Spring 2024

A Hitchhiker's Guide to Psychologically Informed Physical Therapy

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Recommended Citation

Wright, Asher S., "A Hitchhiker's Guide to Psychologically Informed Physical Therapy" (2024). *Senior Projects Spring 2024*. 318.
https://digitalcommons.bard.edu/senproj_s2024/318

A Hitchhiker's Guide to Psychologically Informed Physical Therapy (so far)

Senior Project Submitted to The Division of Social Studies of Bard College

By

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May 2024

Acknowledgements

This project has been an immense learning experience that asked a great deal of me, and I had the gift of so many supportive family and friends who encouraged me to persevere, reassured me I was capable, and did not worry when I fell off the grid on occasion. I would specifically like to thank my advisor Frank Scalzo, my parents who cheered me on, and my friends who lent a listening ear or worked together alongside me. I hope this project is an enjoyable read for everyone.

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Abstract

Almost a decade and a half ago, the terms “psychologically informed practice” and “psychologically informed physical therapy” entered the academic world. The latter is a subset of the former, and both are imperatively new and important methods of practicing healthcare that bolster and enhance a world that has learned that there are better ways to care for each other – a way that combines physical care and psychological care into one. A review of critical literature from its genesis to its current standing on the stage of empirical study will serve to guide and enlighten any person on nearly everything in regards to the practice, be they completely new to psychology or healthcare as a whole, or a physical therapist looking to learn healing methods of the future.

Keywords: Psychologically Informed Practice, Psychologically Informed Physical Therapy, Healthcare, Biopsychosocial

Preface

In Chapter 1: Beginnings, I will discuss Psychologically Informed Practice or PIP in regards to its origin, its prior implementations, its succeeding history, and lightly foreshadow its areas of concern and pitfalls. This is to set the stage for the main focus, that being the specific subset of PIP known as Psychologically Informed Physical Therapy otherwise known by the acronym PIPT. I am choosing to focus on physical therapy as a specific field of healthcare because it is perhaps one of the main iterations in which PIP has begun to penetrate the general world of standard healthcare – via PIPT – and because I am interested in pursuing physical therapy as a career.

Then in Chapter 2: Current Implementation and Understandings, I will divulge into the rationale, manifestations, a detailed economic report, and the results PIPT has generated thus far, as well as the ways in which the practice has yet to change and grow. The bulk of the aforementioned concerns and pitfalls will be more thoroughly detailed as well.

Finally, in Chapter 3: A Path Forward, I will detail the various means that have been developed or are currently being developed that most explicitly highlight paths the practice could take towards becoming more empirically robust. I will also be arguing in favor of the continued integration of PIP into standard healthcare and PIPT into standard physical therapy.

Chapter 1: Beginnings

What is PIP and PIPT

Psychologically Informed Practice, known as PIP, may best be understood as the complete integration of psychological principles into healthcare. Psychologically Informed Physical Therapy, known as PIPT, is an integration of traditional physical treatments (ex: manipulation or exercise of the spine) with cognitive-behavioral treatments (ex: pain coping skills or progressive relaxation) (Ballengee et al., 2021). It is viewed as a subset of PIP when delivered by physical therapists. PIP was first proposed in Main & George (2011) in which the researchers introduced this new model of approach to healthcare by means of treating low back pain.

In the years since then, the practice has inspired numerous studies into its mechanisms and delivery, and continues to gather attention in large trials, discussions, and scientific conferences (Keefe et al., 2018). Interest in PIP appears to be growing, as evidenced by its increasing evidence base, expansion to other forms of musculoskeletal pain, and several attempts of actual implementation in practice. Data confirming and guiding the role psychology plays in physical treatment has been accumulating since well before Main & George (2011) with the most robust of which tending to be the most recent; psychological factors are considered crucial risk indicators for disability and pain outcomes that can guide a clinician towards better helping their patient (Artus et al., 2017). For example, psychologically based treatments that target maladaptive cognitions, emotions, or behavior with physical rehabilitation through multidisciplinary team approaches are observed to be more effective than pure, traditional physical therapy (Kamper et al., 2015). The North American Spine Society sponsored a two-day meeting on PIP in October of 2016 (Keefe et al., 2018). PIPT techniques have mainly been tested on varying manifestations of musculoskeletal pain, given that it is highly prevalent in both developed and developing societies (Global Burden of Disease Study, 2016)(Nahin et al., 2019). Musculoskeletal conditions such as low back pain (LBP), neck pain, and lower-extremity osteoarthritis are listed among the top diseases contributing to years lived with disability (United States Bone and Joint Initiative, 2024). More broadly, the number of adults in the United States reported to have high-impact pain conditions resulting in marked disability are estimated at 10.6 million (Pitcher et al., 2019). It is always worth it to improve a system, and evidently healthcare is a system prime for potential improvement by way of biopsychosocial remodeling.

It was not long after Main & George (2011) that a biopsychosocial model of care became widely recognized as *the* optimal management strategy in treating musculoskeletal pain (Gatchel, et al., 2014). Granted, while such a concept might sound like common sense to the layman, within the field of empirical research it is imperative to let the documented data speak for itself. This pursuit of overhauling pain treatment to a biopsychosocial model of care continues the goal of improving physical and psychological healthcare, which is of utmost importance in our society. The traditional view of low back pain (LBP) as a purely biomedical concern has been replaced by the biopsychosocial model, acknowledging the idea that, while pain largely stems from a biological basis, psychosocial factors (such as pain beliefs/cognitions, distress, coping behaviors, and social factors) significantly impact a patient's subjective experience of pain (Boothby et al., 1999)(Jensen & Karoly, 1991). The standard biomedical approach dictates that all signs and symptoms related to an individual's pain are caused by physical pathology and therefore, treatment decisions are guided by finding damaged tissues (Turk et al., 1984). This is in contrast to the expanded biopsychosocial approach, which dictates that psychological and social factors contribute to the development and persistence of complaints (Linton, 2005) and therefore, treatment decisions are guided by pinpointing relevant psychological and social stimuli.

Today, evidence-based guidelines now recommend the use of non-pharmacological interventions to address many kinds of physical pain and degradation of physical function, with PIPT being a major potential intervention of this nature. In 2020, the International Association for the Study of Pain (IASP) revised the definition of pain to include and focus on the influence of biological, psychological, and social factors on an individual's subjective experience of pain. Such a revision is appropriate and timely given that the need for good overall health is increasingly acknowledged at the societal level, and wider society is keenly supportive of, and shows preference towards, self-management approaches that encourage self-efficacy, all of which are qualities that PIP and PIPT harbor. Furthermore, this societal-level supportive attitude paves the way for viewing PIP as a primary positive way forward in the whole-person healing management of chronic pain and illness (Buchbinder et al., 2018). Since then, the biopsychosocial framework has seen regular occurrences in the International Association for the Study of Pain world congresses and chapter meetings in North America, Europe, and Australia.

While there has been an evolution and refinement in PIP approaches and a growing body of evidence demonstrating the effectiveness of PIPT approaches for pain-related conditions, the adoption of PIP by physical therapists has shown mixed results due to implementation challenges (Delitto et al. 2021)(Rubenstein, 2019). Furthermore, explanatory clinical trials investigating PIPT have a tendency to show favorable results, but pragmatic trials have shown less than favorable results. The difference between the two can be explained as follows: a randomized controlled trial (RCT) can investigate whether a treatment could work in ideal circumstances (explanatory), or whether it would work in everyday practice (pragmatic) (Tosh et al., 2011). There are numerous challenges presenting themselves with regards to implementing PIPT into the clinic permanently, but I believe in the long run, its stay will be worth the welcome.

Main & George, 2011

PIP got its start in the special issue Main & George, published in the *Physical Therapy Journal* (2011) and presented at the Combined Sections Meeting of the American Physical Therapy Association on February 11, 2011, in New Orleans, Louisiana. In this article, a new approach to physical therapy, termed “psychologically informed practice”, was introduced to the world. Its intent was to act as a bridge between narrowly focused standard physical therapy practice based on biomedical principles, and the more cognitive-behavioral approaches developed originally for treating mental illness. The article introduced PIP through the medium of managing low back pain, which is a remarkably common physical ailment among worldwide human populations (Cleveland Clinic, 2021)(Mayo Clinic, 2023). As such, the approach was described as being based on the identification of normal psychological processes that affect the perception of pain, and the behavioral responses to pain. A breakdown of typical psychological processes that affect the perception of pain are: emotional factors such as anxiety, depression, and anger, as well as cognitive factors such as attention, expectations, and attitudes towards pain/beliefs. Through identifying both as an expected and normal part of the musculoskeletal pain experience, one may then potentially modify how a patient processes these psychological and physical responses to their pain. The goal in mind was, and is, to prevent the future development of unnecessary pain-associated activity limitations, ranging from trouble walking to surgery recovery.

Main & George, 2011 reported that, at the time, many physical therapists felt ill equipped to deal with psychological factors, which may be attributed to the fact that most standard physical therapist training was biomedical, whereas PIP may fit best within a cognitive-behavioral framework (this would later go on to be amended to a biopsychosocial framework). Their article focused on the potential implications for training and implementation of targeted treatment. They stated that this new approach of PIP may be viewed as evolutionary rather than revolutionary in that it builds upon the established professional expertise of physical therapists while incorporating systematic attention to the psychosocial factors that are associated with outcomes of treatment. Psychosocial factors are numerous, for a person's psychological wellbeing is affected by numerous events in the internal and external environments, but can best be surmised as premorbid status or mental illnesses, personality styles, coping strategies, defense mechanisms, and emotional reactions to disability (Fulk & Chui, 2024). Other examples of psychosocial factors include spirituality, values, environment, adjustment, cognitive abilities, motivation, family, social supports, life roles, and educational level.

While it is true that physical therapists are expected to identify and address psychosocial risk factors for the development of chronic low back pain in most healthcare systems, a biomedical perspective endured in many of these practicing spaces at the time of the article publication. In the view of Main & George (2011), the shift in focus necessary to include routine consideration of psychological influences in physical therapy is the logical extension of an evidence-based secondary prevention approach within standard practice, with the goal of not only treating the individual for current symptoms but to also prevent the development of future unnecessary pain-associated activity limitations, described previously as covering the range of walking difficulties to post-surgery recovery.

Figure 1 below depicts the proposed theoretical framework for the management of low back pain by physical therapists utilizing PIP, as displayed originally in Main & George (2011). Models have diversified and become more specific since then.

Proposed Management of Low Back Pain

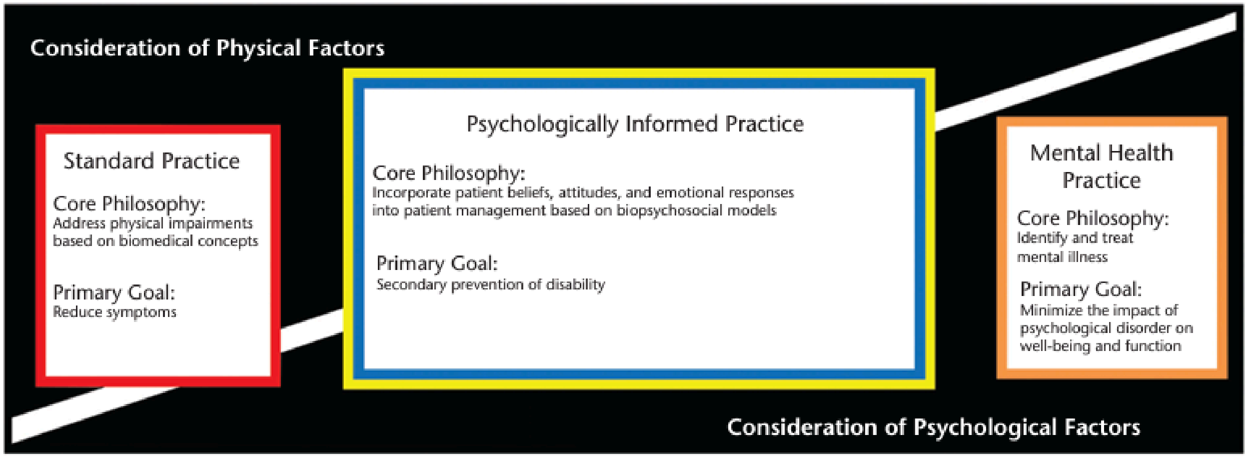


Figure.
Proposed theoretical framework for the management of low back pain by physical therapists.

Prior to PIPT, the primary focus of physical therapists treating and managing low back pain was the reduction of symptoms with the usage of biomedical concepts. In a similar vein, the primary focus of psychological therapy was, and still is, the reduction of psychological disorder and/or mental illness (National Institute of Mental Health, 2024). In PIPT, the primary focus of physical therapists treating and managing low back pain is the reduction of negative physical and mental symptoms, utilizing the belief that emotional and behavioral responses are critical adjuvant factors of said low back pain and disability. Beliefs are a critically important piece of the PIPT puzzle, for an individual's subjective *beliefs* about the nature of pain, fear, pain catastrophizing, and self-efficacy appear to be particularly influential in an individual's subjective *experience* of pain. These beliefs naturally influence behavioral responses and are well cited as associated with emotional factors such as anxiety, depression, and anger (Vlaeyen et al., 1995)(Crombez et al., 2012).

The study that started it all concluded with the hopeful intent that PIP will stimulate the development of a broader approach to practicing physical therapy, with a focus on the identification and management of psychological obstacles – such as the aforementioned beliefs, self-efficacy, anxiety, etc. – leading to recovery of optimal physical function. Main & George (2011) stressed that they were not advocating for the complete disregard of biomedical approaches, but instead, were encouraging the integration of psychosocial approaches *into* the current biomedical standard. In their opinion – as well as mine – we have an obligation to find ways of linking public health perspectives with clinical interventions, and to address individual differences within a wider perspective. And thus, the match was lit.

Succeeding History

An instance of early supporting evidence for PIPT in managing patients with low back pain hailed from the United Kingdom. Hill et al., (2011) compared stratified primary care management for low back pain with the best practice of the time, the STarT Back model. Stemming from the concept of stratification, or the arrangement/classification of things into groups, stratified care methods of managing low back pain prove rather attractive due to their targeting of treatment to subgroups of patients based on key characteristics such as, and rather importantly, psychological factors (Foster et al., 2013). Since many real-world patients do not acquire healthcare or access the healthcare system through primary care, it is necessary to have physical therapists who are skilled in implementing risk stratification approaches for LBP management.

As for the STarT Back approach for LBP – which has considerable overlap with PIPT, stratified care, and biopsychosocial treatment research (Hill et al., 2011)(Hay et al., 2008) – it provides an example of stratification based on prognostic risk for persistent LBP-related disability that consists of 2 corresponding components: (1) categorizing a patient into low, medium, or high risk using the 9-item STart Back Screening Tool (SBT)(Hill et al., 2008), and (2) matching the targeted treatment to the patient depending on their categorized risk level. Patients at low risk receive minimal care, patients at medium risk receive reassurance and education with supplemental physical therapy intent on restoring physical function and treating symptoms, and finally, patients at high risk receive physical therapy intent on restoring function using a combination of physical and psychological approaches, or true PIPT.

The eligible participants included 851 adults aged 18 and up, with or without radiculopathy (radiculopathy, commonly referred to as a pinched nerve, refers to a set of conditions in which one or more nerves are affected and do not work properly), who had prior back pain consultations at ten general practices in England. Utilizing computer-generated blocks with a 2:1 ratio to intervention or control groups, the participants were randomly assigned to stratified primary care (intervention) or non-stratified practice (control). Through these means, 568 participants wound up assigned to the intervention group and 283 participants were assigned to the control group. Stratified primary care was pitted against non-stratified practice on the grounds of clinical- and cost-effectiveness. To gauge clinical effectiveness, participants completed the Roland Morris Disability Questionnaire (RMDQ) at 12 months with their score of the effect of treatment determining the primary outcome. To gauge cost-effectiveness, the study authors estimated incremental quality-adjusted life years (QALYs) and healthcare costs related to back pain. All analysis was conducted with intention to treat.

Among the participants in the intervention group, those who were classified as medium-risk according to the STarT Back Screening Tool were referred for standardized physiotherapy to address physical symptoms and function only. Those who were classified as high-risk were referred for psychologically informed physiotherapy to address both physical symptoms and function, as well as psychosocial deterrents obstructing the path to recovery. 3 days of additional training were authorized for physiotherapists delivering the medium-risk intervention and 6 days were authorized for those delivering the high-risk intervention, for 9 days total.

At 4 months, adjusted mean changes in RMDQ scores were significantly higher in the intervention group than in the control group (4·7 [SD 5·9] vs 3·0 [5·9], between-group difference 1·81 [95% CI 1·06-2·57]) and at 12 months (4·3 [6·4] vs 3·3 [6·2], 1·06 [0·25-1·86]). The respective effect sizes were 0·32 (0·19-0·45) and 0·19 (0·04-0·33), with the latter timing of 12 months finding stratified care (intervention) to be associated with a mean increase in generic health benefit (0·039 additional QALYs) and cost savings (£240·01 vs £274·40). These collected data indicate that, if using a prognostic screening with matched pathways, a stratified care approach is not only viable, but will have important implications for the future management of back pain in primary healthcare.

While these results were generally positive for the prospects of PIPT (Hollinghurst et al., 2008), the difference between the high-risk groups at 12 months (5·9) was not significant. Thus, the study authors stressed that further research was required in order to determine if the observed short-term effects could be sustained over longer periods of time.

Another early study investigating psychological treatments integrated with standard healthcare hails from Uppsala University, Sweden. CBT was utilized so as to properly measure psychosocial factor intervention on cardiovascular disease (CVD) recurrence, which falls well within the existing parameters for PIP. Participants included 362 women and men aged 75 years or younger who were discharged from the hospital after suffering a coronary heart disease event within the past 12 months. The reference group received traditionally appropriate healthcare while the intervention group received traditionally appropriate healthcare with an additional 20 two-hour sessions of a CBT program focussing on stress management.

After adjusting for other outcome-affecting variables, results were gathered during a mean 94 months of follow-up. The intervention group was found to have a significant 41% lower rate of fatal and nonfatal first recurrent CVD events, a significant 45% fewer recurrent acute myocardial infarctions, and a nonsignificant 28% lower all-cause mortality than the reference group (28% was regarded as nonsignificant because it did not breach their statistical power threshold, but nonetheless, the number may still be utilized to derive meaningful ideas). Accordingly, the study concluded that a CBT intervention program decreases the risk of recurrent CVD and recurrent acute myocardial infarction. This study is an early work evidencing the direct approach of PIP as an effective route for improved quality of healthcare.

Other models similar to PIP include collaborative care, which also advocates for the integration of psychological knowledge and techniques into healthcare, as well as practice that is team-driven, population-focused, measurement-guided, and evidence-based. Archer et al., (2012) is one study that demonstrated the beneficial effects of this exact approach.

The results of primary analysis in Archer et al., (2012) demonstrated significantly greater outcome improvement in adults with depression treated with the collaborative care model in the short-term, medium-term, and long-term, but not in the very long-term. These results for short-term, medium-term, and long-term hold for outcome improvement in adults with anxiety treated with the collaborative care model, but no comparison was made to examine the effects of the intervention on the very long-term. Further evidence suggested that collaborative care produced beneficial outcomes in medication use, mental health quality of life, and patient satisfaction, although there was less evidence of benefit in physical quality of life. The researchers concluded that collaborative care represents a useful addition to clinical pathways both for adult patients with depression and anxiety.

Two other meta-analyses, one by Silva Guerrero et al. (2018) and one by Wilson and Cramp (2018), reported findings demonstrating that PIPT has a small but no less significant effect on bolstering physical function managing disability and pain compared to standard physical therapy. It is worth noting that the meta-analyses conducted by Wilson and Cramp included interventions in which the psychological component may be administered by a psychologist or a physical therapist, which could limit the applicability of their review findings if one were to adhere to the description of PIPT by Main & George (2011).

Chapter 2: Current Implementation and Understandings

Implementation

CBT represents the most common psychological approach that has shaped PIPT (Coronado et al., 2020), however, other psychological approaches such as ACT, mindfulness, and positive psychology have begun seeing an uptake in usage and could deliver fresh insights for integration into physical therapy. For example, Godfrey et al., (2020) confidently espouses that, while the improvements observed were not maintained at 12 months compared to standard physical therapy, ACT-based physical therapy (PACT) remains an acceptable and recommendable healthcare intervention for individuals with chronic low back pain, and furthermore, one that can be delivered with high fidelity by trained physical therapists.

Keefe et al., (2018) identified five major types of PIP interventions: education (threat reduction and activation), behavioral (adapting behaviors in response to pain), cognitive-behavioral (cognition and coping skills), psychophysiological (stress reduction and mindfulness), and contextual cognitive-behavioral (Acceptance and Commitment Therapy). In addressing reactivation and reengagement in chronic pain conditions, the primary goal of improvement in PIP is adaptive behavior change. Appropriately encouraging adaptive behavior change more effectively allows negative or otherwise unhelpful behaviors to gradually decrease and stop altogether. Naturally, it is thus vital to aid the patient in identifying the effects of their pain on themselves and others, the sorts of coping strategies they default towards, and to consider more adaptive alternatives if those default strategies are not proficiently helpful or outright detrimental. One specific kind of PIP treatment for persistent musculoskeletal pain systematically teaches patients how to apply individual technique to manage their own pain.

Different sorts of these individual techniques may include relaxation training, guided imagery, problem solving, and goal setting (Keefe et al., 2018). More complex types of formal treatment protocols prescribed in PIP training endorse an array of other techniques and skills that can be customized to the specific pains and ailments of the particular patient. For example, PIP with cognitive strategy training might involve cognitive restructuring and relapse prevention, and PIP with behavioral strategies training might involve self-monitoring, goal-setting, using reinforcement principles, and graded activation.

Alongside these five major types of PIP interventions, there are two overarching methods of implementing PIP into healthcare (Dekker et al., 2023). The two methods of implementing psychological principles integral to PIP into healthcare are, generally speaking, (1) the direct mode, in which psychologists assess and treat patients themselves, and (2) the indirect mode, in which psychologists work through other healthcare providers. In the direct mode, collaboration and coordination with other disciplines ensures that psychological issues are assessed and treated through incorporation with the patient's somatic issues, as opposed to being treated in isolation.

One example of the direct approach may be observed in Gulliksson et al., (2011) in which cognitive behavioral therapy (CBT) is used to reduce stress and improve outcomes of cardiac problems in patients with coronary heart disease.

Several examples of the indirect mode may be observed in Dornelas and Sears (2018), Dekker et al., (2020), Demmelmaier et al., (2012), and Frygner-Holm et al., (2021). In Dornelas and Sears (2018), behavioral consultations with cardiologists to address anxiety in patients who have experienced implantable cardioverter defibrillator shocks. In Dekker et al., (2020), oncologists received psychological counseling on how to deal with emotional concerns in patients with cancer. In both Demmelmaier et al., (2012) and Frygner-Holm et al., (2021), physiotherapists underwent psychological training in order to assess psychological risk factors in patients with pain and to achieve a sustained improvement in patients' physical activity.

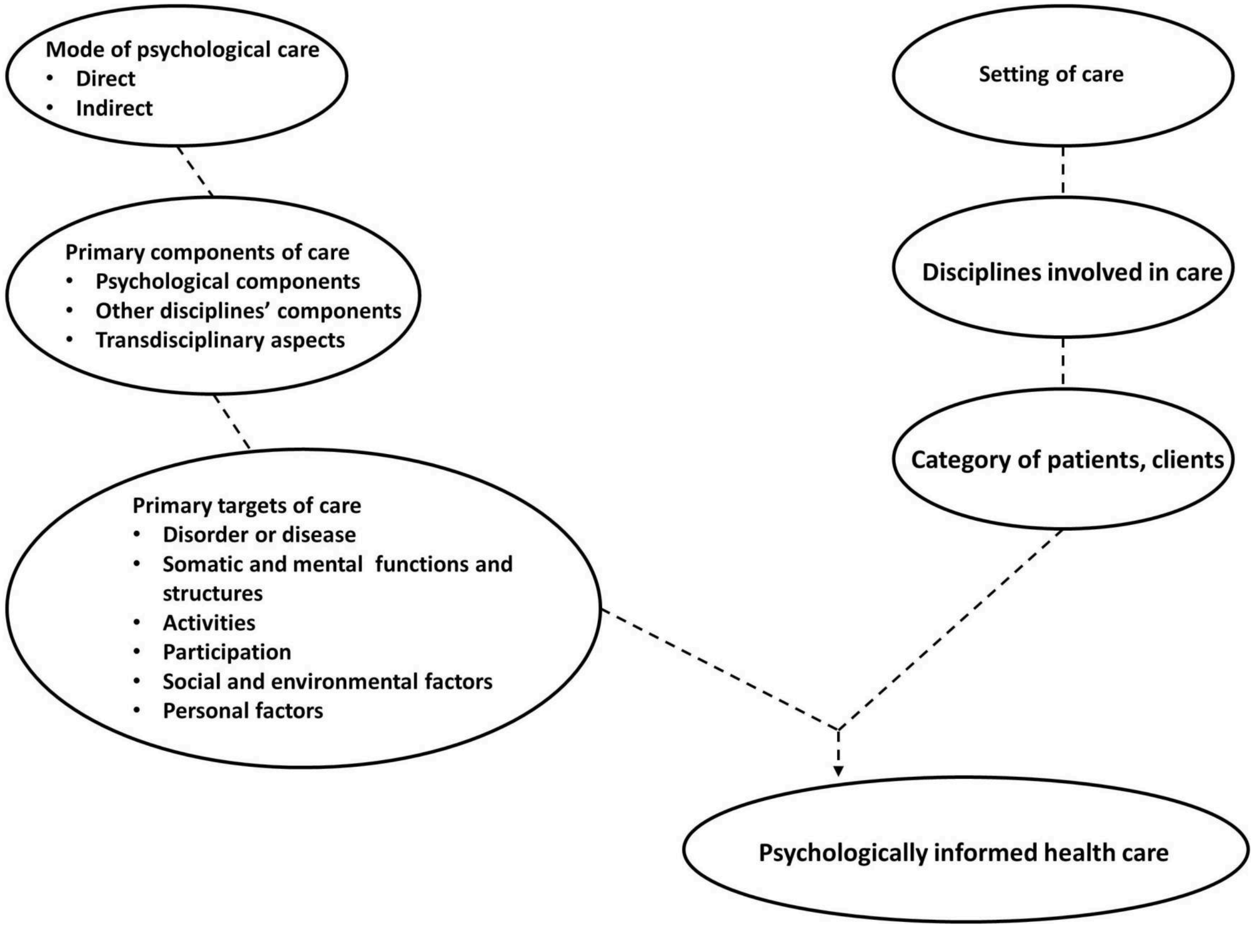
In Frygner-Holm et al., (2021), three primary care physical therapists who delivered behavioral medicine treatment (BMT) to adolescents with physical pain in a previous randomized controlled trial (RCT) study were interviewed regarding their views on said study and the intervention. In this context of physical therapy with adolescents, or pediatric PT, behavioral medicine treatment might include physical exercise, various methods for enabling positive behavioral changes, and hindering optimal functioning. In their background knowledge, Foreigner-Holm cited examples of interfering factors as low self-efficacy, anxiety, catastrophizing/negative thoughts and pain-related fear (Carpino et al., 2014)(Eccleston et al., 2004)(Holm et al., 2013)(Simons and Kaczynski, 2012). The previous RCT trial study had the aim to study the efficacy of tailored behavioral medicine treatment within a primary care physical therapy framework.

The three physical therapists involved treated 32 adolescents aged 12-16 years who sought physical therapy in primary care for a pain-related ailment that had interfered within their daily lives for more than three months (Holm et al., 2016). Together, the participating physical therapists had 10-31 years of experience in the profession – the first one had worked in primary care for 13 years and had 4 years of experience working with children and adolescents, the second had worked in primary care for 31 years and had 15 years of experience working with children and adolescents, and the third had worked in primary care for 10 years and had 4 years of experience working with children and adolescents. None had formal training in pediatrics of behavioral medicine prior to the study, but all had expressed eager interest and clinical experience working with children. In the previous RCT, the physical therapists received a total of

14 hours of training divided into four 3.5-hour seminars, with said education covering the theoretical foundations of BMT as well as skills training in the components and specific behavior change techniques. They were given handouts from these seminars and a detailed treatment manual in which the BMT workflow was described in detail.

All participating physical therapists considered learning about and delivering the BMT as challenging but nonetheless rewarding, with the process of formulating a behavioral analysis being reported as particularly strenuous. They regarded their being supervised as crucial and necessary for learning about and providing tailored treatment. Overall, if provided with extensive education and supervision to ensure successful and safe delivery of BMT, the three physical therapists concluded that the practice is laborious and demanding but ultimately fruitful.

Understanding the various modes and forms that PIPT can be delivered in is critical to further modifying and improving it, but none of these data or findings can be achieved without the use of overarching frameworks. Dekker et al., (2023) published the figure below, which is a framework intended to illuminate the methodology within transdisciplinary care. They cite that transdisciplinary care can be described as care that transcends traditional disciplinary boundaries to create a new approach (Choi & Pak, 2006). The framework, referred to as the Framework for Catalytic Collaboration, comprises 6 dimensions: setting, disciplines, patients/clients, mode of psychological care, primary components of care, and primary targets of care. “Catalytic” refers to the idea that one kind of care may enhance or accelerate another, much like a catalyst.



As one may observe, the Framework points out the direct and indirect modes of psychological care as well as how psychological care is idealized to mesh with other healthcare disciplines to form psychologically informed healthcare. While the framework is a little broad, it was only intended as a starting point to communicate the idea of PIP.

Another more recent example of work being done on the subject are the key treatment components of PIPT known as the 5 R's are listed as Realization, Relief, Regulation, Reactivation, and Reinforcement (Ballengee & George, in press.). Table 1 in Ballengee et al.,

(2021) elaborates on the “5 R approach” to PIPT, including concrete examples of each.

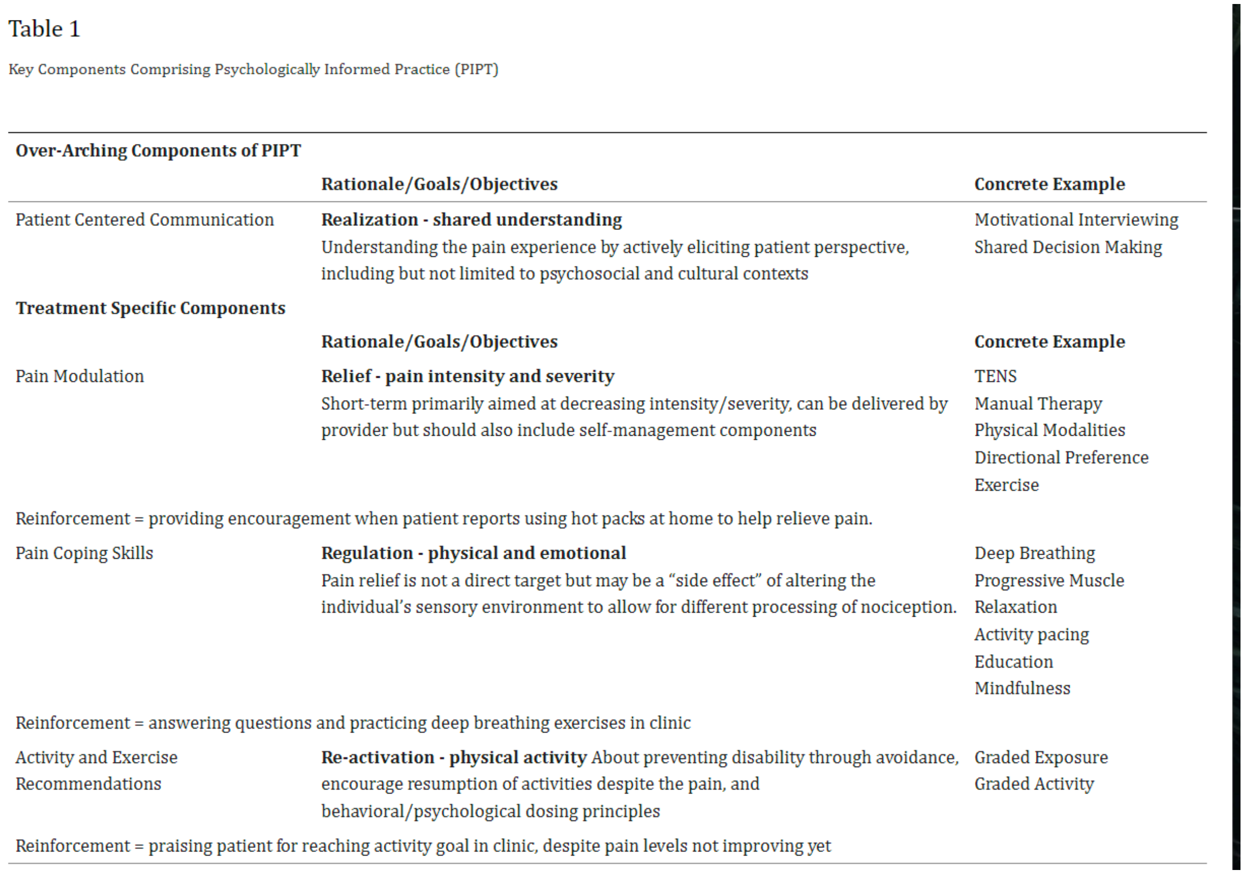


Table 1

Key Components Comprising Psychologically Informed Practice (PIPT)

Over-Arching Components of PIPT		
	Rationale/Goals/Objectives	**Concrete Example**
Patient Centered Communication	**Realization - shared understanding** Understanding the pain experience by actively eliciting patient perspective, including but not limited to psychosocial and cultural contexts	Motivational Interviewing Shared Decision Making
Treatment Specific Components		
	Rationale/Goals/Objectives	**Concrete Example**
Pain Modulation	**Relief - pain intensity and severity** Short-term primarily aimed at decreasing intensity/severity, can be delivered by provider but should also include self-management components	TENS Manual Therapy Physical Modalities Directional Preference Exercise
Reinforcement = providing encouragement when patient reports using hot packs at home to help relieve pain.		
Pain Coping Skills	**Regulation - physical and emotional** Pain relief is not a direct target but may be a “side effect” of altering the individual’s sensory environment to allow for different processing of nociception.	Deep Breathing Progressive Muscle Relaxation Activity pacing Education Mindfulness
Reinforcement = answering questions and practicing deep breathing exercises in clinic		
Activity and Exercise Recommendations	**Re-activation - physical activity** About preventing disability through avoidance, encourage resumption of activities despite the pain, and behavioral/psychological dosing principles	Graded Exposure Graded Activity
Reinforcement = praising patient for reaching activity goal in clinic, despite pain levels not improving yet		

These key components offer yet another fine-tuned direction for more effective implementation of PIPT into standard practice.

Beneciuk and George (2015) reported on the effectiveness of pragmatic application of risk stratification for the treatment of low back pain (LBP) in outpatient physical therapy practices. The two aims of this 2-phase, preliminary study were to assess intervention implementation through evaluation of short-term effects, and to gauge the feasibility of conducting a study on a larger scale. All clinicians and patients were selected from 7 outpatient physical therapy clinics of Brooks Rehabilitation in Jacksonville, Florida.

Phase 1 saw 12 clinicians being randomly divided into two groups, those who received standard practice training (n=6) and those who received stratified care training (n=6). The standard care training involved 3, 60-minute formal group meetings throughout a 4 week period from February, 2013 to April, 2013. Here, they were provided with a description of the study and protocol training (such as informed consent process, study packet review, screening and outcome measure administration). The stratified care training also involved 3 sessions throughout a 4 week period but these lasted 2-4 hours due to the additional focus on psychologically informed practice, and was intended to reflect protocols used in previous studies (Main et al., 2012)(Louw et al., 2012). They were further taught to use the American Physical Therapy Association (APTA) Orthopaedic Section LBP clinical practice guidelines (CPGs)(Delitto et al., 2012) for treating physical symptoms. If the clinicians underwent any changes in their held attitudes or beliefs on LBP, these were assessed and recorded using the Pain Attitudes and Beliefs Scale for Physiotherapists (PABS-PT) and the Health Care Providers Pain and Impairment Relationship Scale (HC-PAIRS).

Phase 2 saw those previously trained clinicians incorporating said training into their practice, and subsequent patient outcome data collection from May, 2013 to February, 2014. 4-week patient outcome data were collected using a numerical pain rating scale (NPRS) and the Oswestry Disability Index (ODI).

They found that physical therapists who were randomly selected to receive stratified care training had increased biopsychosocial treatment orientations, and patients who received care from these clinicians had improved pain and disability scores. The data from phase 1 found minimal changes for PABS-PT and HC-PAIRS scores for standard care clinicians (Cohen d=0.00-0.28). Among stratified care clinicians, data found decreased biomedical (-4.5±2.5 points, d=1.08) and increased biopsychosocial (+5.5±2.0 points, d=2.86) treatment orientations. Additionally, these observations were sustained on the PABS-PT 6 months post-treatment. The data from phase 2 found more between-group improvements in NPRS (0.8 points; 95% confidence interval=0.1, 1.5; d=0.40) and ODI (8.9% points; 95% confidence interval=4.1, 13.6; d=0.76) scores among patients receiving stratified care as opposed to patients receiving standard physical therapy care (n=33). With that said, three limitations ought to be noted: treatment was not randomly assigned in phase 2, therapist adherence to treatment recommendations were not monitored, and the study was not adequately powered to conduct subgroup analyses.

Despite the listed limitations, the results from these trials demonstrated that physical therapists can effectively screen and deliver psychologically informed care, that biomedical orientations can be modified, and risk-stratified care for LBP can be implemented for better patient outcomes.

Potential Economic Impact, 2017

As with any area of healthcare, but especially in developing a new form of clinical care, the funding and financial aspects must be factored into the equation. This informs insurance practices, how costly the new form of care may or may not be, and whether it is an overall net gain or loss. A 2017 report titled Potential Economic Impact of Integrated Medical-Behavioral Healthcare, prepared by Milliman, Inc. for the American Psychiatric Association, will help illuminate details surrounding the financial side of integrated medical care. It builds upon a prior report compiled by the same authors in 2014.

The updated 2017 report begins with the statement that some of the advances in the integration of medical and behavioral healthcare (IMBH) – which PIP and PIPT fall under the definition of – have been driven by primary care providers while others have been driven by behavioral healthcare practitioners. Mental health conditions and substance abuse disorders are grouped together for the purposes of the economic report, but within the discussion of PIP and PIPT, only the former category of mental health conditions is relevant data. The findings from the report will be stated as they were presented, with MH and SUD conditions side by side so as to not alter or censor the interpretation of the original data. The report states that, historically, many individuals with chronic medical conditions and co-occurring MH/SUDs are never diagnosed and treated (Wittchen et al., 2003). Hopefully, through establishing evidence-based collaborative care models, the practice will standardize proactive use of screening tools and better awareness of behavioral disorders among professionals. Ideally, this will directly lead to a more accurate rate of diagnosis among populations. That being said, this idealized future of field improvements was not a reality during the collection of data for the 2017 report, and therefore, it must be kept in mind that their projected healthcare cost savings may be understated due to the extent of behavioral disorder underdiagnosis in claim data. Furthermore, they refer to the difference in individuals' healthcare costs as the "value opportunity", representing the excess healthcare costs that could potentially be saved through effective management of a patient's comorbid conditions. Naturally, it is impossible to achieve complete and total savings potentials due to the undeniable fact that some cost is necessary to manage behavioral conditions. Nevertheless, significant percentages of potential savings are well within the realm of reality to be saved, and estimates given within the report are calculated with finesse.

At the time of the report, patients with health conditions cost an estimated an annual $752 billion in healthcare expenditures. Prior literature indicates that an estimated 5% - 10% of that may be eliminated through effective integration of behavioral healthcare with medical care. Subsequently, when estimating expected savings in the 2017 report, the researchers applied 5% - 10% expected savings to the total costs for MH/SUD patients in the commercial and Medicare markets and 5% - 7% in the Medicaid market. The estimated calculations were lowered for the Medicaid market because their user population has a tendency to display less stable enrollment periods and is more difficult to manage than the commercially insured or Medicare user populations.

Research from the past three decades has examined many different approaches to integrated medical-behavioral healthcare, with most studies finding that integrated care can lead to reductions in total healthcare costs. For patients receiving collaborative care, typical cost savings estimates range from 5% - 10% of total healthcare costs over two to four years, with the most robust evidence being that in the care of depression in older adults. One specific meta-analysis of cost-effectiveness research studies identified 22 studies that explored the economics of collaborative care (Jacob et al., 2012). Collaborative care programs were found to be at *least* cost-neutral in almost all of the studies, with most indicating true, actual savings. For example, one of the sampled studies compared the financial outcomes of clinics that were newly practicing collaborative care to demographically similar clinics that were practicing standard care. The study found that healthcare costs increased for both groups of clinics, but those practicing collaborative care only experienced 73% of the increase than those practicing standard care. Additionally, patients attending the collaborative care clinics were 54% less likely to use the ER and 49% less likely to use inpatient psychiatric care. As always, it is recommended that future research covers whether these findings are consistent with other populations and in non-research settings.

As found within the report, medical costs for treating patients with chronic medical and comorbid mental health/substance use disorder (MH/SUD) conditions are two to three times higher on average compared to the costs for patients who do not have chronic medical and comorbid MH/SUD conditions. Most of the increased cost associated with them is accredited to medical services much more than behavioral services, which generates a wonderful, large opportunity for medical cost savings through *integration* of behavioral and medical services.

Figure 1 displays their projected potential cost savings associated with integration for each of the chosen three large insurance markets: commercial, Medicare, and Medicaid.

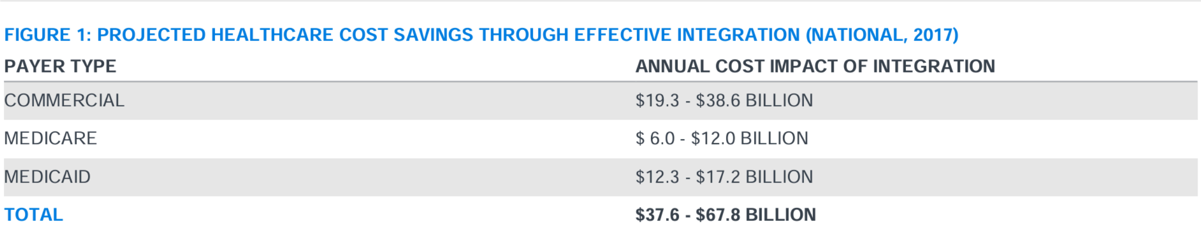


FIGURE 1: PROJECTED HEALTHCARE COST SAVINGS THROUGH EFFECTIVE INTEGRATION (NATIONAL, 2017)

PAYER TYPE	ANNUAL COST IMPACT OF INTEGRATION
COMMERCIAL	$19.3 - $38.6 BILLION
MEDICARE	$ 6.0 - $12.0 BILLION
MEDICAID	$12.3 - $17.2 BILLION
TOTAL	**$37.6 - $67.8 BILLION**

One may observe from Figure 1 that the researchers estimated potential annual savings of $38 billion - $68 billion through the successful integration of medical and behavioral services. Given that the projected national expenditures for mental health and substance use services was about $240 billion prior to 2017 (Substance Abuse and Mental Health Services Administration, 2014), the potential savings numbers offered are enormously preferable. This is a trend likely to continue as medical costs increase, IMBH programs become more effective, and more individuals are properly diagnosed with comorbid medical and behavioral disorders.

The researchers went on to analyze claim data for commercially insured and Medicare insured patients in 2015. The four population groups used for Medicare and commercial insurance were: 1) Those with no mental health or substance use disorder diagnoses (no MH/SUD), 2) those with mental health diagnoses, but no serious and persistent mental illness (non-SPMI MH), 3) those with serious and persistent mental illness (SPMI), 4) those with substance use disorder diagnoses (SUD). It is worth noting that individuals with both mental illness and substance use diagnoses appear in both the mental health (SPMI or non-SPMI MH) and the substance use groups. In addition, they stratified Medicaid insured individuals into two groups: 1) Those with no mental health or substance use disorder diagnoses (no MH/SUD), and 2) those with mental health or substance use disorder diagnoses (MH/SUD).

Figure 11 below displays the costs per member (individual, patient, etc.) per month (PMPM), organized by medical condition and behavioral comorbidity for the commercial population. Comparing the data in such a fashion is useful for gauging the relative increase in healthcare costs and associated savings potential for each combination of medical condition and behavioral comorbidity, so long as the patients with the given condition were targeted for integration programs.

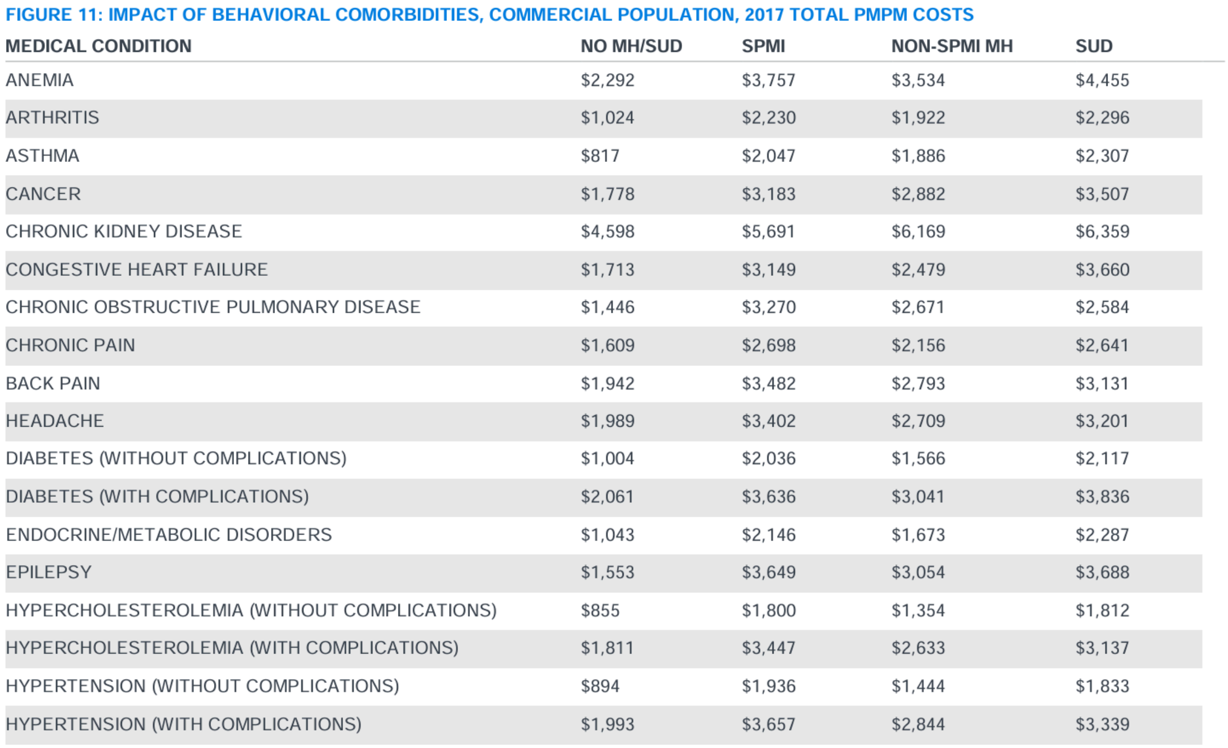
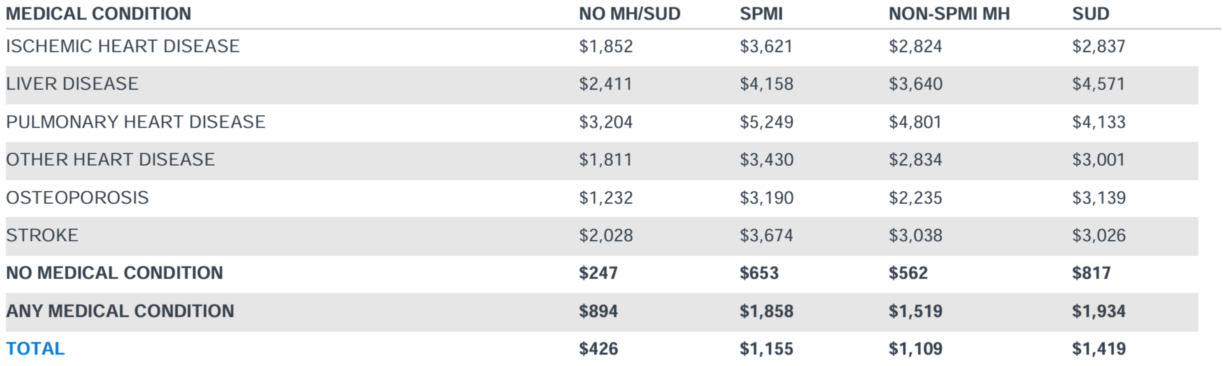


FIGURE 11: IMPACT OF BEHAVIORAL COMORBIDITIES, COMMERCIAL POPULATION, 2017 TOTAL PMPM COSTS

MEDICAL CONDITION	NO MH/SUD	SPMI	NON-SPMI MH	SUD
ANEMIA	$2,292	$3,757	$3,534	$4,455
ARTHRITIS	$1,024	$2,230	$1,922	$2,296
ASTHMA	$817	$2,047	$1,886	$2,307
CANCER	$1,778	$3,183	$2,882	$3,507
CHRONIC KIDNEY DISEASE	$4,598	$5,691	$6,169	$6,359
CONGESTIVE HEART FAILURE	$1,713	$3,149	$2,479	$3,660
CHRONIC OBSTRUCTIVE PULMONARY DISEASE	$1,446	$3,270	$2,671	$2,584
CHRONIC PAIN	$1,609	$2,698	$2,156	$2,641
BACK PAIN	$1,942	$3,482	$2,793	$3,131
HEADACHE	$1,989	$3,402	$2,709	$3,201
DIABETES (WITHOUT COMPLICATIONS)	$1,004	$2,036	$1,566	$2,117
DIABETES (WITH COMPLICATIONS)	$2,061	$3,636	$3,041	$3,836
ENDOCRINE/METABOLIC DISORDERS	$1,043	$2,146	$1,673	$2,287
EPILEPSY	$1,553	$3,649	$3,054	$3,688
HYPERCHOLESTEROLEMIA (WITHOUT COMPLICATIONS)	$855	$1,800	$1,354	$1,812
HYPERCHOLESTEROLEMIA (WITH COMPLICATIONS)	$1,811	$3,447	$2,633	$3,137
HYPERTENSION (WITHOUT COMPLICATIONS)	$894	$1,936	$1,444	$1,833
HYPERTENSION (WITH COMPLICATIONS)	$1,993	$3,657	$2,844	$3,339



MEDICAL CONDITION	NO MH/SUD	SPMI	NON-SPMI MH	SUD
ISCHEMIC HEART DISEASE	$1,852	$3,621	$2,824	$2,837
LIVER DISEASE	$2,411	$4,158	$3,640	$4,571
PULMONARY HEART DISEASE	$3,204	$5,249	$4,801	$4,133
OTHER HEART DISEASE	$1,811	$3,430	$2,834	$3,001
OSTEOPOROSIS	$1,232	$3,190	$2,235	$3,139
STROKE	$2,028	$3,674	$3,038	$3,026
NO MEDICAL CONDITION	**$247**	**$653**	**$562**	**$817**
ANY MEDICAL CONDITION	**$894**	**$1,858**	**$1,519**	**$1,934**
TOTAL	**$426**	**$1,155**	**$1,109**	**$1,419**

As one can see, anemia boasts the greatest value opportunity per patient at $2,163 PMPM ($4,455 less $2,292) in excess costs for individuals treated for Non-SPMI conditions. Other medical condition categories with significant potential savings include liver disease, epilepsy, congestive heart failure, and osteoporosis. Altogether, patients with a chronic medical condition and comorbid substance use disorder show the greatest value opportunity through integration, with an average additional spending of $1,040 ($1,934 less $894) PMPM.

Those estimates ring true for the commercial population. Among the Medicare population, it is congestive heart failure patients who show the greatest potential value on a PMPM basis. Other medical condition categories with significant potential savings among this population include chronic kidney disease, pulmonary heart disease, and other heart disease. Among the Medicaid population, it is blood-related conditions that show the highest value opportunity per member. Endocrine/metabolic disorders display the highest cost savings opportunities in both the commercial and Medicare markets. After accounting for individuals with and without complications, hypertension was found to have the second greatest value opportunity in both the commercial ($41 billion) and Medicare ($30 billion) markets. Across all three populations, they estimated calculations found that IMBH efforts could lead to $38 billion - $68 billion, or 9% - 17% of the total value opportunity of $406 billion in the commercial, Medicare, and Medicaid markets. To put these numbers into greater perspective, even if the current number of active psychiatrists and psychologists working in the United States were doubled in order to support effective multidisciplinary IMBH programs, the savings from said programs would be more than enough to offset that investment. The potential cost impact is several times larger than the estimates of total salaries for psychiatrists and psychologists, and represents 16% - 28% of all spending for mental health and substance use services.

Appropriately, the report finalizes itself with the message that potential healthcare savings should not be the only factor used in determining which conditions to concentrate integration efforts on. Rather, additional consideration should be given to the conditions and patients that physicians, practitioners and care management teams believe can most optimally improve clinical and financial outcomes, with that being the primary variable reducing healthcare expenditures through their integration implementation efforts. The heart of any PIP and PIP-adjacent ventures should always be better human healing.

Pitfalls and Concerns

One of the aforementioned pragmatic trials with a disappointing outcome was Delitto et al., (2021). The Targeted Interventions to Prevent Chronic Low Back Pain in High-Risk Patients (TARGET) Trial investigated whether a risk-stratified approach would result in lower rates of chronic low back pain and improved self-reported disability. It was a cluster randomized large pragmatic trial designed to comprehensively assess whether the stratified approach to LBP was effective in US-based PCP clinics. Patients with LBP in the high-risk group were referred to the stratified approach of care or Usual Care (UC) with supplemental PIPT (UC+PIPT). They aimed to test if this route of care was superior or inferior to UC by itself. If UC+PIPT were found to be superior, the data would demonstrate lower rates of transition to LBP, lower self-reported disability, and lower healthcare utilization.

Unfortunately, the trial concluded that patients in the UC+PIPT intervention group showed no differences in disability, care utilization, or transition to chronic low back pain. Further analysis of the technical issues and limitations found in the study offer potential reasons for this. For example, their approach to PIPT delivery lacked additional resources to assure clinical implementation, and despite it being highly generalizable, the existing barriers to PIPT delivery are difficult to overcome without them. Also, despite creating an automated process of identifying high-risk patients and generating referrals for matching PIPT, only half received a referral to PIPT in the stratified care group, whereas a third of patients received a referral to PT in the usual care group. At 6 months out, there was a 40% non-response of the primary outcome. Moreover, initiating PIPT referrals saw disappointingly low adherence rates that were far below study team expectations, as well as the expectations of their PCP stakeholder groups. This discouraging data on the implementation of BPA-PIPT referral linkage proved to be a major limitation in the TARGET Trial, signifying great challenges that withstand in current primary care settings. While these limitations may soften the blow of these data, it cannot be unsaid that this is not the only study to have foraged such results. Other pragmatic trials that combine research rigor with realworld treatment delivery, many of which also use TARGET, report adjacent findings (Weinfurt et al., 2017). In response to many of these lackluster pragmatic trial findings, some researchers propose conducting explanatory trials placing emphasis on assessment of treatment fidelity. In doing so, we may then isolate PIPT efficacy, but this will not solve the complete, big-picture issues of implementation into daily practice environments.

Whether or not the available data on stratified PIPT care implementation can be effectively translated into standard practice remains cloudy so long as the current rate of non-concordance with LBP practice guidelines persists (Kim et al., 2019). Said LBP practice guidelines continue to see modern development, as more recent guidelines recommend “non-pharmacologic-first” approaches to pain management (National Academies of Sciences, Engineering, and Medicine, 2019). This could potentially influence monetary decisions around the practice, in seeing if payers will engage in reform that reduces barriers to non-pharmacologic care such as physical therapy, be it PIPT or standard PT. The results of this TARGET trial illuminate the challenge that is transferring theoretical implementation data into standard practice (Rubenstein, 2019).

A different study, Cherkin et al., (2018), conducted a Matching Appropriate Treatments to Consumer Healthcare needs (MATCH) pragmatic cluster randomized trial – with a pre-intervention baseline period – investigating whether use of the STarT Back risk-stratification strategy (first used in England in Hill et al., 2011) would result in superior outcomes for physical function and pain severity among US patients with low back pain. Six primary care clinics were pair randomized with three being trained in the usage of the STarT Back Tool approach and the other three functioning as controls. Participants were adults over eighteen years of age receiving primary care for non-specific LBP. After a primary care visit, they were instructed to divulge data 2 weeks later, then again 2 months and 6 months later for follow-up data collection.

Primary care clinicians in the intervention clinics were engaged in six didactic education sessions to ameliorate their understanding of LBP management. They also received in-person training in using the STarT Back Tool and incorporated it into the electronic health record (EHR). Physical therapists received 5 days of intensive training and control clinics received no training. The MATCH trial randomized the matched pairs of clinics to serve as intervention or control clinics, and the sample sizes were adequate in power to detect meaningful differences. There were reportedly high follow-up rates and the flexible, pragmatic intervention design allowed for substantial PCP and physical therapist training, training modules based on requests of primary care teams, and inclusion of the entire primary care team.

Data on the intervention effects were gathered by comparing mean changes in primary patient outcomes of back-related physical function and pain severity at 2 and 6 months. Any differences in change scores by trial arm and time period were gathered with linear mixed effect models, with secondary outcomes including healthcare utilization. While clinicians used the STarT Back Tool with half of participants, use of the tool did not change recommended treatments nor did the intervention have any significant effects on patient outcomes. This led the researchers to conclude that a resource-intensive intervention to support stratified care for LBP in a US healthcare environment had no effect on patient outcomes or healthcare use.

Naturally, investigating limitations offers possible explanations for such resulting data. While it is true that a comprehensive evaluation of their implementation process did find high levels of clinician engagement and submitted system support, notable limitations include: (1) they did not conduct feedback audits to coax clinician adherence to matching treatments to patient subgroups, and (2) compared to studies based in England like Hill et al., (2011) and Foster et al., (2014), their matched treatment options were more numerous, less familiar to clinicians, and of an increased difficulty to access. All these variables placed a greater strain on PCPs. Moreover, they utilized a different recruitment strategy than the England-based studies did, and thus, while both study populations were similar in age, gender, employment, risk subgroup proportions, and pain severity, US patients had markedly higher baseline levels of

LBP-related physical disability (RMDQ scores of 11.8 versus 8.4, respectively). These differences between study populations offer additional explanation for outcome differences. Other limitations include: less than half of all LBP patients participated and are therefore not necessarily representative of all patients, the baseline data collection was prolonged until 2 weeks after the PCP visit (causing any early treatment effects to go undocumented), and the restriction of the sample population to a single socio-economically homogeneous, integrated healthcare system.

Limitation uses notwithstanding, the study authors went on to say that they designed their intervention (Cherkin et al., 2016) to be “as potent as possible” while still retaining the ability to implement it in primary care clinics. Therefore, even if the intervention data had displayed favorable outcomes, it still might not have been viable to translate it into the standard US primary care environment. It must also be noted that incorporating highly complicated changes into clinical practice in USA healthcare is made increasingly difficult by the high levels of reported burnout among PCPs in the country (Shanafelt et al., 2017). The study authors advised future trials investigating implementation of complex care interventions to have simple, easily-implemented treatment recommendations for patients, automatic alerts in the EHR making it easier for clinicians to collect risk-stratification data and allowing them to better recommend proper matched treatments with their patients, and finally, regular periodic feedback on their performance. Whether or not clinicians are correctly adhering to the matched treatment recommendations for patients at each different risk stratum is highly influential in outcome results. Of course, bearing in mind the aforementioned high levels of burnout among PCPs in the US, it is difficult and perhaps unfair to ask them to take on more responsibilities, so innovative approaches like an expanded nurse role could offer necessary cushioning to successfully integrate such changes and finally see improved patient outcomes.

There exist many recommendations for ways in which future directions of PIP and PIPT study and integration should go. Dekker et al., (2023) recommends four key issues that ought to be addressed: (1) The direct mode of PIP delivery is the more traditional role, but the less visible and often overlooked indirect mode must be better recognized for its value and potential for major impact on healthcare. (2) A stable form of financing the indirect mode must be solidified. As found in the 2014 report Economic Impact of Integrated Medical-Behavioral Healthcare, IMBH has been estimated to result in substantial savings on Medical costs, all the more reason to reimburse the indirect mode alongside the direct mode. (3) There must be cross-disciplinary training for psychologists and healthcare providers whose primary training is not psychology. Psychologists ought to have a thorough understanding of the pathology, symptoms, impact on behavior, and medical treatment of the disease whose care they are involved in. Healthcare providers whose primary training is not psychology need practical training to develop a basic understanding of psychological problems and skills to deal with such problems. (4) Research must continue in order to further develop psychologically informed healthcare, paying particular attention to the transdisciplinary aspects, in order for the practice to become as robust as possible.

Chapter 3: A Path Forward

Clinical Consultation

In one of the most recent articles published about PIP titled "Psychologically Informed Practice: The Importance of Communication in Clinical Implementation" (Main et al., 2023), the same authors who spearheaded the idea of PIP detailed some of the difficulties the practice has found in research trials. Observations find the practice having clinical and economic advantages over usual care, but pragmatic and qualitative studies identified implementation issues in both system delivery and clinical management. Moreover, several other recent clinical trials provide findings indicating that the troubles in scaling PIPT to meet the demands of routine clinical delivery are primarily related to these identified implementation issues (Delitto et al., 2021)(Cherkin et al., 2018). Inadequate appreciation for the difficulty clinicians face in adopting PIP into their practice may be partially responsible for the lackluster outcomes seen in pragmatic trials, moreso when said clinicians are firmly rooted in biomedical principles of practice and care. An example of this may be observed in the following scenario: when lacking confidence in dealing with the emotional impact of pain, clinicians who are used to biomedical approaches may downplay the patients' problem(s) or even avoid them altogether (Synnott et al., 2015).

Additionally, while efforts have been made to improve the development of screening tools, training, and the assessment of outcomes, the nature of *consultation* has remained largely unexplored. Effective communication is one of many, if not *the* cornerstone for PIP and it begins with a clinical consultation (Main et al., 2023). Of course, an integral aspect and core element of PIP is proper management of a patient's response and simultaneous proper regulation of the clinician's own response and reaction to the patient.

Patient-centered care is essential for fruitful musculoskeletal pain management, and patient-centered care requires effective communication (Lin et al., 2020). Good patient-clinician communication has the potential to help regulate patients' emotions, facilitate comprehension of medical information, and allow for better identification of patients' needs, perceptions, and expectations (Ha & Longnecker, 2010). Notably, sometimes there arise difficulties in introducing PIP to patients, moreso if delivering with the undertone of personal responsibility. Such patients may enter with a markedly different expectation of the consultation; shifts observed in these instances include transitions from pain *relief* to pain *management*, *prescribed treatment* to *guided self-management*, *function* to *work capability and social participation*, and *illness* to *wellness*. Assessment tools provide a crucial resource to engage a patient in meaningful, worthwhile conversation.

Of crucial importance to the nature of clinical consultation is the therapeutic alliance (also known as working alliance), a term referring to the partnership between a patient and their therapist that allows them to achieve goals through compromised tasks. The term dates back to Sigmund Freud and has seen much evolution throughout the decades, particularly in the world of psychotherapy integration (Goldfried, 1980)(Strupp, 1980). Common among all forms of meaning for therapeutic alliance is the idea of the therapist being on the patient's "side", so to speak, instead of acting as a tabula rasa (Latin for "blank slate") or an otherwise neutral force. Both within the field of psychology and in this specific context, the official terminology of "tabula rasa" refers to the idea of a therapist avoiding revealing any personal information about themselves, lest they suade their client in any particular, confounding direction of progress (Fritscher, 2022). This concept of the therapist allying themselves with the patient is central to the therapeutic alliance, naturally. In the context of PIPT, therapeutic alliance refers to the relational processes at play in treatment that can act in combination with or independent of specific interventions. In 2021, the Physical Therapy & Rehabilitation Journal stated that essential elements are agreement between patient and clinician on treatment goals and tasks, as well as development of a personal bond (Unsgaard-Tøndel & Søderstrøm, 2021).

Ackerman and Hilsenroth (2003) conducted a study reviewing techniques positively impacting the therapeutic alliance, and from this data established 2 overarching goals of a clinical interview: to facilitate communication, and to establish effective working relationship between patient and the provider. Alodaibi et al., (2021) and Holmes et al., (2022) support the observed positive impact of the patient-*physical* therapist alliance on functional outcomes of patients, and in Ferreira et al., (2013), positive therapeutic alliance ratings between physical therapists and patients are specifically associated with improvements of outcomes in low back pain. Recent research (Main et al., 2023) suggests that 2 predictors of patient-reported therapeutic alliance are clinician attitudes and beliefs that are more aligned with a biopsychosocial approach (Main & George, 2011), and sharing information and power with patients (Beneciuk et al., 2021). In regards to clinician attitudes and beliefs, various studies indicate that these factors can influence their willingness to use PIP approaches in the first place, especially considering they are still not commonly taught in pre-professional training for many provider types (Gardner et al., 2017)(Caneiro et al., 2021). Resuming discussion of the therapeutic alliance with PIP and clinical consultation, PIP has been cited to align remarkably well with the client-centered approach (Koch, 1959) in part due to its emphasis on patient self-efficacy. By its very nature, PIP has strong potential to enhance therapeutic alliance.

Hand-in-hand with the therapeutic alliance, empathy is dually significant in good patient-clinician communication. From a humanistic perspective, one may argue further that good communication between people in general is next to impossible without it. From a clinical perspective, empathy has oftentimes been conceptualized as the ability to take the perspective of another person without confusing it with one's own interests (Decety & Jackson, 2006). Empathy a clinician harbors toward a patient has generated considerable neurophysiological and psychological interest throughout the years (Goubert et al., 2005)(Goubert et al., 2011), and for good reason, as it has the potential to affect the emotional climate of the consultation and subsequent decision-making. Detailed analyses of how cognitive, affective, and behavioral components of empathy are elicited help to understand the nature of communication in the PIP consultation (Goubert et al., 2005). Additionally, linkages between those three components are proposed in the Social Communication Model (Hadjistravopoulos et al., 2011).

The nature of the clinical consultation is of particular interest in PIP and PIPT's fight against chronic pain, because it is believed that the use of communication skills in clinical consultations may be used to minimize said chronic pain. To date, only a limited operationalization of communication behavior has been found in physical therapist practice in chronic pain rehabilitation (Chapman et al., 2022). Traditional clinicians may have a tendency to operate in a purely analytical, problem-solving approach with the goal of "fixing" their patient's pain, and while this is generally a good thing, it is unrealistic for people with *chronic* pain and will most definitely cause more detriment than benefit. With these patients, clinician tone should be that of cautious optimism, assuming the clinician and patient have identified achievable therapeutic tasks and goals. Thus, it is advised that clinicians positively highlight therapeutic gains the patient has made and place emphasis on changes the patient has achieved, while also reminding them that setbacks and flare-ups are to be expected. The focus ought to be on the next phase rather than the endgame outcome.

Clinical consultations done today already have a surplus of data with which to shape the consultation process of PIP. Effective patient-clinician communication has demonstrated positive outcomes (Henry & Matthias, 2018) such as greater patient satisfaction (Bertakis et al., 1991) and higher treatment adherence, however, interview and focus group studies have found that discussions about pain management are often frustrating and unproductive (Esquibel & Borkan, 2014). This is due to the tendency for patients and clinicians to often prioritize different pain management goals (Bergman et al., 2013). “Ruptures” is the term used for breakdown in the patient-clinician therapeutic relationship, coined in Miciak & Rossettini (2022). Unsurprisingly, ruptures have been associated with increased dropout rates and poor clinical outcomes.

There is further evidence that can offer guidance to clinicians on what to expect out of patients, in particular the powerful influence of beliefs. Patients’ subjective beliefs about their possibilities of change and the role of pain coping strategies, as shown in the fear-avoidance model (Vlaeyen et al., 1995)(Crombez et al., 2012), offers crucial aid in understanding the effects of psychological factors on chronic pain and chronicity as a whole. A healthcare provider’s verbal and nonverbal behaviors (as described in Keefe et al., 2018) can contribute to the effectiveness of patient-clinician communication, and there is additional evidence to suggest that healthcare providers’ attitudes and beliefs about a patient’s pain experience will influence their patient’s treatment choices (Rainville et al., 2000).

A patient’s lack of confidence in gaining control over pain, or “self-efficacy” (Bandura, 2004) is consistently associated with impairment and disability, affective distress, and pain severity (Jackson et al., 2014); and in the opposite direction, improvements in self-efficacy have been associated with improved outcomes in integrated psychological and exercise interventions (Sterling et al., 2019). Alignment of self-efficacy with fear-avoidance is depicted in the Figure below.

Main et al

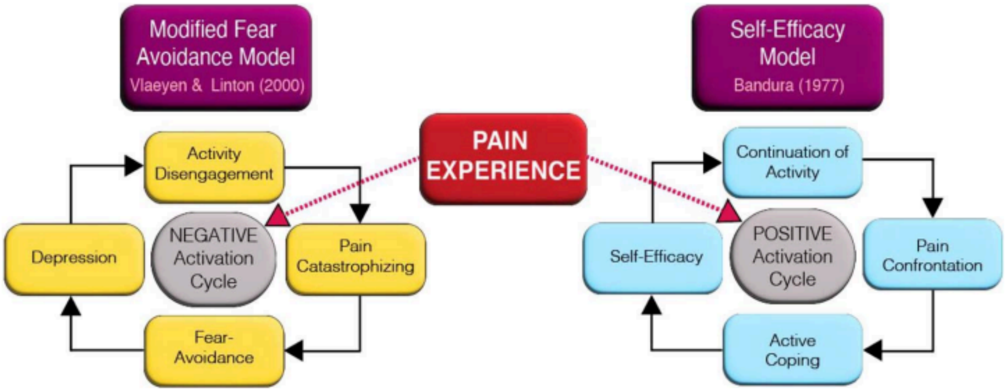


Figure. The influence of negative expectations (catastrophizing) and positive expectations (self-efficacy) on recovery.

The Figure shows how the experience of pain might lead to either a negative cycle that increases associated disability (Main et al., 2023) or a positive activation cycle that leads to recovery (Main & George, 2011).

Fortunately, good interview skills that bolster the therapeutic alliance can be taught and mastered (Apodaca et al., 2016). Table 1 from Main et al., (2023) provides a multitude of techniques which may be followed to optimize patient-clinician communication.

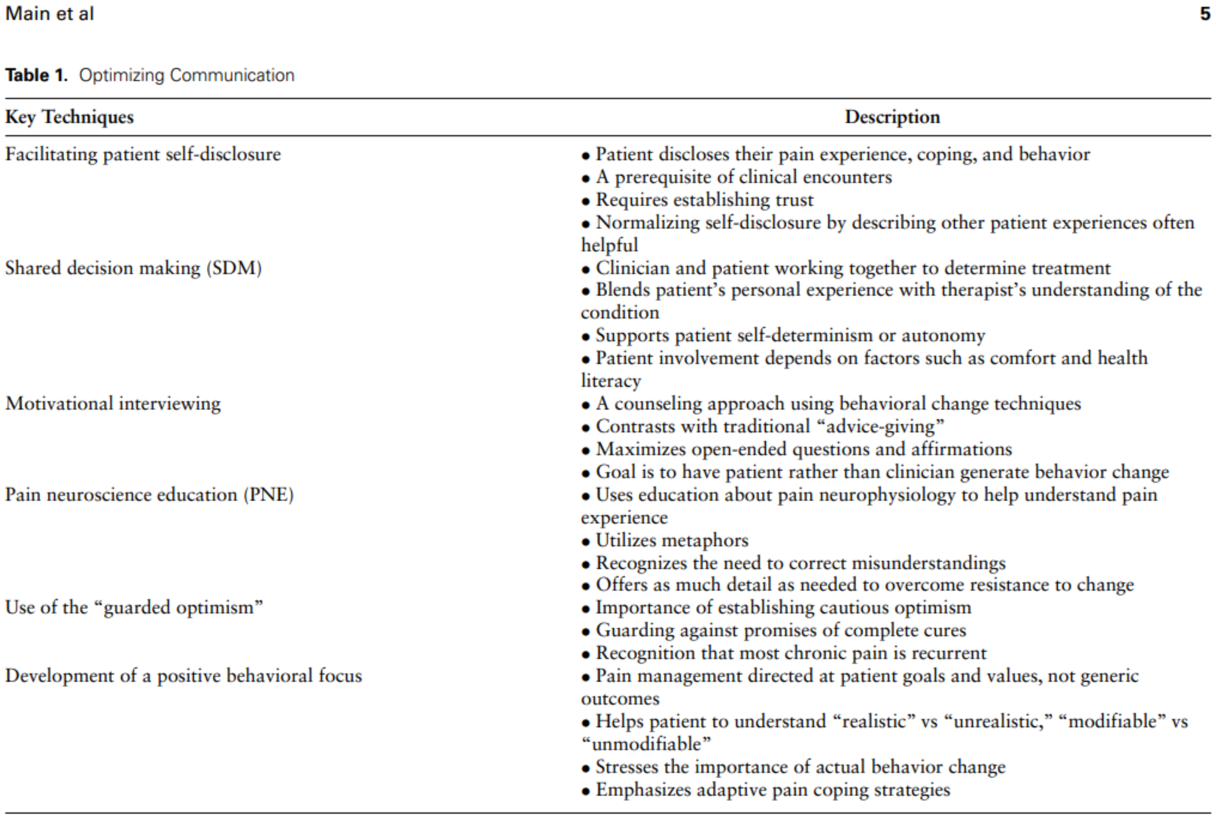


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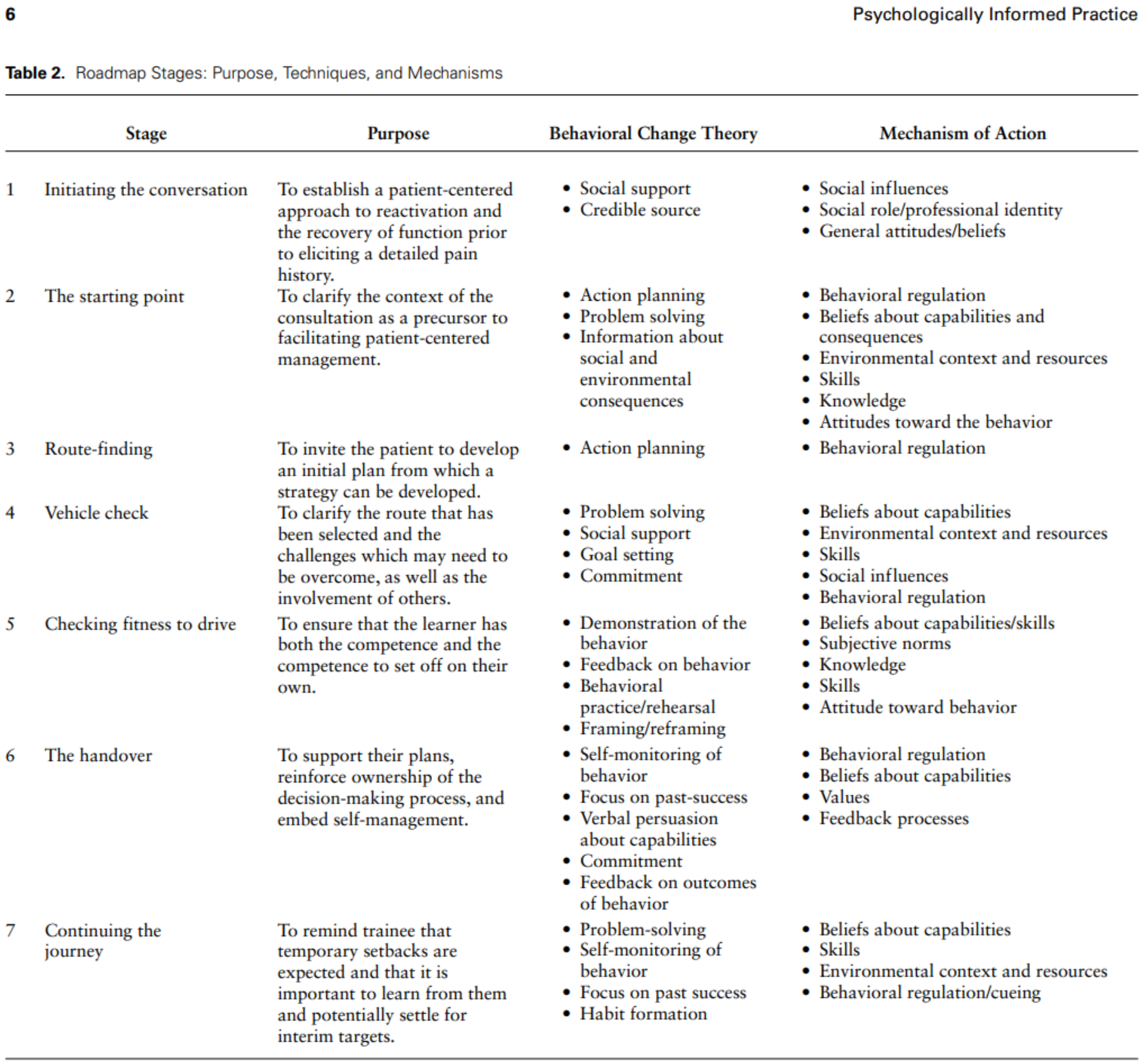
Table 1. Optimizing Communication

Key Techniques	Description
Facilitating patient self-disclosure	• Patient discloses their pain experience, coping, and behavior • A prerequisite of clinical encounters • Requires establishing trust • Normalizing self-disclosure by describing other patient experiences often helpful
Shared decision making (SDM)	• Clinician and patient working together to determine treatment • Blends patient's personal experience with therapist's understanding of the condition • Supports patient self-determinism or autonomy • Patient involvement depends on factors such as comfort and health literacy
Motivational interviewing	• A counseling approach using behavioral change techniques • Contrasts with traditional "advice-giving" • Maximizes open-ended questions and affirmations • Goal is to have patient rather than clinician generate behavior change
Pain neuroscience education (PNE)	• Uses education about pain neurophysiology to help understand pain experience • Utilizes metaphors • Recognizes the need to correct misunderstandings • Offers as much detail as needed to overcome resistance to change
Use of the "guarded optimism"	• Importance of establishing cautious optimism • Guarding against promises of complete cures • Recognition that most chronic pain is recurrent
Development of a positive behavioral focus	• Pain management directed at patient goals and values, not generic outcomes • Helps patient to understand "realistic" vs "unrealistic," "modifiable" vs "unmodifiable" • Stresses the importance of actual behavior change • Emphasizes adaptive pain coping strategies

When reading the description of these techniques, note that several bullet points illustrate action that facilitate patient health literacy and autonomy. These strategies adhere to the guidance provided thus far by previous research.

Main et al., (2023) introduced a PIP Consultation Roadmap that comprises a structured and flexible treatment approach for non-mental health healthcare providers to incorporate key psychological principles into their treatment practice, one that accommodates different therapeutic communication styles and levels of experience. The PIP Consultation Roadmap was developed utilizing the theoretical underpinnings of the Theoretical Domains Framework (TDF)(Michie et al., 2005). The TDF has been created as a basis for identifying clinical implementation, how to design implementation interventions to enhance healthcare practice, and understanding behavior change processes. It is especially necessary because PIP is built on the development of effective communication between clinicians and patients and patient-centered care, rather than on a didactic, purely analytical, problem-solving focused model.

As stated in the article, three important challenges that ought to be kept in mind when communicating with a patient in pain are: 1) an effective therapeutic relationship must developed and built on trust, and disclosure of potentially sensitive information must be sensitively and tactfully encouraged, 2) in people with complex chronic pain conditions for whom cues are ambiguous, appreciate that evaluation is often challenging and obtaining an accurate picture even moreso, and 3) pain complaints can be, and often are, misinterpreted; clinicians should avoid suggestions of exaggeration. Table 2 from Main et al., (2023) displays the purpose, explanatory theory, and mechanism of the different Roadmap stages.



6 Psychologically Informed Practice

Table 2. Roadmap Stages: Purpose, Techniques, and Mechanisms

Stage		Purpose	Behavioral Change Theory	Mechanism of Action
1	Initiating the conversation	To establish a patient-centered approach to reactivation and the recovery of function prior to eliciting a detailed pain history.	• Social support • Credible source	• Social influences • Social role/professional identity • General attitudes/beliefs
2	The starting point	To clarify the context of the consultation as a precursor to facilitating patient-centered management.	• Action planning • Problem solving • Information about social and environmental consequences	• Behavioral regulation • Beliefs about capabilities and consequences • Environmental context and resources • Skills • Knowledge • Attitudes toward the behavior
3	Route-finding	To invite the patient to develop an initial plan from which a strategy can be developed.	• Action planning	• Behavioral regulation
4	Vehicle check	To clarify the route that has been selected and the challenges which may need to be overcome, as well as the involvement of others.	• Problem solving • Social support • Goal setting • Commitment	• Beliefs about capabilities • Environmental context and resources • Skills • Social influences • Behavioral regulation
5	Checking fitness to drive	To ensure that the learner has both the competence and the competence to set off on their own.	• Demonstration of the behavior • Feedback on behavior • Behavioral practice/rehearsal • Framing/reframing	• Beliefs about capabilities/skills • Subjective norms • Knowledge • Skills • Attitude toward behavior
6	The handover	To support their plans, reinforce ownership of the decision-making process, and embed self-management.	• Self-monitoring of behavior • Focus on past-success • Verbal persuasion about capabilities • Commitment • Feedback on outcomes of behavior	• Behavioral regulation • Beliefs about capabilities • Values • Feedback processes
7	Continuing the journey	To remind trainee that temporary setbacks are expected and that it is important to learn from them and potentially settle for interim targets.	• Problem-solving • Self-monitoring of behavior • Focus on past success • Habit formation	• Beliefs about capabilities • Skills • Environmental context and resources • Behavioral regulation/cueing

As the practice of PIP continues its crawl towards concise and successful implementation into clinical practice, the best combination of methods of training physical therapists have yet to be determined. One thing is certain, that existing educational models must be changed to remain consistent with the biopsychosocial model (Zangoni & Thompson, 2017).

Training

With the onset of attention towards patient-centered medicine came a growing interest in different approaches to patient interaction. This naturally led to more focus on training healthcare professionals in patient-centered interview methods; subsequent research has shown findings that associate such interview methods with higher patient satisfaction and enhanced outcomes (Wanzer et al., 2004)(Stewart et al., 2000). Of course, common hindrances against the use and mastery of clinical interview skills are time pressure, excessively talkative patients, and emotional deterrents (Keefe et al., 2018). Training healthcare professionals to tactfully handle these hindrances is a skill that can, and should, be achieved.

An ongoing problem seen within integrating PIPT into standard physical therapy practice and clinical settings is getting therapists trained in the biomedical standard to *fully* recognize the value in, and gain the confidence to address, psychosocial challenges among patients. Many physical therapists do recognize the value of biopsychosocial interventions, but rather often do not feel adequately trained to deliver such interventions (Synnott et al., 2015)(Beneciuk et al., 2019)(Alexanders et al., 2015)(Driver et al., 2017). In one systematic review, physical therapists were put under the microscope to examine their perceptions of learning and implementing biopsychosocial interventions for musculoskeletal conditions, and the review found that while there *was* a shift towards biopsychosocial care, insufficient training more often than not let to lack of confidence with implementing psychosocial interventions (Holopainen et al., 2020). Specific concerns include lack of knowledge and resources, time constraints, and insufficient role clarity. Moreover, there is no widely accepted standard for PIPT intervention training (Keefe et al., 2018). Psychologically informed training for physical therapists is wildly different across different settings, with some training programs taking place individually or in groups, lasting 10

- 150 hours, single workshops or ongoing mentoring and learning support that reaches well beyond the initial didactic components (Holopainen et al., 2020). This highly variable, non-standardized delivery of training offers one possible reason for some of the inconsistency with psychologically informed treatment outcomes in other studies (Archer et al., 2018).

Although, there are many roadmaps and programmes being proposed and built. Naturally, adequate training improves confidence and could easily mitigate this problem, but as of right now, the field has little information on how adequate training translates to clinical practice. Various other studies call for further research in support of the development of training for, and mentoring of, physical therapists gaining both confidence and competence in delivering PIP interventions (Ballengee et al., 2021)(Denneny et al., 2020). Specific to standard physical therapy training, a 2012 survey of certified Doctor of Physical Therapy (DPT) Programs in the United States found that the average amount of time students spent on pain education was 31 hours, with a range minimum at 5 hours and a range maximum at 115 hours. A staggering 39% of respondents believed their students received insufficient pain management education (Hoeger Bement & Sluka, 2015). Of course, however, one must always look for a silver lining, and the silver lining of this situation is that: while 39% is scary, it is an astronomical improvement from a 2001 survey which cited the average amount of time spent on pain education was 4 hours (Scudds et al., 2001). As much as this is a slow but steady improvement, we must always push beyond. Recommended future directions for pain education have called for going beyond didactic content and including more experiential training to harbor focus towards acknowledging the complex nuances of nonpharmacological pain treatments. Examples of this may be: building the therapeutic alliance, reducing the perceived threat of pain, conceptualizing pain beliefs, and promoting self-efficacy (Denneny et al., 2020).

Hall et al., (2018) conducted a systematic review that assessed the effectiveness of physical therapist-delivered cognitive behavioral (CB) interventions for low back pain, having stated that traditional biomedical treatments that only tackle physical ailments, such as acupuncture, manual therapy, massage, and specific exercise programmes, tend to only provide short-term benefits. Several of the studies reviewed were randomized controlled trials (RCTs). The patient outcomes of disability, pain, and quality of life were assessed using the GRADE approach, and intervention reporting was assessed using the Template for Intervention Description and Replication. The study found that, when compared with education and/or exercise interventions, CB had a greater effect (SMD; 95% Cl) on reducing disability (-0.19; 0.32, -0.07), pain (-0.21; -0.33, -0.09); and moderate data suggesting little difference in quality of life (-0.06; -0.18 to 0.07). Typically, studies reported the type of CB component used, such as challenging unhelpful thoughts, but told little detail on how it was operationalized. Overall, the review found access to treatment manuals, patient materials, and provider training to be lacking.

From the data gathered on the studies reviewed, the study authors concluded that physiotherapists can deliver effective CB interventions when provided with sufficient, additional training. Moreover, they state that using a CB approach that can be easily adopted in a physical therapy setting provides optimized patient outcomes to traditional physical treatments alone. They advise any physiotherapists considering improving their practice regarding patients with LBP to undergo training to best incorporate CB techniques into the treatment for ideal, long-term benefits. However, they did observe significant hurdles when attempting to adopt CB interventions into practice due to previous studies failing to describe their intervention or accessible training materials. Access to provider training and resources ensures accurate replication, and therefore, physiotherapists ought to contact authors of a study whose intervention they wish to incorporate into their practice. The review authors requested researchers improve reporting of procedural information, provide relevant materials, and offer accessible provider training.

Broadening the topic to PIP training, explanatory trials are often resourced to focus on treatment fidelity through many different means – such as standardization and a dedicated provider pool – using evaluations that cannot generally be built into the funding nor implementation in routine clinical practice (Main et al., 2023). While it appears that there is an emerging pattern in regards to core components of a PIP training program, there is little evidence as for the most effective intensity of training on how to increase uptake of PIP into an existing healthcare setting, or on how to sustain PIP in a workforce after initial training attempts are completed. Thus, PIP and PIPT share the burden of gaps in training. Although PIPT is still a healthcare model with tremendous potential, more convincing evidence is required before widespread adoption can take place, even moreso with the aforementioned training demands and implementation issues (Coronado et al., 2020).

Coronado et al., 2020 identified 18 randomized controlled trials that used PIPT approaches for patients with musculoskeletal pain and found that PIP interventions had a greater effect on reduction of disability and pain than education or exercise-only interventions. They examined 22 studies, representing 18 trials, published since 2012 to describe PIPT methods, observed findings, and to offer directions for future research. They deemed half of the "positive effects" studies on cognitive-behavioral-based physical therapy to be of lower methodological quality, and tended to have larger sample sizes compared to trials showing no difference. This could have biased the results, and further suggests a higher likelihood to detect small differences in outcomes. They deemed high-quality studies that showed greater efficacy after cognitive-behavioral-based physical therapy were those that had rigorous training and implementation protocols; examples of such studies include Bennell et al., (2016), Sterling et al., (2019), Godfrey et al., (2020), Vibe Fersum et al., (2013), and Vibe Fersum et al., (2019). Many such trials – Bennell et al., (2016) and Sterling et al., (2019) – included collaboration between a clinical psychologist and/or rehabilitation physician, which suggests such a component may be crucial to PIPT training and fealty.

The systematic review went on to point out that prior studies lack targeting of PIPT to a specific population “at risk”, which could possibly contribute to the mixed or comparable outcome findings. This is particularly cumbersome given that PIPT can benefit patients by individualizing physical and psychological care to most optimally improve function in activities that had been previously limited due to pain (Ballengee et al., 2021). Some population factors other than pain-associated distress have only begun to be investigated; those found to potentially impact the chance of responding favorably to a psychologically informed treatment component are socioeconomic status, education level, and the use of pain medication (Beneciuk et al., 2017). The identification of robust treatment modifiers specifically for low back pain has been a particularly challenging venture, but nevertheless, it remains imperative that research continues to explore and determine which moderating factors limit the practice’s overall effectiveness as well as how existing treatments can be adapted to account for them.

An example of a study that did target PIPT to a specific population can be observed in Sterling et al., (2019) where patients were screened for hyperarousal symptoms. Stratifying patients based on their psychosocial risk has additionally seen success with primary care pathways involving physical therapy for acute back pain, as seen in Hill et al., (2011) through the STarT Back method. From this, one may conclude that psychologically informed physical therapy might not be necessary in treating all patients suffering musculoskeletal pain. Thus, personalized approaches may best be utilized not to assess whether or not PIPT works, but rather, which patients can most benefit from it and which patients may not need it, or furthermore, may not respond well to it. Many investigations into how the practice can be applied to common musculoskeletal disorders other than low back pain (such as neck, shoulder, and knee pain) have already been done, such as in Butera et al., (2016) where a modified version of the STarT Back Screening Tool was utilized across other anatomical regions.

It is not well known what the most "active" components of PIPT are, for there have not yet been any studies that examined content optimization for PIPT (Coronado et al., 2020). Such an examination may require more advanced research designs (Collins et al., 2011). When reviewing how many studies tackle the issues of training, they found that many successful behavioral intervention training programs often use multiple methods to ensure intervention adoption and prevention of drift. Some of these methods include, but are not limited to, workshops, role playing, practice, supervision by a psychologist, and peer feedback (Herschell et al., 2010). Ergo, a number of the reviewed trials reported using these methods with physical therapists involved in the study and the results frequently supported high fidelity in delivering PIPT. And, even in cases where there are low rates of successful intervention implementation, the now-trained physical therapists still display confident ability to provide PIPT (Reid et al., 2017). Data indicates that important determinants in addressing patient unique patient experiences are periodic feedback from a psychologist as well as peer discussion (Nielsen et al., 2014), but such factors may be a luxury that not all practice settings can provide. Therefore, Coronado et al. (2020) advises future research to determine optimal methods of training, supervision, and monitoring physical therapists' utilization of PIPT techniques and strategies in order to generate a standard – a recommendation that is echoed by many, many other studies.

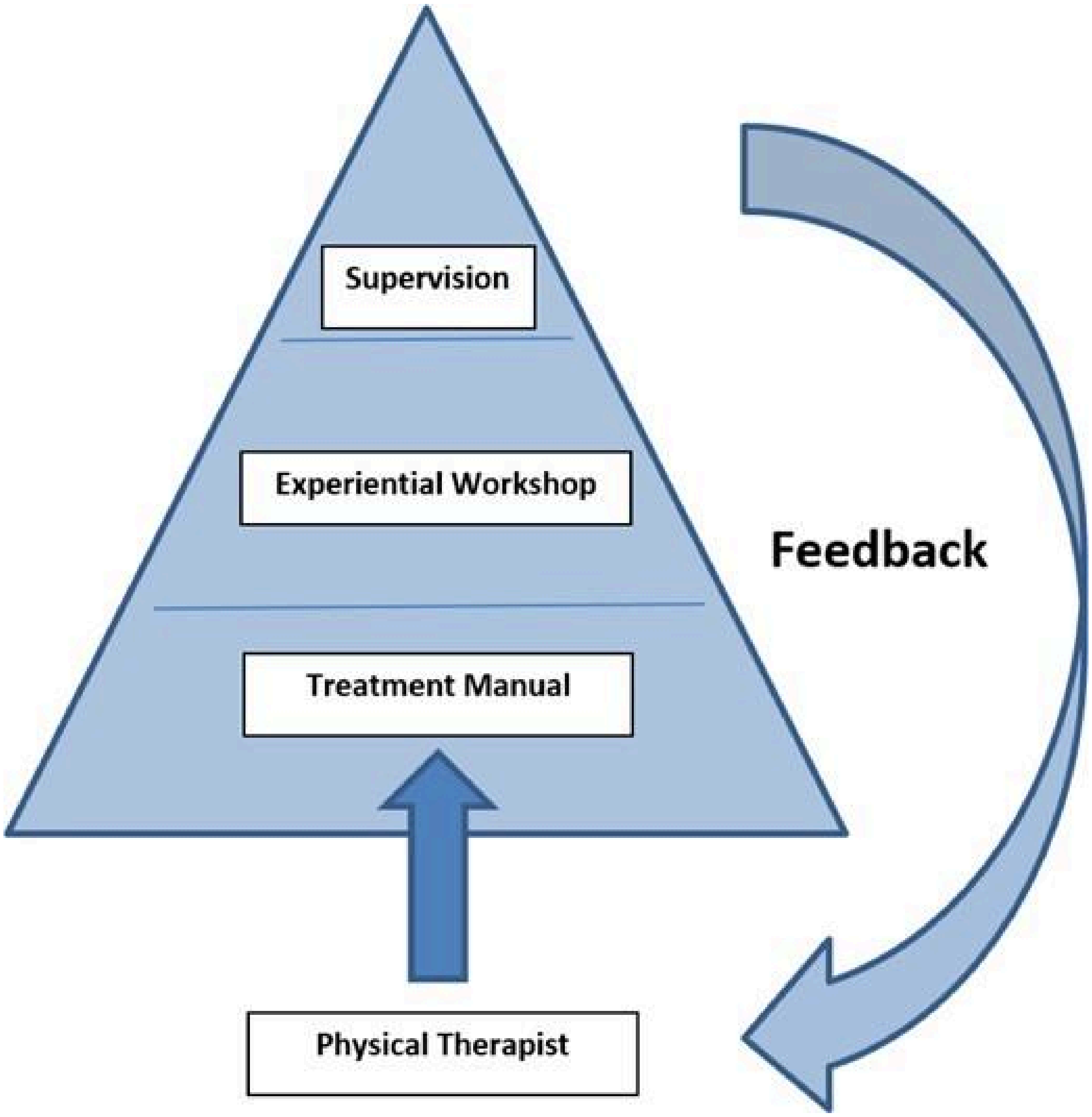
Fortunately, a training approach for pre-licensure physical therapists has been introduced, one that is similar to the one used for practicing clinicians with an additional focus on foundational pain education and patient-centered communication (Ballengee et al., 2020). Within the empirical study that went into curating this approach, 30 Doctor of Physical Therapy (DPT) students took part in an educational intervention that involved one 4-hour didactic teaching session and three 1-hour experiential learning sessions. When choosing inclusion criteria for the students, one must be aware that most Doctor of Physical Therapy curriculums in the United States comprise of two years of didactic/classroom learning material and one year of off-site clinical rotations. Therefore, first and second year students were invited to participate as part of the study's pre-clinical training.

Before the first session, students were asked to perform a standardized examination of a patient with chronic low back pain. The data gathered from this initial examination were used to assess the students on their PIPT-adherent behaviors via a rating scale. In addition, students were asked to complete the Pain Attitudes and Beliefs Scale (PABS-PT). The Pain Attitudes and Beliefs Scale for Physiotherapists (Ostelo, 2003) is a 19-item tool used to assess a healthcare providers' attitudes and beliefs about treatment approaches for non-specific musculoskeletal pain. Put simply, the PABS-PT determines whether a healthcare provider is more inclined towards using a biomedical approach or a biopsychosocial approach. That said, the study Ballengee et al., (2020) utilized the older, 20-item version of the PABS (Bishop et al., 2007), with 10 biomedical questions (range score 1o-60) and 10 biopsychosocial questions (range score 10-60). On this iteration, healthcare providers are tasked with rating varying statements on the topic of treatment preferences, with the data-gauging medium being a 6-point Likert scale ranging from ‘totally disagree’ (1) to ‘totally agree’ (6). Naturally, higher scores on each subscale indicate a stronger biomedical or psychosocial treatment orientation. At the end of the study, the same students were tasked with examining another patient with chronic low back pain and were once again assessed on their PIPT-adherent behaviors, and retook the PABS-PT.

The qualitative data found that students experienced positive changes in their pain attitudes and belief scores, which indicated a stronger orientation toward a psychosocial approach to patient care ($p < 0.05$). Students also showed positive changes in their adherence to using PIPT behaviors and techniques in their curated patient examinations ($p < 0.05$). Overall, the study found that students had their attitudes and beliefs develop an increased preference towards a psychosocial orientation and the students displayed improved PIPT behaviors in simulated patient examinations after a short educational intervention.

The training approach found within Ballengee et al., (2020) focuses on addressing the complex nuances of behavioral-based, non-pharmacological pain treatments such as building therapeutic alliance, reducing the perceived threat of pain, conceptualizing pain beliefs, and promoting self-efficacy (Denneny et al., 2020). Pre-licensure training like these have been seeing integration throughout Doctor of Physical Therapy curricula throughout the US (Hoeger Bement & Sluka, 2015). While this is generally good news, one noteworthy limitation of addressing PIPT implementation challenges through this type of training is the potential lack of reinforcement upon graduation if the physical therapy is not working in an environment with PIPT-specific mentoring.

Keefe et al., (2018) developed a PIPT training program for practicing physical therapists, utilizing the knowledge that the use of multicomponent training elements is more likely to result in positive training outcomes (Herschell et al., 2010). The program consists of a PIPT treatment manual, experiential workshops, and ongoing supervision with consultation and feedback. It works with a singular group of 3-5 clinicians at a time, who undergo 90 minute didactic and experiential sessions for 15 weeks with a pain psychologist. The figure below illustrates their hierarchical 3-step training approach, which they propose as an overall systematic strategy for training physical therapists in psychologically informed practice.



As one may observe, each step in the training approach serves as a foundation for the subsequent step. This circular system allows feedback from mentors and consultants to reconfigure new elements of the training, and having such a feature be built into the structure of the process enables constant growth and evolution.

Keefe et al., (2018) goes on to reiterate some priorities that come with pushing this practice forward, one being the need to develop clinical guidelines that clearly operationalize mental health referrals for a non-mental health provider delivering PIP. For this purpose, there are three types of psychological contraindications. The first contraindication is the identification of a current mental disorder should trigger a referral for a mental health assessment. Examples of this include psychotic symptomatology, severe clinical depression, posttraumatic stress disorder or PTSD, explicitly stated suicidal intent, and/or marked personality disorder (such as ongoing drug abuse or forensic involvement). And, in the very likely instance that a clinician is unsure about the significance of certain psychological symptoms, then psychiatric screening tools may be employed to aid clinical decision making. The second contraindication is a patient's inability to meaningfully and purposefully participate in treatment, whether as a consequence of intellectual capacity, low health literacy, or marked cognitive dysfunction. The third contraindication is a declared unwillingness to participate and involve oneself in self-management, even after it has been carefully explained. Resistance to participation and involvement ought to be carefully listened to for the purpose of identifying the nature of such hesitation or outright rejection. Possible reasons an individual may resist are concerns about or difficulties in participation, fear, misunderstandings, or practical difficulties, all of which are hurdles that could potentially be overcome. It is important to stress that the second and third examples of contraindications should *not* trigger a referral for mental health assessment, at least in most cases.

One other priority emphasized by Keefe et al., (2018) is the need to develop ways to systematically define and record the appropriate PIP treatment dosing parameters, duration, intensity, and frequency of interventions.

Argument

I argue that, despite the many obstacles lying in the road and issues needing to be addressed and solved, PIP and PIPT are worthwhile ventures that have the potential to elevate modern day physical therapy and healthcare tenfold. Currently, the American College of Physicians' pain clinical practice guidelines place direct and clear emphasis on the use of nonpharmacological practices for optimal treatment of acute and chronic low back pain (Qaseem et al., 2017), a sentiment that echoes the philosophy of PIP.

Archer et al., (2018) led a review that examined the use of psychologically informed physical therapy for different types of musculoskeletal pain. Having identified eight randomized controlled trials, the findings help further understand the benefits of PIPT as well as what training might be needed to most effectively deliver PIPT interventions. Overall, many of the RCTs reviewed found that pain coping strategies and exercise effectively improved physical function for patients with knee pain in the short term, with varying results for the long term depending on the nature of the comparison group. As for neck pain, once more, the findings were highly variable and by proxy, unreliable when attempting to make a definitive statement about PIPT. However, the review did find that PIPT is likely effective for low back pain, especially when it is targeted toward patients with chronic pain, or those who are at high risk of poor outcomes due to fear of movement. The delivery formats that saw the most success in clinical outcomes were one-on-one, group, and telephone formats, strikingly enough. Common components of successful format implementation were graded activity, goal settings, and cognitive-restructuring, with possibilities of further improving treatment effectiveness with the practice of stratifying patients and applying targeted PIPT. And, if one wants to ambitiously look beyond the scope of musculoskeletal pain, there now exists a large body of research in support of the efficacy of psychological treatments for patients with other persistent physical pain ailments such as arthritis, cancer, migraine headaches, and tension headaches (Ehde et al., 2014).

Perhaps the strongest argument in favor of the potential of PIPT is the initiative underway by the US Department of Veterans Affairs Health System (VA) to train physical therapists in PIP approaches. In the initiative, physical therapists who have already been training in PIPT interventions train other VA physical therapists (train-the-trainer approach) who are interested in learning components of the International Association for the Study of Pain (IASP) pain education curriculum, dubbed the *IASP curriculum outline on pain for physical therapy* (Slater et al., 2021). The curriculum is appropriately intended for pre-licensure physiotherapy/physical therapy students, but they also declare it is applicable on a wider scale. In the question of whether that wider scale crosses national boundaries, they also declare that the curriculum learning objectives and outcomes are designed to be flexible, allowing for adaptation for many specific or broad healthcare settings. It can be integrated into preexisting programs in the healthcare systems of other countries using any differing approach methods deemed necessary for that local professional setting. The curriculum is structured hierarchically: (1) Principles, (2) Learning outcomes, and (3) Competencies. “Competencies” refers to competency-based education, a practice that contrasts the far more common knowledge-based education. Instead of prioritizing the teaching of what a learner should *know*, the emphasis lies on what a learner should be able to *do* (Gruppen et al., 2012). Due to the far more impactful long-term improvements associated with competency-based education, as well as its more substantial real-world application, the IASP has reoriented all its curricula towards it. Critically, a competency-based education just might be the answer, or perhaps *an* answer, towards how best to implement PIPT into proper clinical routine practice. If a practice has been deemed worthy for the US Department of Veterans Affairs to integrate its principles into its curriculum, then it is surely one that should be offered ongoing, researched support.

Conclusion

Having learned the history of the inception of PIP and PIPT, how PIPT has evolved and been adapted in the years since then, and being given a glimpse into its possible future trajectory, I feel it is appropriate to warrant the new practice worthy of continued speculation and research. Most pragmatic trials have returned with *unfavorable* results while most explanatory trials have returned with *favorable* results. This fact gives reason to believe that with enough fine-tuning, the practice may eventually procure gold by means of concretely modifying PIPT to not only produce exemplary results in pragmatic trials, but to work as effectively and efficiently in proper healthcare clinics as dreamed.

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