ethic. As such, I implicitly assume benefits of working hard amidst adversity. The role of grit that I assign to myself may not be either common to or appropriate for certain populations. I have accumulated experiences and perspectives from a privileged standpoint in society that may overlook important factors such as ethnic background and systemic oppression. I have experienced depression, with many of its attending symptoms; not the least of which being anhedonia and a lack of motivation, which serve to destabilize one's mood and ability to assert one's agency in the world. I have personally had contact both with the difficulties and the benefits of using RT to manage my symptoms of depression, and just as those experiences are vital in empathically

understanding the problems of others, it is of utmost importance to not mistake my experiences for the experiences of clients (Isachsen, 2020). Each client's experiences are unique to the client, and there is an inherent risk when trying to make generalized statements about subjective phenomena.

My experiences in the topic have motivated my interest but they may not in any way be taken to be a substitute for an evidence-based approach. Many important factors to the topic in question have had little or no bearing on my experiences. For example, considerations of differential socioeconomic constraints and non-heteronormative expression that may interfere with my natural ability to assess and appraise both the research data and clinical considerations. Therefore, it is my intention to not only express awareness of my potential blind spots as a matter of transparency, but I also hope to explore and supplement my perspective in a way that can benefit my own research-based and ethical engagement in the discipline. Therefore, I have synthesized empirical data and vigorous analysis and reflection to produce a guide for therapists to use RT to treat anxiety and depression.

**Overview of the Paper**

Canadians have been steadily becoming more depressed and more anxious as they have become more sedentary. Standard pharmacological and psychotherapeutic interventions have been serving approximately two thirds of these populations, leaving approximately 1.5 million Canadians partially or totally underserved (Stats Can, 2023). The efficacy and simplicity of PA on treating mood can be an important consideration for reaching this underserved population with behavioural interventions like PE. RT specifically may offer unique benefits that may be used to supplement traditional treatment protocols. The following is a project to determine the potential role of RT to treat anxiety and depression.

Chapter Two will outline the methods of my literature research by describing the search process. This will also include the databases, search terms, inclusion and exclusion criteria, a description of some of the significant studies that were reviewed, challenges that were encountered, and a description of how my methodological limitations impacted my findings. Chapter Three will discuss how the themes that have arisen through deductive analysis through my biopsychosocial and CBT frameworks to attend to the research problem. Chapter Four will provide a discussion for clinical implications of my key findings as they have arisen out of Chapter Three. Chapter Five will provide recommendations for future research and conclude this study with some reflections on the research journey.

# Chapter Two: Methods of Literature Search

## Literature Search Process

The literature search process began as an investigation of the mind-body connection between PE and depression. This general topic proved to be too broad, as I was met with an embarrassment of riches in the literature. The initial search terms were ‘exercise’ and ‘depression’ in PsycInfo and PsycArticles databases. The preliminary search yielded thousands of scholarly articles published within the last five years. The scope of the topic required some refinement. I have noted that there is more information in the literature about aerobic training than RT. Because of the relative disparity between training modalities and my personal experience with RT, I narrowed the scope of the topic to be the effects of RT on depressed and anxious populations. This focus proved suitable to analyze the connection between the mind and the body in a therapeutic context. The search terms included ‘resistance training’, ‘depression’, and ‘anxiety’. These terms were searched in the PsycInfo and PsycArticles databases.

The narrowed focus on RT as a subset of PE presented some benefits as well as some difficulties. The search terms yielded 92 articles, of which ten were selected for an in-depth analysis of using RT to treat anxiety and depression. The selected articles are summarized in a table format in Appendix A. Additional articles have been included throughout the discussion to provide a more thorough discussion of the topic. Research about the connections between PA and mental health outcomes, and research about social and cultural dynamics of RT that did not appear in the initial searches. These articles will appear in the discussion to add more context and to flesh out the topic to better equip therapists with practical knowledge to integrate into their practice.

**Challenges During the Literature Search**

One issue that confounded the original search terms was that many of the articles consisted of exercise activities that were not physical. For example, memory exercises to treat depression, which were not relevant to the research question attending to the mind-body connection by using RT to treat anxiety and depression. Using memory exercises to treat depression amounts to using psychological methods to treat psychological ailments whereas my research topic is focused on using physical exercises to treat psychological ailments. The core of this inquiry is to investigate the relationship between bodily movement and mental health. Therefore, articles that discussed exercises that were not physical in nature were excluded.

The search terms for 'physical exercise' and 'depression' and 'anxiety' produced many thousands of results. These results included forms of PE that included activities like yoga, Pilates, bicycling, yoga, running, and more. PE as a means by which to increase PA to treat anxiety and depression involved too many PE modalities for a cohesive analysis for the purpose of this study. My need to narrow my focus for the purpose of this study may reflect a parallel need for therapists, clients, and the lay population to have access to practical and actionable information regarding mental and physical health that I hope to develop in this study.

**Refinement of the Literature Search**

I decided to change the search terms and inclusion criteria. The basis of this change was a consequence of my personal interests and experience. Much of the literature regarding PE focused on aerobic training protocols and their impact on mood. The research on aerobic, or cardiovascular, training may be sufficiently understood. Somewhat less clear are the benefits of RT on mental health more broadly. Furthermore, my experiences with RT are such that my own

mood has been managed by RT over the years. This begs the question to what extent does developing musculoskeletal trough RT health benefit mood.

To narrow the search, I was faced with a decision to change the topic slightly. Thus, ‘resistance training’ and ‘depression’ and ‘anxiety’ were selected as the final search terms. Similar inclusion and exclusion criteria were adopted as before. These included scholarly, peer reviewed articles from PsycInfo and PsycArticles databases published within the last five years. ‘Resistance training’ as a search term did not invite the problems of equivocation that the term ‘exercise’ did. Several articles contained an exploration of RT for improving quality of life and for rehabilitation from injuries, and those types of articles were excluded unless they contained detailed discussions of the mental health effects of RT.

**Inclusion and Exclusion Criteria**

The inclusion criteria were that a PE protocol was to be used to treat depression and anxiety. Because of the frequency of comorbidity of anxiety and depression (APA, 2022) and the frequency of anxiety and depression being addressed in the literature, my search permitted a comorbidity of anxiety. The search began under those terms and yielded over one hundred results. Papers that included the terms ‘resistance training’, ‘anxiety’, and ‘depression’ in the title or abstract were considered for the study. The broad topic of PE and depression included many ancillary topics. Many articles addressed PE being used to treat traumatic brain injuries, heart disease, and rehabilitation. Those topics all addressed PE and depression, as people rehabilitating from injuries may experience depression and use PE to recover, testifying to how prevalent the mind-body connection can be in the literature. All those topics are separate topics in their own right; however, they strayed from the research question of using RT in therapy to bridge the mind-body gap in depressed and anxious populations. Consequently, any articles whose focus

was on physical ailments and diseases like physical injuries and heart disease were excluded for this study.

**Highlights of Significant Studies Under Review**

One of the studies was a correlational study. Qiu and others (2024) measured the muscle mass and strength of over 4,000 participants and found a negative correlation between muscle strength and depression. This provides a view into the role of physical health goals of RT and how they may correspond to psychological treatment goals. Other studies that I included were meta-analytical studies that aggregated RCT findings. These include Aumer & Vögele (2025), Marinelli and others (2024), and Cunha and others (2024). Taken together, these authors account for 45 RCT studies including over 2,000 participants, all of which demonstrate psychological benefits on treating anxiety and depression with RT. Their findings and recommendations have contributed to my analysis because of the range of factors that they measured. The individual RCTs that I included largely corroborate the metanalyses (Cunha et al., 2021; D'Oliveira et al., 2022; Torelly et al., 2022); however, the RCT research does not uniformly support the clinical benefits of RT, as in the case of Keogh et al. (2022), which will be discussed specifically in the analysis to follow.

I also included mixed methods studies like Ciccolo and others (2022) and Leung and others (2024). These studies included 72 participants. Ciccolo et al. (2022) focused on Black men experiencing depression and performed an RCT to investigate how RT could be used to treat their depression, and the researchers also conducted qualitative interviews six months after the intervention. The work of Leung et al. (2024) investigated the use of RT as an exercise in experiential learning method for treating elderly Chinese clients suffering from depression and chronic pain. The use of RT was done in conjunction with acceptance and commitment therapy

(ACT) that was culturally modified to attend to the population (Leung et al., 2024). These studies provide qualitative findings that can offer insight into the psychosocial underpinnings of RT and its relationship to the treatment of anxiety and depression.

**Methodological Limitations**

The subjective nature of treating anxiety and depression renders much of the research difficult to assess. Most of the work in the literature relies upon self-reported data. While different inventories have been developed and used to minimize this issue, it remains the case that all the data are limited by self-reported data on some level (Wright et al., 2021). Attempts to render the phenomena of anxiety and depression into objective measures can limit the validity of objective analysis. Anxiety and depression are, at their core, attempts to systematize diverse patterns of subjective experience into discreet categories (APA, 2022). The participants have been grouped together as depressed and anxious individuals; however, there is likely variation in the presenting symptoms and severity within and between the categories of anxiety and depression. In this study, I have sought out studies that largely consist of mild to moderate levels of anxiety and depression to try to maintain internal consistency. The reliance on self-report leaves open the question as to what extent the data within and between studies are fair comparisons.

Likewise, there may be elements of subjective beliefs about RT that have influenced the research. Participants may associate RT as a healthy and beneficial activity, and that association may account for many of the benefits that have been documented. The expectation of meaningful but difficult activities yielding a positive outcome may be generating the positive results. From personal experience, I can attest to the discomfort and even pain that can sometimes accompany RT. Typical experiences can include changes in blood pressure, pain in the muscles and joints,

and soreness. Those experiences, paired with beliefs about leading a healthier lifestyle can transform the otherwise stressful and uncomfortable experience into a positive one. Therefore, the sociocultural beliefs and assumptions about RT may have some impact on the results. This leaves some uncertainty as to the precise causal relationship between RT and the treatment of anxiety and depression. Are participants benefiting from physiological processes like hormone and neurotransmitter production or are they benefitting from participating in a socially constructed activity and self-generating meaning and fulfilment? This study will aim to reconcile these two potential interpretations.

**Conclusion**

The first iterations of the literature review were too broad and vague. Consequently, the results were vast and unconnected. As the search was refined, a connective thread presented itself in the literature that will stand to serve two functions. Firstly, my personal and intellectual curiosity will be explored. This is not a trivial function, as the true exercise of intellectual curiosity may seldomly be nurtured in one's lifetime. Lastly, this will provide some basis for clinicians to assess RT as a potential psychotherapeutic intervention for their anxious and depressed clients. In pharmacology, toxicity is determined by the dose, and, as such, the discussion to follow will empower clinicians with the relevant information to help them determine whether RT can serve as an asset or a liability, both for themselves and for their clients.

## Chapter Three: Literature Review

The prevailing knowledge that physical inactivity and mood dysregulation are connected is attested by the research that finds some benefit in increasing PA with RT to treat anxiety and depression (Hallgren et al., 2016; Hird et al., 2024; Marinelli et al. 2024; Oftedal et al., 2021). I will employ a deductive thematic analysis by using a biopsychosocial lens and a CBT lens to identify themes that are present in the literature. There exist biological, psychological, and sociological factors that are related to RT and its effects on psychological mood that will be discussed. The RT modality itself leverages a biological system that dynamically may influence psychosocial systems. The biological benefits of RT will be largely taken for granted because the physical benefits of PE are widely recognized. The psychosocial benefits of RT, however, are less widely understood by therapists, and the way to leverage the psychological benefits of RT are less clear. Using a biopsychosocial framework, I will synthesize the principles of RT and CBT to form a basis to use RT as a behavioural intervention to treat anxiety and depression. My psychosocial analysis will rely on CBT and behavioural treatment of anxiety and depression and how they relate to RT. This analysis will identify themes of RT for the treatment of anxiety and depression and produce information that will equip counsellors with practical information to use.

### Treating Anxiety and Depression with RT by Successive Approximation

The training intensity is one of the most important factors in determining whether any form of exercise is technically being performed (Hallgren et al., 2016; Klussman et al., 2021). As people's experience in any training modality increases as they participate in it, the lines between low, moderate, and high intensities may shift in ways that require reflecting on how to respond to progress that has been made. Levels of resistance that were once difficult can become easier, and more load may be needed to be added to increase the resistance. This process of incrementally increasing the load is called progressive overload in RT. It can be defined as applying load on the

muscles and joints that gradually increases over time and across training sessions (Chertoff, 2020). This process was employed widely in the literature (Aumer & Vögele, 2025; Cunha et al., 2021, 2024; Ciccolo et al., 2022; Keogh et al., 2022; Marinelli et al., 2024). The principle of progressive overload can guide participants in selecting the exercise intensity in RT over the time. For example, if a participant performs a squat with only the bodyweight for a month, over time the movement that was once difficult will become easier as the participant's skill and strength increase. The participant may then add more load by carrying an implement like a barbell to perform a barbell squat, first with minimal weight and increasing the load progressively over the course of successive sessions.

This principle of progressive overload can direct the practice of RT as the participant's abilities change over time. Therapists may recognize the basic principles of progressive overload as being applicable to shaping behaviour through successive approximation (Skinner, 1958). If a client wishes to change their behaviour, incremental changes towards that behaviour over time can guide the client to the target behaviour. Likewise, RT is a way of applying goal setting and behaviour change to a concrete strength goal, and those skills of goal setting and perseverance developed in the weight room can be applied in other avenues of clients' lives. Therapists could benefit from becoming familiar with understanding the skills that clients may acquire in their physical pursuits can be applied to mental domains as well.

Therapists can be in a uniquely privileged position to help their clients to bridge the mind-body connection by integrating RT principles into their treatment of depression and anxiety by applying RT principles like progressive overload into other domains of their lives. This may be beneficial because the emphasis on physical strength in RT may be more accessible for some clients. Modifying behavioural changes through successive approximation could be more

abstract than progressive overload for some clients. However, the basic principles of behaviour modification can be learned and practiced through progressive overload. As clients recognize that they cannot immediately reach their strength goals, they can learn to engage in a process of progressive overload to incrementally work towards their goal. That process can be a way to learn and practice successive approximation in other areas of life. RT can serve as a kind of object lesson for clients to shift their expectations and patterns of goal setting.

The use of RT, a biological intervention, for anxiety and depression, psychological issues, is an example of a benefit of using a holistic lens like the biopsychosocial model. By recognizing that these domains are interrelated, opportunities for different treatment modalities like RT can present themselves. For clients whose psychosocial pain is difficult to address directly with psychological interventions, an indirect modality like RT has been found to be effective (Bondoc et al., 2022; Ciccolo et al., 2022; Leung et al., 2024). Cognitive approaches to treating anxiety and depression have their place, as supported by the literature (Cuijpers et al., 2012; Cuijpers et al., 2021); however, anxiety and depression can be treated by thinking differently in the world just as they can be treated by acting differently in the world. The repetitive and incremental trajectory of RT and progressive overload can be a vital tool for clients to develop actionable skills at changing their thoughts and behaviours to be more in line with the kind of person they wish to be. RT, used in a therapeutic capacity, can help clients embody the means by which they can change their experience.

### *RT and Progressive overload to Overturn Learned Helplessness with the ZPD*

A basic principle of counselling psychology is to meet clients where they are at. Clients are often overwhelmed by their life stresses and feel that their situations and their emotions are outside of their control. RT can be a way of ensuring manageable degrees of difficulty that

clients can overcome by using the principles of progressive overload. The experimental literature had a tendency of selecting training intensities for their participants in the moderate to high intensity levels (Aumer & Vögele, 2025; Marinelli et al., 2024; Cunha et al., 2024; Ciccolo et al., 2022). Each participant was invited to lift a fraction of their maximum strength (1RM), and under no circumstances were any participants asked to lift more than they could handle. RT gradually increases load over time as a response to improvements in strength through progressive overload. The real world that clients live in may not afford them with manageable boundaries and expectations like that.

Depressed and anxious clients are often in situations in which they are overwhelmed and have lost a sense of control. Too much difficulty can instill a form of learned helplessness (Maier & Seligman, 1976). The therapeutic goal is resilience through self-efficacy (Barattaet et al., 2023). RT can show us that difficulty can be overcome if addressed appropriately by calibrating exercise intensity to manageable goals determined by current strength standards. Clients can, through RT, select voluntary hardship that is within reasonable limits, unlike many chaotic and overwhelming situations that clients might otherwise inhabit. Through RT, people can experience an incremental pathway to success rather than persisting in a constant state of being overwhelmed and discouraged. A RT program can help people change their physical behaviour patterns as well as their thought patterns, instilling a sense of resilience that can help to treat anxiety and depression (Ruf et al., 2024; Tabibnia & Radecki, 2018). This can be an opportunity for developing a sense of what can be accomplished over time with an iterative approach. It requires an admission that the goal is, in the moment, not attainable; however, through consistency and time, what was once unattainable, may one day be within reach. With RT, and its

intensity appropriately calibrated, people can experience manageable difficulty and cultivate a sense of control in their lives.

Learning theory has a similar concept of the ZPD (Vygotsky, 1978). Too little difficulty amounts to boredom and does not facilitate desirable process of growth, just as too much difficulty can produce frustration: the appropriate level of difficulty and guidance will produce the most favourable environment for growth. As people engage in RT, they are navigating between too much comfort and too much difficulty through the process of progressive overload. The patterns of anxiety and depression that are reinforced by the cognitive reactions to the environment can be renegotiated through cognitive and behavioural interventions (Barattaet al., 2023; Beck, 1984, 1991; Maier & Seligman, 1976). RT provides a mechanism by which anxious and depressed populations can systematically operate within the ZPD and develop a sense of achievement to renegotiate their patterns of learned helplessness. RT can offer a way to develop a sense of accomplishing what before was not thought to be possible. It can be an exercise of the body to answer a question of the mind. RT can help people to inhabit the ZPD and to affirm to themselves that they can work towards difficult goals and that they can be more than what they might have previously believed. RT can treat anxiety and depression by helping people operate within the ZPD to reclaim their sense of self-efficacy and overturn their learned helplessness.

### *RT for Psychological Treatment Must be Calibrated Differently than for Physical Benefits*

As discussed, RT has been found to be an effective treatment for anxiety and depression; however, the way that RT is practiced can be counterproductive for psychological goals. The physiological and the psychological benefits of RT have been shown to diverge in response to exercise intensity. RT for treating depression has been found to be more effective when using low and moderate intensities (Cunha et al., 2024; D'Oliveira et al., 2022; Fortier et al., 2020;

Helgadóttir et al., 2017; Henriksson et al., 2022; Leung et al., 2024). Keogh and others (2022) found that their participants' physical health continued to improve while performing RT in high intensities; however, their mental health improvements were not statistically significant. More RT at higher intensity levels may yield more physical benefit, but there appears to be a point of diminishing returns for psychological benefits that therapists must be aware of to ensure that their clients are not being led into worse psychological outcomes. The physical and psychological benefits of RT must not be conflated to ensure beneficial treatment outcomes.

Anxiety and depression, which are often comorbid (APA, 2022), respond to RT intensity differently. While depression seems to respond better to moderate and low intensities of RT, anxiety has been demonstrated to respond better to moderate and high intensities of RT (Aumer & Vögele, 2025; Henriksson et al., 2022; Marinelli et al., 2024). Therefore, it is important to match the presenting concerns of clients with the appropriate RT intensity to reach the desired therapeutic goals. Depressed populations may have less energy to draw upon, which is why they respond more favourably to low and moderate intensities, whereas anxious populations are beset by an overabundance of energy which may be why higher RT intensities have been shown to be more effective for treating anxiety. RT can be a way for clients to take stock of their energy levels and a therapeutic approach to RT can help depressed and anxious Canadian populations manage their symptoms with appropriate training intensities.

**RT can Treat Anxiety and Depression through Psychosocial Transformation and Self-Efficacy**

How participants relate to their training on a psychological and cultural level may impact how they respond in biological terms (Bondoc et al., 2022; Ciccolo et al., 2022; Leung et al., 2024). For example, any physical activity that people undergo is motivated by socially

constructed assumptions that imbue the activity with meaning. In the case of RT, participants in the literature likely harboured assumptions of health and improvement which may have contributed to their symptom management. The relationship that people have with their daily activities can contribute to their symptoms, and RT as an intervention to treat anxiety and depression can help renegotiate people's relationships with themselves and their lives. The biopsychosocial model predicts that this interrelation of beliefs, social status, and biological health are all related (Engel, 1981). Therefore, when RT is performed it is done so in a social context that may influence participants' experience of RT and its effects (Vella et al., 2023). Conversely, RT in a therapeutic context, may be used to redefine the social reality of clients to treat their anxiety and depression.

The psychosocial meaning that RT conveys can influence the participants' engagement of the activity (Fortier et al., 2020; Helgadóttir et al., 2017; Marinelli et al., 2024; Vella et al., 2023). Whether participants enjoy their participation in RT can determine the degree to which they can access the full psychological benefits, and enjoyment may be a product of the practice of RT just as it may be a product of beliefs about the practice of RT. The biopsychosocial model holds that the physiological mechanisms can influence and be influenced by psychological mechanisms (Engel, 1981). This is why RT, as a therapeutic intervention, can be so impactful. Through collaborative investigation between clients and counsellors, anxious and depressed populations can use their experiences in RT to look inward for an embodied journey of self-discovery of who they are and how they can change how they manifest in the world when adversity comes. This can be especially important because social status and racial identity can be profound confounding factors to the access to, and outcome of, therapy.

Access to psychological services can be an important limiting factor for depressed and anxious populations. Therapists can benefit their clients by using a biopsychosocial model to recognize that a physical intervention like RT can empower clients to reevaluate their sense of self to entrench a sense of self-efficacy. Cultivating the psychological mechanisms of self-efficacy and resilience can be accomplished through a physical intervention like RT. Visible minorities can benefit from the use of RT as a behavioural intervention, even amidst systems of oppression (Bondoc et al., 2022; Leung et al., 2024; Ciccolo et al., 2022). RT can help clients to develop a more resilient sense of self in a non-verbal manner that may be more accessible to some populations. Anxiety and depression reinforce feelings of insufficiency and feelings of what clients cannot do. The practice of RT can instill a sense of mastery and self-efficacy by demonstrating what clients can do in the face of difficulty. RT can serve as a form of embodied self-affirmation for clients to build themselves up, both in body and mind.

As physical strength improves over the course of RT, psychosocial responses to the training increase in response to the gains in strength and muscle health (Ciccolo et al., 2022; Cunha et al., 2021; Keogh et al., 2022; Marinelli et al., 2024). The biopsychosocial model of treatment can help therapists to recognize that psychosocial presenting problems of their clients may be treated by physical interventions like RT. As clients engage in RT, they can acquire skills and abilities above and beyond what they started with. This growth in mind and body can enrich people's social sense of who they are and what they can be in their social world. RT is a tool of physical change, and RT can be a tool for social change to redefine what kind of person people wish to be. RT can be used to facilitate the beneficial psychosocial changes that clients seek to make in their complicated social worlds.

The social underpinnings of anxiety and depression cannot be overlooked. Social systems contribute to mental health issues. Personal growth through RT may not be sufficient to overturn all the ills of systemic racism and oppression; however, it has been demonstrated to be effective in treating depression in racially oppressed populations (Leung et al., 2024; Ciccolo et al., 2022; Bondoc et al., 2022). For populations that experience psychosocial stress, including poverty and racism, the mere act of strengthening the musculoskeletal system can be enough to instill a sense of transformation that can motivate people away from their experiences of anxiety and depression and towards a more self-directed sense of self-efficacy. This is, in part, because RT can offer anxious and depressed populations experiencing systemic oppression experiences that can affirm that self-directed change is possible amidst hardship and difficulty. RT, with its simple and concrete nature, can offer oppressed and underserved minorities with a domain in which they can develop a sense of control in an otherwise unfair and overbearing system. Systemic oppression is a classic example of a social problem that inflicts psychological pain in the form of anxiety and depression. A biopsychosocial lens can help identify RT as a potential tool to treat that psychosocial situation with a behavioural intervention to promote self-efficacy.

RT can help with the treatment of anxiety and depression by helping clients renegotiate their sense of what they can do in difficult situations over time. The roles that people play in society can be experienced as overly constrictive. Just as social systems can constrain individuals, biosocial dynamics like ageing can contribute to anxiety and depression. RT has been shown to treat anxiety and depression in elderly populations (Cunha et al., 2021; Cunha et al., 2024; D'Oliveira et al., 2022; Keogh et al., 2022; Leung et al., 2024). People associate ageing as an inevitable process of physical degradation. There are psychosocial associations that influence how people’s relationships with their social personae develop over time. RT as a

therapeutic intervention to treat anxiety and depression can be an opportunity for elderly populations to renegotiate what they believe about themselves to develop a sense of self-efficacy.

While there are biological realities to ageing that RT can not altogether change, increased muscle strength through RT can help ageing individuals increase their physical health, which can in turn improve their symptoms of anxiety and depression. RT can offer these individuals with a concrete way to redefine and affirm what is possible and what kind of person that they wish to be in their social environment. Self-limiting beliefs can be directly challenged through cognitive interventions, and RT can further entrench newer and more productive beliefs by putting beliefs to the test of action. This can include using RT to help elderly individuals embody a more capable and more confident way of being in society, which can alleviate symptoms of anxiety and depression. RT can help anxious and depressed people challenge their self-limiting beliefs and attitudes by developing a sense of resilience through self-efficacy.

### *RT can Facilitate Social Connection to Treat Anxiety and Depression*

The practice of RT, in addition to enriching how people inhabit their social roles, can facilitate new social connections to treat anxiety and depression. The biopsychosocial lens implies that social dimensions of life can contribute to physical and mental phenomena (Engel, 1981). While the research literature did not focus on social exchanges during RT, there may be important social contributions to anxious and depressed populations who wish to use RT to treat their symptoms. RT obliges people to connect with each other for safe and effective practice. In the case of the literature on RT to treat anxiety and depression, the experimental designs all included supervision of the participants while performing the RT (Aumer & Vögele, 2025; Ciccolo et al., 2022; Cunha et al., 2024; Cunha et al., 2024; D'Oliveira et al., 2022; Keogh et al., 2022; Leung et al., 2024; Marinelli et al., 2024; Torelly et al., 2022). The participants were given

instructions, demonstrations, and were monitored as they began their practice of RT. The participants were provided with a PA as well as social connections, which can be vital elements to treating anxiety and depression.

For RT to be used to treat anxiety and depression, social connection can be an indirect result of the intervention. Self-isolation is a common symptom of anxious and depressed populations (APA, 2022). To practice RT, it is necessary to learn from others to become comfortable with the movements. To learn the RT movements, people often obtain coaching and mentorship, which can be indirect social bonds within the practice of RT that can benefit the treatment of anxiety and depression. Those bonds can be meaningful additions to populations who struggle to engage in their regular social activities. A shared focus on RT can help anxious and depressed people engage in social exchanges that can be less personal and difficult than a direct interrogation of their emotions. By focusing on RT activities, anxious and depressed people can experience small manageable doses of social interaction as they learn RT and benefit from the practices of RT as well as the social atmosphere they train in.

As people become more accustomed to RT, they may eventually stop using a coach or a trainer. There can still be other opportunities for social connection as people continue to use RT to manage their psychological symptoms. The mere practice of RT can combat feelings of social isolation by instilling a sense of purpose in training (D'Oliveira et al., 2022; Marcos-Pardo et al., 2021; Vella et al., 2023). If RT is practiced in a public training facility, merely seeing other people train can create a unifying sense of community as anxious and depressed people engage in RT in the company of others. If RT is practiced in the company of others, social exchanges can organically arise because of the shared sense of community. Common social interactions in a fitness facility can consist of taking turns on limited equipment and sharing equipment during

peak hours. Another classic example could be asking another person training at the facility for a ‘spot’. This is when someone is about to perform a movement, and they ask another to assist them in case they are unable to perform the movement themselves. For example, if someone is about to perform a bench press at a load that they feel unsure about, they may ask another for a spot to prevent being crushed by the load in case they fail to lift it. This can be an opportunity to develop trust and reciprocity with others with the practice of RT. Social exchanges and reciprocity in RT culture can sow seeds of deeper social connections that can help to treat anxiety and depression.

As people engage in RT to treat anxiety and depression, social interactions can even develop into friendships. Common goals of RT, paired with being in the same geographical location of a training facility over time, can help people meet each other. It can be common for people to become training partners. In such cases, training partners can motivate one another to continue their RT over time, supporting each other through hardship. Friendships based upon shared interests and goals can be formed as people engage in using RT to treat their anxiety and depression. Newfound friendships can enrich the lives of people who use RT to treat their anxiety and depression.

**RT Treats Anxiety and Depression through Holistic Lifestyle Behaviours**

So far, this discussion on the use of RT to treat anxiety and depression has taken a largely reductionistic form. Sleep, diet, stress management, and other lifestyle behaviours can all contribute to symptoms of anxiety and depression (Duncan et al., 2021; Oftedal, 2021; Ruf et al., 2024). RT, taken more broadly, ultimately requires changes in sleep and nutrition to continue along the practice. By adding in a few difficult hours of RT a week, participants can expect to become hungrier and more tired. For clients whose sleep and hunger have been dysregulated by

their anxiety or depression, RT can be a viable strategy for balancing sleep and eating habits. Adding more physiological strain on the body through RT can create an increased demand on sleep and nutrients with a single behavioural intervention (Duncan et al., 2021; Martland et al., 2024). Promoting RT to treat anxiety and depression can be an indirect way of empowering people to manage and balance several aspects of their lives.

RT as a holistic lifestyle behaviour, can be used to treat anxiety and depression. The goal of RT is to increase muscle mass and strength. The psychological benefits of RT are, however, more to do with the behaviour of training more so as a *process* rather than the *product* of having more healthy muscle tissue. On the one hand, having healthy muscle tissue is related to more beneficial outcomes with anxiety and depression (Bobos et al., 2020; Fritz et al., 2017; Qui et al., 2024). Having healthy muscle tissue as a product conveys some psychological benefits; however, RT is a process that can benefit the treatment of anxiety and depression. Only one session of RT has been shown to benefit depressed inpatients (Torelly et al., 2022). A single session's physical benefits in terms of muscle size and strength are negligible. The psychological benefits of RT, however, are also the result of a *process* of balancing several behaviours in concert, and that process and its attending benefits can be made available immediately.

The process of RT can be a tool to treat the process of anxiety and depression. Anxiety and depression are the result, in part, of patterns of reinforcing negative beliefs and attitudes (Beck, 1984, 1991). People use their thoughts and actions to either affirm or deny their beliefs and attendant emotions. RT to treat anxiety and depression can be a process for people to affirm certain beliefs about how they can act in difficult times. By engaging with RT as a process of growth, improvement, and self-efficacy, people can form lifestyle behaviours that can challenge the patterns of negative self-beliefs and self-talk, breaking the pattens of anxiety and depression.

RT can amount to a ritualized practice of resilience to hardship that empowers people to process their experiences of anxiety and depression. RT can help people to recognize the amount of control that they can assert in their lives over time. Small amounts of control and small improvements over time can produce positive changes over time, and RT can help anxious and depressed people experience these incremental changes and balance those principles across their lives.

RT, in addition to having immediate beneficial psychological applications, can be applied to people at several points in their lifespan. There may be safety concerns for populations that are either too young or too old engaging in RT. The research demonstrates that RT can be effectively used to treat anxiety and depression in adolescent populations (Aumer & Vögele, 2025); young adult populations (Ciccolo et al., 2022; Marinelli et al., 2024); and elderly populations (Cunha et al., 2021, 2024; D'Oliveira et al., 2022; Keogh et al., 2022; Leung et al., 2024). What this shows is that there are lifestyle benefits of using RT as a process to treat anxiety and depression that can be applied across many points of time in people's lives. The difficulty of RT is such that it can be adjusted to meet the desired training needs of experts and beginners. The starting point of using RT to treat anxiety and depression is less important that the process of the practice over time.

Its flexibility is the reason why the practice of RT can be used to treat anxiety and depression across such a wide range of abilities. The load lifted can be incrementally adjusted to meet the needs of the very old and the very young alike. For example, an exercise like a pullup can be performed by vertically pulling oneself up to an overhead handle with one's bodyweight, and if the participant is sufficiently strong then they can attach weight to a belt to make the movement more difficult still. However, many people may not be able to complete even a bodyweight pullup. There are implements that add assistance to the participant so that they can

successfully perform the movement safely, progressively using less assistance as their strength improves over time. The barrier to entry for RT can be quite low, because minimal equipment or technical skill is required to participate in it. With some guidance and coaching, the practice of RT can be used to holistically treat anxiety and depression.

**Ethical Principles and Considerations**

Careful considerations of the ethical principles, as laid out by the Canadian Psychological Association (CPA), the College of Alberta Psychologists (CAP), and the Tri-Council Policy Statement of Ethical Conduct for Research Involving Humans (TCPS2) will follow to ensure that using RT to treat depression and anxiety can be done ethically. Anxious and depressed people are, by definition, vulnerable people that seek treatment because of their difficulties in functioning (CAP, 2.30, 2022). As such, including vulnerable people like anxious and depressed populations must be done with careful consideration of their circumstances (TCPS2, 4.7, 2022). The ability of RT to modulate the difficulty to meet the needs of a vast array of ability levels can safely include anxious and depressed populations. The Canadian Code of Ethics for Psychologists holds that the respect for people's inherent dignity has primacy over all other considerations when acting within the purview of psychological treatment (CPA, 2017). This requires a non-judgemental approach to treating anxiety and depression with RT.

The principle of being non-judgemental requires therapists to demonstrate respect for their clients' experiences, beliefs, and backgrounds (CPA, I.1, 2017). This respect can be demonstrated as therapists help their clients explore their beliefs and cultural upbringing, integrating those features into treatment in a collaborative spirit between the client and the therapist. This can create a method of treatment using RT that respects and honours clients' beliefs and experiences while building new ways of being for clients (Ciccolo et al., 2022; CPA,

II.10, 2017; CAP, 19.1, 2022; Leung et al., 2024; TCPS2, 4.1, 2022). RT as a behavioural intervention must be presented in a way that respects and compliments clients' sociocultural experiences to ethically treat their anxiety depression. The addition of RT to psychological treatment may provide people with more opportunities for reflection and growth. However, the power imbalances that exist between the counsellor and the client may unduly undermine clients' autonomy. This can be addressed by a thorough commitment to informed consent.

Counsellors can include their clients in a collaborative approach to their treatment plan to create a therapeutic alliance of informed consent. Counsellors inform their clients of potential treatment plans and interventions, but this must be an ongoing process that aims to empower clients with knowledge that promotes their autonomy and dignity (TCPS2, 3.3, 2022; CPA, I.17, 2017; CAP, 3.4, 2022). Including RT in the treatment of anxiety and depression is one avenue that clients can try, and counsellors must be responsive to clients who agree to RT as an intervention. Clients must be made aware of their right to rescind their consent without fear of reprisal or judgement. Counsellors must navigate between encouraging RT while not mandating it. This process of ongoing informed consent can empower clients to participate in counselling as an equal partner. This ensures that clients be made aware of what therapy that they can comfortably do with their counsellors, and they can clearly understand what their counsellor will do with their information as it arises in session.

Without a reasonable right to confidentiality, the therapeutic alliance cannot develop fully to benefit clients. For the use of RT to treat anxiety and depression, clients may coordinate between a counsellor, a healthcare provider, and a coach. As more parties become involved in the client's care, it is vital that clients are made aware of what kind of information that they can expect to be shared between parties and what information that they can expect to remain

confidential (CAP, 12.15, 2022). This is why informed consent about the client's right to confidentiality, and the limits of their confidentiality must be obtained and documented to preserve their autonomy and dignity over the course of therapy (TCSPS 2, 2022; CPA, I.23, I.26, 2017; CAP, 12.2, 2022). Counsellors must maintain confidentiality of the client's treatment to protect the client. Clients must be given impartial care that preserves their dignity.

One way to be impartial is to be committed to inclusivity in treatment. Historically, women have been systematically excluded from research participation and researchers are obliged to consider whether they are including women adequately (TCPS2, 4.2, 2022). In the case of using RT to treat anxiety and depression, the inclusion of women into research upholds the commitment to inclusivity in the research because the majority of participants were women (Aumer & Vögele, 2025; Cunha et al., 2021; Leung et al., 2024; Marinelli et al., 2024; Torelly et al., 2022). This inclusivity in the research can be reflected in practice to ensure that clients are not being unjustly excluded from treatment protocols on the basis of gender. A more robust commitment to inclusivity of using RT as a treatment protocol can also aim to consider the inclusion of women who are pregnant or breastfeeding and non-heteronormative populations as well (TCPS2, 4.1, 4.3, 4.4). RT principles can be used for treating anxious and depressed populations, and gender identity and sexual orientation are not legitimate grounds for exclusion because of RT's capacity for personalization according to physical ability is nearly infinite. RT can be appropriately used for a wide range of individuals, even children and elderly populations have been included in the literature, and their inclusion in practice can be beneficial (TCPS2, 4.4, 4.5, 2022). There is the proviso that children may require informed consent from their legal guardian to participate in RT for their psychological treatment (CPA, I.34, 2017; CAP, 12.9,

2022). RT can be an inclusive modality for the treatment of anxiety and depression that can maximize benefits for clients.

Integrating RT into treatment for anxiety and depression can be done in an evidence-based way that must be communicated to clients in a way that informs them of the potential risks and benefits (TCPS2, 11.4, 2022; CPA, II.18, 2017; CAP 3.5.6, 2022). As I have argued, a biopsychosocial model can best equip therapists and their clients to navigate the intricacies of integrating the mind-body connection. To do this, therapists must be informed of the potential risks and benefits of using RT as a treatment modality, and therapists must be aware of the risks and benefits as they relate to different populations that their clients may be a part of (CPA, II.13, 2017). RT has held a spot in the general culture in the form of cosmetic concerns and body image. This has manifested in body image issues, compulsive exercise, eating disorders, muscle dysmorphia, and even drug use (Beos et al., 2025; Martenstyn et al., 2022; Nahman, & Holland, 2022). A therapist's nonjudgemental stance would require that therapists discuss RT without their clients feeling judged or humiliated, because such a discussion of PA can easily drift into judgement and cruelty. Unconditional positive regard would serve the therapeutic alliance greatly (Rogers, 1957). Additionally, there are injury risks that therapists must help clients to be aware of before adopting a RT protocol to help their clients stay safe.

**Conclusion**

There are thousands of Canadians who are struggling to find suitable resources to treat their anxiety and depression (Stas Can, 2023). New methods and modalities can equip therapists and clients to address the problems of managing anxiety and depression more holistically. Physical and psychological health benefits have been proposed to be gleaned from PE that include RT (Ciccolo et al., 2022; Cunha et al., 2021; Fortier et al., 2020; Hallgren et al., 2016;

Helgadóttir et al., 2017; Howlett et al., 2021; Jong et al., 2021; Krogh et al., 2012; Mandolesi et al., 2018; Murray et al., 2022). Because RT can be readily practiced by many people and can transcend linguistic and cultural barriers, it may be a useful tool for therapists as a form of object learning for their clients. A literature review of experimental, mixed methods, and correlational data corroborated the claim that RT can be used effectively to treat anxious and depressive symptoms in a wide array of applications.

There are different explanations about why this may be. There may be some benefit of having strong and healthy muscle tissue that itself protects people from biological mechanisms that are related to depressive and anxious symptoms (Ciccolo et al., 2022; Fortier et al., 2020; Hallgren et al., 2016; Helgadóttir et al., 2017; Howlett et al., 2021; Jong et al., 2021; Krogh et al., 2012; Mandolesi et al., 2018; Murray et al., 2022; Qiu et al., 2024). The benefits of developing healthy and strong muscle tissue may help people develop psychological resilience (Ruf et al., 2024; Zhou et al., 2024). However, there may be psychological benefits of various activities that merely use muscle contractions, because even a single session RT has been shown to help treat depression for severely depressed inpatients (Torelly et al., 2022). Developing healthy muscle through RT to benefit the treatment for anxiety and depression requires a framework of RT as a process to participate in more so than a product to achieve. The process of RT can activate links between the mind and body that a biopsychosocial model of treatment can direct.

The process of RT can be a tangible way for clients to learn beneficial psychological skills that can treat anxiety and depression. Progressive overload can be a way for clients to approach goal setting through successive approximation. RT intensity can be selected to determine whether the training intensity is appropriate for psychological benefits to be gained

alongside physiological benefits. The treatment of depression has been found to respond more favourably to low and moderate intensity while treating anxiety has been found to respond more favourably to moderate and high intensity (Cunha et al., 2024; D'Oliveira et al., 2022; Helgadóttir et al., 2017; Henriksson et al., 2022; Keogh et al., 2022; Klussman et al., 2021; Leung et al., 2024). The energy levels available to clients can help inform their therapeutically appropriate training intensity levels for using RT to treat their anxiety and depression. As clients adjust their exercise intensity of RT over time, they can learn to operate in the ZPD and develop a sense of what they can do amidst adversity, which can overturn learned helplessness. The use of RT to treat anxiety and depression must be considered to operate in a holistic context that the client inhabits.

The Various psychological and cultural beliefs and attitudes can contribute to how a client responds to RT. Beliefs about meaning and improvement can leverage RT into a meaningful experience that can help clients renegotiate their relationship to psychosocial hardship and physical pain (Bondoc et al., 2022; Ciccolo et al., 2022; Leung et al., 2024; Marinelli et al., 2024). Meaningful and difficult activities like those provided through RT may be used to help treat anxiety and depression by providing clients with an activity that can provide sustainable and incremental improvement over time. This can empower clients with a sense of accomplishment and self-efficacy. The experience of withstanding the discomforts in RT can help depressed and anxious clients develop a sense of being able to change their bodies and minds in line with their values, and clients can redefine what is possible for themselves with regards to how they can manifest themselves in their social reality. Clients' social worlds can be expanded and enriched through the practice of RT.

The constrained sense of self as it has been learned and experienced can be renegotiated over the course of clients' lives through a holistic practice like RT. RT can be a mechanism to rework clients' balance of their thoughts, beliefs, and lifestyles (Duncan et al., 2021; Oftedal, 2021; Ruf et al., 2024). Both the young and the old have been shown to be able to have their anxiety and depression treated by RT (Aumer & Vögele, 2025; Ciccolo et al., 2022; Cunha et al., 2021, 2024; D'Oliveira et al., 2022; Keogh et al., 2022; Leung et al., 2024; Marinelli et al., 2024). The benefits of RT as a process of balancing biopsychosocial health can be an important tool for treating anxiety and depression. Recommendations for how therapists can apply these findings into their clinical practice will follow in the next section.

## Chapter Four: Application to Clinical Practice

RT can be a useful tool for people to improve not only their physical health but their mental health as well. As discussed above, RT has accrued robust support in the literature for supporting people's management of depressive and anxious symptoms. This begs the question as to how therapists should apply these research findings in their clinical practice. The connection between the mind and the body can be multifaceted, but therapists can use a biopsychosocial model of treatment to synthesize the research data to help their clients to assess their own physical and mental needs for PA. Furthermore, a biopsychosocial approach can guide therapists to collaboratively determine the costs and benefits of RT to clients, developing a form of an experiential way of learning about themselves and developing a sense of self efficacy and resilience. Injury risks and considerations of gender and racial identity will be discussed with regards to RT. The mechanisms that RT involves will be discussed in biopsychosocial terms, explaining how that model can help therapists treat their anxious and depressed clients by using RT as a form of experiential learning to develop a sense of self efficacy that extends beyond training sessions. The role of therapists will be explored in a way that renders RT as a potential form of intervention and point of discussion for treating anxious and depressed clients.

### Health Costs and Benefits

The biopsychosocial model suggests that the biological and psychological dimensions are dynamically connected in such a way that implies that a person's physical and mental health are dynamically linked (Engel, 1981). As such, therapists must be responsive to the physical needs of their clients just as they must consider their psychosocial needs. Depression has been linked to excess adiposity, inflammation, diet, and poor sleep (Kiecolt-Glaser; Mac Giollabhui, 2021; Pebole et al., 2024; Ruf et al., 2024). Treating depression and anxiety holistically requires some attention to the physiological underpinnings of these disorders. Behavioural interventions as well

as psychological interventions can be useful tools for clients. PA has been shown to be an important factor in the mental and physical health, improving inflammation, sleep quality, and psychological symptoms (Ciccolo et al., 2022; Fortier et al., 2020; Hallgren et al., 2016; Helgadóttir et al., 2017; Howlett et al., 2021; Jong et al., 2021; Krogh et al., 2012; Mandolesi et al., 2018; Murray et al., 2022; Oftedal et al., 2021; Pebole et al., 2024; Yager, 2020). The potential benefits of PE in general and RT specifically have been demonstrated, but they must also be weighed against the costs.

The first costs to be considered are potential injury risks. RT requires moving the body with an external resistance applied, increasing the difficulty of the movement. The added stress on the muscles, bones, and connective tissues can lead to injury. There are data about the injury rates of people participating in strength sports like bodybuilding, weightlifting, powerlifting, and strongman. Bodybuilding was found to have the lowest rates of injuries at 0.2-0.7 injuries per 1,000 participation hours, and strongman was found to be the highest at 4.5-6.1 per 1,000 participation hours (Keogh & Winwood, 2017). The authors found that strength sports have lower injury rates than typical team sports, and that the injuries consisted of overuse injuries like tendonitis and sprains (Keogh & Winwood, 2017). The injury rates amongst strength athletes, who would be the most avid practitioners of RT, are higher than zero, but the rates are sufficiently low to recommend RT to clients without unnecessarily leading clients to debilitating injury. Clients could realistically expect injury-free participation in RT for years without injury, especially under the guidance of medical professionals and trainers.

Input from a medical doctor and guidance from a certified trainer are helpful tools to ensure that clients are set up for safety and long-term success. Therapists can help clients to coordinate with medical health professionals and personal trainers to approach behavioural

interventions like RT in a way that is responsive to the client's needs and abilities. Therapists can help their clients process fears and anxieties regarding their desire to improve in their adherence to RT (Mason & Asmundson, 2023). Therapists can also use their client's difficulties in their training to practice skills at planning, goal setting, and developing self efficacy and resilience (Ruf et al., 2024; Tabibnia & Radecki, 2018; Zhou et al., 2024). A collaborative therapeutic alliance can support clients as they develop new ways to manifest themselves in the world. RT as a form of experiential learning which obliges practitioners to develop strength through progressive overload in their RT. This can then be generalized in therapy by recognizing opportunities for shaping behaviours and attitudes in other domains through successive approximation (Skinner, 1958).

As discussed, exercise intensity can determine the physical and psychological benefits of PE. PA characterizes many forms of activity, and the intention and the degree differentiates between PA and PE (Hallgren et al., 2016; Klussman et al., 2021). The biological and psychological benefits of RT may not necessarily coincide at every intensity level, and it does not necessarily follow that more is better. It should be noted that exercise intensity can be something of a moving target. For example, RT intensity is often determined in relation to a 1RM. Over time, as the practitioner becomes stronger and more adept, their 1RM changes, and the absolute load must be recalculated accordingly to maintain a consistent intensity: the intensity of a particular load will decline over time as the practitioner's strength improves with the movement. That is a result of the body's adaptation to progressive overload. Adolescent populations may reap more psychological benefits as intensity increases, even extending to high intensities (Aumer & Vögele, 2025). However, elderly populations may not benefit psychologically as much from higher intensities and may instead benefit from low and medium

intensities (D'Oliveira et al., 2022; Leung et al., 2024). Physical benefits of increasing RT intensity can increase whereas psychological benefits of increasing the training intensity of RT may reach a point of diminishing returns before the physical benefits do.

The specific experiences of depressed and anxious populations may also be a determining factor of how they respond to RT intensity. The treatment of anxiety has been shown to respond more favourably to moderate and high intensities of RT (Aumer & Vögele, 2025; Henriksson et al., 2022; Marinelli et al., 2024). This may be because anxious populations experience a surplus of energy that they can productively expend in a RT session to treat their anxiety. Conversely, depressed populations, who experience lower energy levels, have been shown to respond to treating their depression with low and moderate RT training intensities (Cunha et al., 2024; D'Oliveira et al., 2022; Fortier et al., 2020; Helgadóttir et al., 2017; Henriksson et al., 2022; Leung et al., 2024). Therapists can help their clients to recognize their energy levels and to manage their approach to RT accordingly. For example, a depressed client may report difficulty with adhering to their RT regimen. The counsellor could help the client to determine if their training intensity is too high, potentially overwhelming the client's energy levels. In such a case, the client could be well advised to lower their RT intensity to honour their energy levels and treat their depression.

Overall, a moderate intensity has been shown to be an effective training modality to elicit mental health benefits for anxiety and depression (Aumer & Vögele, 2025; Ciccolo et al., 2022; Cunha et al., 2024; Leung et al., 2024; Marinelli et al., 2024). Clients and therapists have many psychological benefits to work towards under low and moderate training intensities rather than high training intensities. Therapists can help their clients use a holistic approach to RT and help encourage them to select moderate training intensities that may be more beneficial for mental

health outcomes. In cases when clients report high levels of anxiety, their counsellors could discuss whether considering increasing RT intensity gradually might benefit their treatment of anxiety (Aumer & Vögele, 2025; Henriksson et al., 2022; Marinelli et al., 2024). For depressed clients who express difficulty with their RT regimen, counsellors could discuss decreasing the training intensity rather than stop altogether (Cunha et al., 2024; D'Oliveira et al., 2022; Fortier et al., 2020; Helgadóttir et al., 2017; Henriksson et al., 2022; Leung et al., 2024). Clients can be empowered to make more informed decisions by being encouraged by their counsellors to reach out to medical professionals and personal trainers to get support as they use RT to treat their anxiety and depression.

**Diversity and Identity Considerations**

Societal standards and ideals can lead both genders and diverse racial identities away from healthy participation in RT. Most of the research on the mental health benefits of PE discussed above consisted of participants who were predominantly female (Aumer & Vögele, 2025; Leung et al., 2024; Marinelli et al., 2024; Prado et al., 2021; Qiu et al., 2024; Torelly et al., 2022). Depressed and anxious populations in Canada are also predominantly female (APA, 2022; Knoll & MacLennan, 2017; Stats Canada, 2023). The social context of RT includes notions of musclebound masculinity, which may be an obstacle for women to participate in RT. Anxiety and depression are reinforced by assumptions and fears that people harbour, and therapists have much to offer when attempting to untangle those cognitive distortions (Beck, 1984, 1991). Some women's fears of becoming too bulky if they were to begin an RT regimen could be weighed against the experiences of men who are unsuccessfully building their desired levels of massy bulk without turning to extreme dieting and drug use (Beos et al., 2025; Hilkens et al., 2021; Martenstyn et al., 2021; Nahman & Holland, 2022). Therapists can be in a uniquely productive

position to help clients navigate their fears and hopes with regards to the type of person that they can become, managing fears with realistic expectations.

Therapists should also be aware of the added barriers to RT for female clients. Despite overrepresentation of females within the depressed and anxious populations, there is a female participation gap with regards to RT (Coen et al., 2018; Vasudevan & Ford, 2022). There are gendered ideals and stereotypes of becoming too bulky or too masculine that have served as a barrier for women participating in RT (Coen et al., 2018; Vasudevan & Ford, 2022). Female practitioners of RT may also be advised to reflect their menstrual cycle in their training in a way that honours their shifting levels of energy and motivation. Otherwise, there is no reason for females to eschew RT for fear of undermining their femininity. Counsellors can use RT as a way of exploring gendered ideals of expression and identity in healthy ways that emphasize personal growth and self-mastery to treat anxiety and depression.

The masculine ideals that males seek after may not necessarily be realized through RT alone. As a result, some males may turn to the use of supplements, disordered eating, and drug use to pursue their idealized goals (Beos et al., 2025; Hilkens et al., 2021; Martenstyn et al., 2021; Nahman & Holland, 2022). As stated above, moderation is a key element that determines the benefits or risks of any remedy. An integration of cognitive approaches, managing distorted thinking and behavioural interventions including RT can yield a type of experiential learning, inviting clients to renegotiate their hopes and fears into productive goals (Leung et al., 2024). RT can supplement therapy in a way that reveals clients' cognitive distortions about how they should present in the world. As clients engage in RT, their relationship with themselves can be developed in a more realistic and healthy way as they adopt progressive overload and integrate a

biopsychosocial model. A more realistic picture of what is possible over time can be developed, replacing clients' attention of their perceived notions of their present insufficiencies.

RT, as a form of homework in therapy, can be an invitation for clients to engage in a simplistic activity for a truthful engagement with reality: either the movement was done or not. The outcomes of RT are more objective than in other domains of life. Where a client is at and what they are capable of is less susceptible to distortion. RT can reinforce the ZPD over time through successive approximation to develop a sense of self-efficacy. A biopsychosocial model can further elucidate the perceived fluctuations in ability that clients may experience, as their sense of improvement may lapse as other life stresses come and go in their lives. Therapists can counsel with their clients to develop a sense of self-efficacy and resilience through RT to treat anxiety and depression.

The kinds of physical and mental resilience that people can develop through RT can be extended to broader social notions of identity. RT has been used as an intervention for developing a healthy sense of racial identity for youth of colour who are trying to reintegrate into society after being incarcerated (Bondoc et al., 2022). Black men experiencing depression benefitted from RT more than from discussing their experiences of systemic racism (Ciccolo et al., 2022). Similarly, elder Chinese clients experiencing chronic pain were able to manage their chronic pain and depression with RT and psychotherapy integrating their beliefs and experiences into their therapy (Leung et al., 2024). There appears to be an element of identity renegotiation and reaffirmation that can result from RT. RT can help clients transform their lived experience of their social roles that they project and inhabit. RT can provide clients with a behavioural intervention that can improve their health in multifaceted ways that therapists can anticipate and integrate into treatment of anxiety and depression with a biopsychosocial model.

**RT, Psychotherapy, and the Biopsychosocial Link**

This whole discussion begs the question as to what extent should therapists prescribe RT, or any other PE, as a therapeutic intervention. Eating more fruits and vegetables may have similar benefits, but therapists may be ill advised to spend time in session to plan meals for their clients and become a nutritionist or a dietician. Nevertheless, diet and lifestyle are important factors for mental health outcomes (Oftedal, 2021; Ruf et al., 2024). Therefore, therapists must be conversant about some of the potential impacts of different lifestyle factors and physical activities, especially in response to clients who express desires to strike a new balance between lifestyle behaviours that are relevant to their treatment goals. This is where therapists can benefit their anxious and depressed clients by using a biopsychosocial model to potentially recommend RT as an intervention to supplement treatment. This can be done through psychoeducation about the mental health benefits of RT and referral to personal trainers and medical professionals to help their clients form a new balance in their minds and bodies.

Some clients may express difficulties in adhering to lifestyle interventions that they have adopted, and therapists may assume an important role in encouraging their clients to follow their desired path. CBT has been demonstrated to be effective at managing clients' exercise adherence (Mason & Asmundson, 2023). Therapeutic principles like successive approximation and the ZPD can be applied to empower clients with skills to address their difficulties with goal setting and adherence to their plans. RT, like many aspects of life, involves making changes and persisting through difficulty. A conversation about the very real difficulties that clients face while balancing their lives can involve programming their RT to be responsive to changes in other facets of the clients' lives (Zhou et al., 2024). In this way, clients can learn to become more agentic and purposeful in their lives, developing more self efficacy and resilience (Mason & Asmundson,

2023). RT can benefit the treatment of anxiety and depression by instantiating change in clients between therapy sessions.

While much can be accomplished in a 50-minute session, clients have an entire week of behaviours to either facilitate the positive change that they envision or not. RT provides a modality that can provide clients with a framework that can act as a microcosm of life. The participants that Ciccolo and others (2022) interviewed who reported that they faced a challenge that was more difficult that they expected but that they felt that they could adapt to the challenge: those participants described their experience of developing resilience. By abiding by RT principles like progressive overload, clients are also operating within Vygotsky's (1978) ZPD. RT offers a way for clients to restructure their nervous system, learning new ways of responding to pain and difficulty with calm and resilience (Chen et al., 2021; Chow et al., 2021; Sillero-Quintana et al., 2022; Tabibnia & Radecki, 2018). RT can form a basis for growth and change for clients, both in body and in mind. RT can be an opportunity for clients to reflect on what is meaningful in a way that can rewire and renegotiate their relationship with pain and resilience in ways that are unique to the clients' unique experiences and cultural heritage (Leung et al., 2024).

Anxiety and depression are different manifestations of a deficiency in self-efficacy, which RT can improve. Clients find themselves in situations where their ability to assert themselves in their lives is insufficient. Their motivation and sense of self-efficacy are insufficient to flourish. RT can provide a mechanism that can yield biological and psychological benefits that can make clients' situations more manageable. Because clients can, both in principle and in practice, select exercise intensities specific to their goals and abilities, clients can systematically operate within their ZPD and train not only their musculoskeletal system, but also their nervous system. Anxiety and depression are different patterns of denial of one's ability to face the challenges that one

faces. RT can be a mechanism of systematically facing more and more difficult challenges in a structured way that can empower clients with a sense of self-efficacy and resilience (Mason & Asmundson, 2023; Ruf et al., 2024; Zhou et al., 2024). This form of activity can be a boon for depressed and anxious clients, and therapists can determine the potential costs and benefits by using a biopsychosocial framework that can account for the interrelated phenomena at play. Therapists can treat anxiety and depression by using RT as an intervention for their clients to discover what they can do and what they are capable of in the presence of difficulty and discomfort.

**Making Recommendations**

It is my contention that therapists are not in the business of solving clients' problems for them. Ultimately, the role of the therapist is to facilitate positive change in their clients. It is hardly the role of the therapist to prescribe RT, dieting, or any other form of behavioural intervention, just as it is not the role of the therapist to prescribe journaling, meditation, or religion. The contention of Carl Rogers (1957), that clients have within themselves the means of their own healing, should be taken seriously in this discussion. Whether a behavioural intervention like RT would benefit a client or not is less relevant than whether a client wishes to adopt such an intervention. As it stands, it is becoming common knowledge that PE does benefit physical as well as mental health. It is the therapist's duty, therefore, to empower their clients with relevant information about the potential costs and benefits of RT to treat their anxiety and depression.

Therapists can help their clients develop goals and strategies to take charge of their lives in productive ways (Ruf et al., 2024; Zhou et al., 2024). In this way, therapists can collaborate with their clients and help them realize their goals and self-actualize their ideal of themselves.

RT can be a tool of developing self-efficacy and resilience by systematically operating within the ZPD as progressive overload is practiced (Chen et al., 2021; Chow et al., 2021; Lee et al., 2022; Leung et al., 2024; Sillero-Quintana et al., 2022; Tabibnia & Radecki, 2018; Vygotsky, 1978). Those qualities can prove as foundational skills that can help clients in other aspects of their lives. Expending effort in moments of discomfort is what RT is comprised of, and this basic skill can be developed to benefit other facets of clients' lives. Therapists can offer RT as one of many tools for clients to use to bring their lives into balance to treat anxiety and depression.

There are risks associated with RT that therapists should help their clients to recognize. There are overtraining and injury risks (Keogh & Winwood, 2017); there are risks of distorted body image, disordered eating, and drug abuse (Beos et al., 2025; Hilkens et al., 2021; Martenstyn et a., 2021; Nahman & Holland, 2022); and there are risks of operating within unproductive and gendered body ideals (Coen et al., 2018; Vasudevan & Ford, 2022). Therapists can be aware of these risks and help their clients to capitalize on the potential benefits of RT while minimizing the risks. RT is, in a way, just as much about showing up in the world and asserting one's identity as it is about moving mass through space. Therapists can help their clients manage their view of themselves in a productive way and imbue meaning of their actions in ways that are appropriate to their life history and personal goals (Leung et al., 2024).

A biopsychosocial view of RT helps therapists to view RT as more than lifting weights or stretching elastic bands. It involves effortful amidst discomfort and pain. RT alongside therapy helps clients change their relationships with effort and pain (Leung et al., 2024). Psychotherapy can be enhanced if it is accompanied by a PE regimen like RT. RT, from a biopsychosocial lens, offers clients and therapists a means to apply psychological skills like reframing, cognitive flexibility, emotional intelligence, and others to a physical behaviour. Therapists can be more

holistic in their approach by recognizing the interrelated biological and psychological elements that operate when a client is engaging in RT. Therapists can use RT to help their clients learn skills like resilience and self-efficacy that benefit clients outside of session and throughout the clients' lives.

**Conclusion**

The biopsychosocial model of treatment (Engel, 1981) can provide therapists with an accurate and parsimonious theory of how RT can benefit clients. Biological, psychological, and social factors interact with each other dynamically. These interrelated phenomena can provide clients with an opportunity to engage in a virtuous cycle that can manage symptoms of anxiety and depression. There are biological mechanisms that are mobilized when people engage in RT that can elicit favourable physiological outcomes that can directly or indirectly affect psychological symptoms. The behavioural element of RT, requiring goal setting, planning, adherence, and self efficacy can facilitate a sense of confidence and resilience that can benefit people's psychological well-being. Finally, clients' feelings of insufficiency and isolation can be improved by the social interactions embedded in the enterprise of learning new skills and techniques of RT. There are benefits and costs that therapists should consider when discussing RT in session with clients. Therapists can encourage clients to make substantive changes in their lives, supplementing information that clients may already have, and therapists can help clients navigate the risks and rewards that are associated with RT.

# Chapter Five: Conclusions and Recommendations

## Synthesizing Key Points

There are thousands of Canadians who are struggling to find suitable resources to treat their anxiety and depression with standard therapeutic modalities (Stas Can, 2023). The biopsychosocial model can help therapists to focus on the interrelated phenomena that culminate in the mental health benefits of RT for their clients who suffer from anxiety and depression. The data show that RT can be useful for physiological health as well as mental health (Ciccolo et al., 2022; Cunha et al., 2021, 2024; Fortier et al., 2020; Hallgren et al., 2016; Helgadóttir et al., 2017; Howlett et al., 2021; Jong et al., 2021; Krogh et al., 2012; Mandolesi et al., 2018; Murray et al., 2022). The biological mechanisms associated with the physical adaptations that RT elicits include the mere contraction of musculoskeletal tissues from PA, which release chemicals into the bloodstream that may have positive effects on mental health outcomes (Hird et al., 2024; Kiecolt-Glaser et al., 2014; Mac Giollabhui, 2021; Torelly et al., 2022). There is correlational data that shows that greater muscle mass and muscle strength are associated with lower rates of depression (Bobos et al., 2020; Fritz, et al., 2017; Qiu et al., 2024).

RT may also mobilize clinically relevant psychological systems. The act of engaging in progressive overload may help clients instill a sense of self-efficacy and resilience that could be useful in training and throughout other areas of clients' lives (Ciccolo et al., 2022; Chen et al., 2021; Chow et al., 2021; Lee, et al., 2018; Leung et al., 2024; Sillero-Quintana et al., 2022; Tabibnia & Radecki, 2018). Therapists can help their clients determine a cost-benefit analysis by using a biopsychosocial model of treatment, adjusting training intensity according to the client's clients' age, gender, and health condition. The practice of RT can be an exercise in embodying concepts like the ZPD, successive approximation, and self-efficacy. In this way therapists can bridge the mind-body divides by treating anxiety and depression with RT.

RT for treating anxiety and depression must make many considerations for the regimen to promote mental health benefits and adherence. While higher intensity levels of RT may correspond to greater physiological benefits, it does not necessarily follow that the mental health benefits scale at the same rate as the physical health benefits. More is not always better, at least with regards to the mental health benefits of RT. Low and moderate intensity RT may be more beneficial for treating depressed populations (Cunha et al., 2024; D'Oliveira et al., 2022; Keogh et al., 2022; Leung et al., 2024), whereas treating anxiety has been shown to be more effective with high intensity RT (Aumer & Vögele, 2025; Henriksson et al., 2022; Marinelli et al., 2024). An approach to RT that favours a moderate intensity can treat both anxiety and depression; however, therapists can be aware of their client's energy levels and treatment goals, recommending clients to consider increasing or decreasing their training intensity to better match their psychological goals. The approach to RT for mental health benefits can be determined by a biopsychosocial approach that reconciles a client's multifaceted life, balancing various lifestyle stressors with RT to treat anxiety and depression.

**Take Home Message**

How we feel affects how we act and present in the world. CBT and its emphasis on how negative thought patterns can reinforce negative behaviours and emotions also implies that positive behaviours can reinforce more positive thought patterns and emotions. Certain behavioural interventions like RT can be an integral component of holistically treating anxiety and depression, especially for clients whose behavioural patterns are more accessible to them than their thought patterns. While some clients respond well to cognitive interventions like journaling and mindfulness, some clients may express misgivings about the intangible nature of

cognitive interventions. Therapists can benefit these clients by including behavioural interventions like RT that promote PA in their lives.

RT is one potential avenue to facilitate more PA in clients' lives. This can engender a more holistic approach to treating anxiety and depression. The discussion of RT is one component of a larger discussion of increasing PA to improve physical and mental health. PA need not even include RT or any other form of PE, as activities like work, shopping, or gardening can meaningfully increase PA levels and improve mental health outcomes (Hallgren et al., 2016). Ultimately, therapists can help their clients to identify and cultivate productive activities to leverage them toward treating anxiety and depression. Just as therapists can help their clients reflect on their nutrition and diet without necessarily becoming a nutritionist, therapists can help their clients reflect on their bodily movement without becoming a kinesthesiologist or a strength coach. Therapists can benefit their clients use of RT for psychological treatment by facilitating client-centred self-reflection and, when necessary, referral to experts in other fields to maximize benefits and minimize harm.

RT can offer clients a more tangible experience that can benefit their anxious and depressive symptoms. Because it is a behavioural intervention, it may be less reliant on a shared language and cultural heritage than traditional treatment modalities. Furthermore, the interrelated nature between thoughts, behaviours, and emotions implies that behavioural interventions like RT can help clients work toward standard treatment goals like resilience and self-efficacy through physical behaviours like RT. The practice of RT can serve as a way for clients and therapists to embody psychological concepts in a more accessible way.

**Recommendations for Future Research**

As the amount of information increases in the literature, so too do the gaps in knowledge increase. The work of Prado et al. (2021) identified important considerations for a biopsychosocial approach to using aerobic training to treat anxiety in women. They tracked the training effects at different points of women's reproductive cycles and analyzed how the training effects and mental health outcomes responded to different intensities of training. Research on how women's reproductive cycles respond to RT intensities for the treatment of anxiety and depression would greatly add to the topic of this study. These types of considerations can extend to other factors and other populations like menopause or other hormonal and glandular changes that women and men may experience over the course of their lifetimes. There are many potential health-related changes that people may respond to over their lives that they could benefit from some further inquiry.

As mentioned, people undergo many changes over the course of their lives. These changes may include family, relationships, career, and health, and they could all impact people's lives and health, negatively or positively, in dynamically interrelated ways that a biopsychosocial approach could help to assess. The research has had its focus on untrained participants, which is to say people for whom RT is novel. Beginners may have the greatest psychological benefits to gain from RT acutely, or their psychological benefits may compound over the course of their training career. The study that had the longest time horizon was 40 weeks (Aumer & Vögele, 2025). Longitudinal data that span years or decades are not present to inform therapists about how lifelong training can impact mental health. The discussion of potential diminishing returns could be greatly enriched by a longitudinal study that investigated different approaches to training that are more conducive to long-term adherence and positive mental health outcomes.

This study has investigated the benefits on RT for depressed and anxious populations. The theoretical approach has consisted of a biopsychosocial model informed by CBT. There may be other theories and applications that may improve this biopsychosocial approach to RT. For instance, the development of self-efficacy that I have argued for could be productively described in terms of Attachment Theory by developing an internal locus of control. This could be explored empirically by administering RT to an experimental group and measuring the degree of an internalized locus of control as a dependent variable. The cognitive aspects of RT could also be more directly associated with cognitive flexibility from the Acceptance and Commitment Therapists with a similar experimental design. Emotional intelligence may be related to RT by increasing pain tolerance as well. There are many facets of RT that may inform various clinical outcomes that could be explored in the literature.

**Reflecting on the Research Journey**

This inquiry began because of my personal experiences with using RT to manage my mood. The difference between conventional wisdom and empirical validity is determined by research and objectivity. I was glad to have investigated this topic and to have found something of potential value. For personal experience, while valid and useful, does not provide sufficient information to navigate the nuances that will be encountered in therapy sessions. Ethical practice requires evidence-based treatment that must transcend personal experience. This project has been an invaluable experience of a deeper contact with the literature which will impact my personal and professional life moving forward.

The research data are complicated and voluminous. The process of narrowing the topic and refining the search was an important exercise for me, who sometimes errs on the side of breadth of information at the expense of depth. This project has obliged me to narrow my focus

and develop a depth of knowledge that will be useful for myself and my clients in the future. I will value my opportunity to have explored this curiosity within the confines of academic rigour. A curiosity about a particular exercise modality and its mental health benefits has revealed a plethora of findings that have enriched my appreciation for RT, which has developed into more than my hobby somewhere along the line.

The information presented and discussed throughout have provided more breadth and depth into my understanding of therapy as well. As more data were assessed, the question blazed in my mind: “how should this impact how a therapist operates?” This is not an idle query, and a return to the fundamentals of client-centred therapy allowed me to form some clarity. Rather than be confined to a small role, the client-centred approach allowed me to trust in the personal expertise of the client, with the therapist bringing in minimal ‘expertise’, instead entrenching and strengthening what clients already know. Clients generally know that they would be better off if they were less sedentary. This study can empower therapists and clients with important nuances found in the literature to do so. Anxious and depressed populations may be stifled with preconceptions about overly vigorous PE to make impactful changes in their lives. My encounter with the literature, however, provides a robust basis for guiding clients through more modest and manageable goals and expectations that can help clients realize the change that they desire to make. Put simply, this research demonstrates that clients can be better off by moving more, which does not require extreme exertion and technical complexity. Instead, a little improvement sustained over time can generate considerable improvement that spans across biological, psychological, and social facets of people’s lives.

## Conclusion

The physiological and cognitive benefits of RT have been demonstrated through the literature. The mental health benefits, particularly in the treatment of depression and anxiety, offer similarly robust justification for therapists and mental health professionals to promote its use. The research has focused on untrained populations and the benefits that can be gleaned from as few as one session of RT. Experimental data has been amassed that provides information for participants over the course of months; however, the question arises as to what extent those benefits persist across the lifespan. Data have been collected from adolescent, adult, and elderly populations, all corroborating some efficacy of RT in the treatment of anxiety and depression. However, sufficient longitudinal data that suggest that RT may be used across the lifespan of any singular person to manage their mood has not been collected.

The intensity of training appears to determine the efficacy of the RT. Moderate intensity appears to generally be associated with favourable mental health outcomes, and younger populations may tolerate higher intensities than older populations. There are other factors to consider, like energy levels, hormone levels, nutrition, and sleep quality. RT, therefore, must be considered as a part of a client's life that must be balanced with many others. The biopsychosocial model provides a foundation to integrate RT with psychotherapeutic principles, merging the physical and the mental aspects of health. There are elements of the ZPD, successive approximation, resilience, social meaning, and pain tolerance that can be developed in a RT regimen to treat anxiety and depression, and those elements may carry over into other aspects of clients' lives. Therapists can empower their clients by connecting those skills across multiple domains of their clients' lives, instilling a kind of psychological fortitude that can nurture their growth and health. By lifting weights, clients can also learn to lift their moods.

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*Appendix A Summary of cited studies and their results*

| Study | Participants | Methodology | Disorder | Conclusions | Intensity | Age | Duration | Modality | Context | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| Aumer & Vögele, 2025 | 16 studies, with range from 33 to 1,296 participants; About ¾ female | Meta analysis, 14 RCT studies | Anxiety | Short term benefits, long term effects unclear. | Moderate and high (6-8 RPE) | 13-30 | Range from 2 to 40 weeks, average 14.2 weeks. 1-4x/week. Most 3x/week, 90 minutes | Aerobic and RT | Group interventions; supervised. | Both helped, could not tell which better. PA as add on or stand alone |
| Marinelli et al., 2024 | 376,<br>F-209<br>M-127 | Meta analysis, 10 RCT studies | Anxiety and depression | Benefits in scaffolding clients to taper off supervision and promote long term adherence. | 60% to 70% of 1RM (large effect sizes) | 26 and below | 5-20 weeks, 2-4x/week, 6-90 min duration | RT | Enjoyment not typically put in when making design. Supervised. | RT showed significant reduction in symptoms. Large effect sizes found in trials that were 2-3 x/week. Best results when supervised and progressing as strength improves. |
| Ciccolo et al., 2022 | M-50<br>Black | Longitudinal, experimental. Qualitative interviews. Mixed methods. | Depression anxiety and other | RT feasible to reduce depressive symptoms in urban Black population | Adaptive, based on metabolic equivalents. | 21 and up | 12 weeks, 2x/week, 60 minutes, supervised, and 6 month follow up | RT | Supervised OR given health and wellness education. RT group demonstrates that RT can attend depression without concerns of stigma from traditional treatment. Catered to access of participants. | RT group said that it was more challenging than they expected but that they felt that they could adapt with the interventionalist. Muscular strength seems to drive gains in symptom management. |
| Cunha et al., 2021 | F-41 | RCT<br>Longtitudnal | Anxiety and depression | RT can reduce anxiety in women, and old age and cognitive function are not significant factors to contraindicate its use. | Moderate | 68 ± 8 | 12 weeks | RT | Experimental group supervised for a progressive program of RT for 12 weeks. Eight whole body exercises with three sets of 1-12 repetitions three times per week. The Control group was given no RT intervention. | RT had significant improvements on muscular strength and reduced symptoms on anxiety and depression. |
| Cunha et al., 2024 | 21 RCTs;<br>968 individuals,<br>538 RT and 430 control | Meta analysis | Depression and anxiety | RT helped people with and without mental disorders (with more so) | 20-80% 1RM | 60 and up | 12 weeks,<br>Found 3x/week to be best | RT | Traditional RT included supervised and bands. Looked at healthy aging. Frequency 2x per week: no effects, 3x a week: showed effects. Fewer exercises per week superior to more exercises. | RT helps mood, with and without disorders, regardless of mental health status. Traditional RT better than alternative (found to have no effects). |
| D'Oliveira et al., 2022 | 68, half in experiment, half in control | RCT, experimental design. | Depression, anxiety, mood, stress, sleep quality. | RT to help with physical and mental health | Low intensity and low volume | 60 and up | 4 weeks and 15 day follow up 3x/week | RT and walks | Remote intervention as a response to lockdowns. Home based. Load progression and remote monitoring. 3x/week frequency. Worked with an instructor. Remote supervised. | N/A |
| Keogh et al., 2022 | 245, 67 in experiment, 129 in control | RCT | Ageing in general | Supervised PRBT can be a standalone program for community dwelling individuals. | Moderate to high (50-75% 1RM, progressive) | 65 and up | 26 weeks, 2x week | RT | Supervised RT. Body composition and physical and cognitive function from MUAD program. | Worse physical baseline in terms of grip strength, knee strength, and chair stand predicted greater benefits after RT and balance training. No statistical significance in cognitive change (50-50%). |
| Leung et al., 2024 | 22, 86% F | Mixed methods | Depression and chronic pain | Lower pain intensity and lower depressive symptoms. Will need more RCTs for future. | Low to moderate intensity | 60 and up | 8 weeks<br>2x/week | RT and ACT | Weekly 2hr ACT, 1.5 hr PE. Integrated cultural values and self efficacy. Supervised. | Able to manage and restructure beliefs about pain and aging. Way to push through pain to fulfill goals, as a way to attend to vague sense of 'values'. RT as an experiential way of learning, which helped with low literacy participants. |
| Qiu et al., 2024 | 4,871 | Quantitative, correlational. | Depression | Exercise for healthy muscle mass and strength may be a protective factor against depression. | N/A | 18 and up | N/A | RT | Relationship between muscle mass, strength, and depression. | Negative correlation between ALM and depression, there is a negative correlation between grip strength and depression. |
| Torelly et al., 2022 | 24, 72.2% F | RCT | Depression and anxiety | EX and MB alone have physiological and psychological benefits. | N/A | 23 to 51 | Single session, 30 minutes | RT and aerobic | Depression inpatients during a depressive episode. Order of EX, MB, and CA randomized and affect measured immediately after. Pro-inflammatory cytokines present in depressed populations. PA can help with this.<br>Supervised. | The MB seemed to have a stronger impact than the EX |

Notes:

ACT –
ALM - Appendicular Lean Mass
CA – Control Activity
DMT - Dual-Mode theory
EX – Acute Exercise
F- Female
Hr - hour
M - Male
MB – Mind-Body Practices
MUAD -
OR -
RCT – Randomized Control Trial
RT – Resistance Training
RM – Rep Max
RPE – Rate of Perceived Effort
PA – Physical Activity
PE – Physical Exercise
PRBT – Progressive Resistance and Balance Training
x/week – times per week