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## Physical Therapy Review of Best Practices Based on Psychology

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PHYSICAL THERAPY REVIEW OF BEST PRACTICES BASED ON  
PSYCHOLOGY

BETHANY PAINTER

HONORS PROJECT

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## **I. Abstract**

Physical therapy is a field that is growing and changing constantly. For so long, it was assumed that physical healing should be the sole focus of physical therapy. While this is an important aspect of the rehabilitation process, there is so much more to it than that. The psychological trauma a person may experience following an injury can be just as challenging, if not more challenging to overcome than the physical repercussions of the injury. For this reason, it is important to take psychological healing into consideration, as well as physical healing when creating best practices for physical therapists. The following review assesses the existing literature that establishes the psychology of injury, the best practices in physical therapy and the best practices in physical therapy based on the psychology of injury.

## **II. Introduction**

When determining physical therapy practices, most physical therapists are taught to examine the physical elements of healing. When reviewing the curriculum at a wide range of schools with accredited doctorate of physical therapy programs, it was evident that psychology was not a major focus of these programs. The vast majority of programs require classes that focus on anatomy and physiology of the human body, and how the human body can be manipulated to provide physical healing. In fact, many programs do not even include a single course on how psychology affects the physical healing process (PTCAS, 2017). The mind and body are greatly connected, therefore, the psychology behind what someone is enduring after an injury is something that should be taken into consideration when working with clients in a physical therapy setting.

A study conducted in the Netherlands shows the importance of taking psychological healing into effect when treating patients. This study conducted by Rumpke (2015) found that of the patients who were attending physical therapy for healing from an injury, 30 to 50 percent of those patients had complaints that were unexplainable from a physical perspective. While these complaints may appear to be physical on the surface, they are often brought on by underlying stressors and may delay progress. The implications of this study display the importance of interdisciplinary collaboration. Professions such as social workers, psychologists, psychiatrists and other mental health professionals could be a beneficial resource to physical therapists who are treating these patients who have a response unexplained from a physical perspective (Rumpke, 2015). In recent years, many studies such as this one have been conducted to focus in on mental illness and its prevalence in our society. In response to patients needing more than just physical healing, professionals in the Netherlands have created a field they call psychosomatic physical therapy. This practice focuses on how a cycle of negative thoughts can have a negative effect on physical well-being. Through enhancing positive attitude awareness, they have given patients coping mechanisms that help them stay healthier and more relaxed in their everyday lives. Through the enforcement of these attitudes in physical activity, patients have been able to strengthen their physical and mental health (Shridhar, 2015). These practices have been highly successful in other countries who put an emphasis on the importance of mental health and could be transferred to physical therapy practices here in the United States as well.

For this review of literature, it is expected that practices which create an encouraging, hope-filled environment, focusing on the future of getting patients back to doing the things that they love, is the best environment. It is also expected that home-health physical therapy under the careful observation of a therapist or an outpatient clinic will be the best setting for success. In

order to determine this, a variety of articles reviewing the psychology of injury management will be reviewed. This will be combined with articles determining the most successful physical therapy practices. By combining these two topics, a conclusion can be drawn on what may be considered best practices in physical therapy based on the psychology of injuries.

### **III. Review of Literature**

#### Psychology of Injury

When patients begin attending physical therapy, they are faced with the treatment of an injury that has an impact on their quality of life. This impact could be minor, or major, depending on the extent of the patient's injuries and the percentage of disability caused by their injury. Just as each injury is unique, each patient's psychological response to their injury is unique. Some may experience minimal psychological effects, while others may experience severe feelings of depression or anxiety brought on by the loss of the ability to complete daily activities. Additionally, emotions brought on by concussions or Post-Traumatic Stress Disorder (PTSD) related to the accident leading to injury could have an effect on the patient's recovery process.

While there are a variety of causes of injury, Berger, Weinberk & Eklund (2015) explored five of the major causes of injury in athletes. The five main causes of injury they assessed included physiological, biomechanical, environmental, sociological and psychological. Physiological training is a result of improper exercise prescription and training. This is most common in younger people who are still in the early stages of growth and development. This may also be seen in elderly exercisers. This is usually the result of exercise performed at a very high intensity or too long in duration. Injury caused by improper movement when participating

in activity is considered to be biomechanical in nature. Individuals who do not appropriately treat smaller injuries that progress to larger injuries also fall into this category. Environmental factors are the result of poor decision making on where and when to exercise. These injuries are usually a result of climate-related injuries in participants of outdoor activities. Sociological injuries are the result of pressure from an outside source to participate in an activity that causes injury. This could include continuing to participate in sport on an injury through the encouragement of family, friends or coaches. This could also include enduring pain or injury in order to reach a goal. Finally, psychological injuries could occur based on personality factors, stress levels and predisposed attitudes. Studies have found that people who have low self-esteem or those who are overconfident are more likely to experience injuries (Berger, Weinberk & Eklund, 2015). These five causes of injury only suggest injuries in athletes. Additionally, injury occurs daily as a result of accidents and trauma in people who are not participating in physical activity. Regardless of how injury occurs, the psychological aspect that happens in patients can have an influential effect on their recovery process.

When patients have experienced injury, it is important to note if a concussion was sustained alongside the injury. Whether the injury was sports-related or the result of an accident, any time the head experiences impact or trauma, a concussion can occur. Even if the patient is experiencing treatment for the concussion and is allowed to participate in physical therapy, the effects of the concussion could play an impact on the patient's physical healing. A study conducted by Howell, O'Brien, Beasley, Mannix & Meehan (2016) revealed many of the symptoms resulting from a concussion. Five domains were assessed, including: somatic, vestibular–ocular, cognitive, sleep and emotional. While the first four domains will have a physical effect on the physical healing process, the emotional symptoms of a concussion may

have an effect on the psychological aspects. Emotional symptoms revealed by this study included being more emotional than usual, irritability, sadness, and nervousness/anxiousness. In participants who reported these symptoms, they reported symptoms to be more common 28 days after the concussion was sustained (Howell et al., 2016). This indicates that these emotions could still be having a negative effect on mood once the patients start their treatment for physical therapy.

Another psychological disorder that could have an effect on a patient's recovery is Post-Traumatic Stress Disorder, or PTSD. PTSD is "an anxiety problem that develops in some people after extremely traumatic events, such as combat, crime, an accident or natural disaster" (APA, 2018). The result of this could lead to flashbacks, nightmares, or anxious feelings about the trauma that disrupt the person's quality of life (APA, 2018). While this may not be as common among athletes, it is something to be aware of in patients that are recovering from injuries related to a variety of accidents. Research has shown that during their lifetime, 50% of woman and 60% of men will experience at least one traumatic event. As a result of these events, 6.4 to 6.8 percent of the population have PTSD (Pietrzaka, Goldstein, Southwick & Gran, 2011). PTSD mostly results in psychological symptoms; however, physical symptoms can occur as well. PTSD can result in a variety of emotional symptoms that are all grouped into three main categories: re-experiencing, avoidance/numbing, and hyperarousal. In addition to these emotional problems, physical problems such as poorer physical health-related quality of life, greater musculoskeletal pain, and cardio-respiratory, gastrointestinal, and general health complaints have been reported by patients suffering from PTSD (American Psychiatric Association [APA], 2000). These psychological and physical affects could affect a person's ability to adequately perform proper physical therapy treatment.



Depression is another mental illness that physical therapists should be able to recognize and take into consideration when working with patients. When patients have experienced a life-altering event, the results of this and the loss of the ability to do the things they love could lead them into a state of depression. In fact, Walsh & Abbott (2008) found that 19.6% of patients at one specific outpatient clinic were suffering from depression. A Modified Zung Self-Rated Depression Scale was used to determine which patients receiving treatment were experiencing symptoms of depression (Walsh & Abbott, 2008). With almost one in five patients experiencing depression, it is important that physical therapists understand the benefits of exercise for those patients who are suffering from depression. In a study conducted by Danielsson, Kihlbom & Rosberg (2016), these benefits were assessed in a physical therapy setting. It was discovered that patients who participated in exercise at a physical therapy facility reported having greater feelings of physical ability and liveliness. These feelings produced by their physical therapy treatment were able to off-set some of the emotions associated with their depression. Additionally, patients in this study reported feeling alive but not euphoric and needing people to be there to support them (Danielsson, Kihlbom & Rosberg, 2016). This indicates the importance of the therapist serving as the support system for those patients who are suffering from depression.

Additionally, physical therapists should watch for signs of anxiety when working with patients who have acquired an injury. Anxiety can be brought on for many of the same reasons a person might experience depression following an injury. Anxiety can stem from a person's insecurities and fears of not being able to perform everyday activities and how this will affect their quality of life. Exercise associated with attending physical therapy could be useful in alleviating some of this anxiety though. Many studies have been conducted that focus on the

effects of exercise on people suffering from anxiety. It has been found that both low and high-intensity exercises can decrease anxiety levels to below their baseline level. It is important to take into consideration that while exercising at a lower intensity, the participants did not see a decrease in anxiety during exercise, but following exercise, they saw the same drop in anxiety below baseline as those exercising at a higher intensity saw (Bixby & Hatfield, 2011). This is beneficial for physical therapists to take into consideration since most of their patients will be exercising at a lower intensity to promote healing.

### Physical Therapy Practices

When establishing the best practices in physical therapy, it is important to look at what practices have been successful at the current time and which have been unsuccessful. There are many variables that play into a successful physical therapy treatment outside of what exercises a therapist performs with their patient. Factors that indicate how a person feels about their treatment play a crucial role in the success of the program. It is also important for physical therapists to understand what factors encourage a patient to be successful so they can take these factors into consideration when creating a treatment plan for their patients.

One factor that has been studied to have an effect on patients' success is whether they are self-referred to a physical therapist or referred by a medical professional. One study that surveyed a large sample of patients receiving physical therapy found that 65 percent of patients were referred to physical therapy by a general practitioner, 15 percent of patients were referred by a medical specialist and 20 percent of patients were self-referred to physical therapy. This study found that there was a difference in the recurrence rate between patients who were self-referred and those who were referred by a medical professional. Those patients who were self-

referred tended to have more recurrent complaints about therapy and their injury than those who were referred by a medical professional. This study also found that those who were self-referred attended fewer treatment sessions than those who were referred by a medical professional. A final difference between patients who were self-referred and those who were referred by a medical professional was the exercise treatment. While exercise treatment for both groups focused on improving impaired body function, exercise treatment for those referred by their health care provider was more likely to be focused on improving limitations to activities (Barten et al., 2015). All of these factors are important for physical therapists to consider. By reviewing whether a patient is self-referred or referred by their healthcare provider, physical therapists may be able to tell what kinds of warning signs to look for so they can address these problems efficiently.

Another part of referrals that physical therapists should be aware of is which doctors are referring patients. A study was conducted among orthopedic surgeons to discover which surgeons found physical therapy to be beneficial. Among those surveyed, it was found that those who had been practicing for over 20 years found physical therapy to be less beneficial and therefore, they were less willing to prescribe it. These surgeons believed that home exercises could be just as beneficial as a patient going to exercise with an actual physical therapist (Dusik, Buckley & Robertson-More, 2013). Physical therapy is a newer field and is something that is still growing and changing as we learn more about it. These surgeons may not have learned the benefits of it when they were in school which could have an influence on their opinions of it now. For this reason, physical therapists should be aware of their prescribing doctor's opinions on physical therapy. If the doctor's opinions about the treatment method are evident when they

prescribe it to the patient, this could affect the patients' opinion of physical therapy going into treatment before they have the opportunity to develop feelings towards the treatment themselves.

There is a wide variety of physical therapy settings that are available for treatment. A study conducted by Slaney et al. (2014) reviewed patients' feelings about their treatment in various care facilities following injury. They found that most patients had mixed feelings about the hospital setting: few patients reported all positive experiences and few patients reported all negative experiences. Those who had negative comments about hospitals commonly reported the staff as "depersonalizing" due to the severe pressure the staff was under and some staff's thoughtless and inconsiderate attitude towards patients. There were also complaints that hospital staff was not responsive to complaints about the patient's pain or their needs and they did not communicate well with other health care providers to address patient's needs. The information found from patients' complaints of hospital staff helped researchers determine the kind of care patients desired. Patients wanted their healthcare providers to talk in terms that they understood and they wanted information given to them in a timely manner. This study also found the importance of social support in the recovery process (Slaney et al., 2014). All of this information is important for physical therapists to take into consideration. They should use patient reviews to create an environment that is more personal. They can do this by helping patients understand their injuries in terms that they understand, by working with other health care professionals to assist the patient and by giving the patient information in a timely manner. It is also important that the physical therapists ensure that the patient has a support system and that the therapist helps the patient find that support system if they do not have it. Having support plays a critical role in the emotional healing after an injury. This can be accomplished through a

support group, counseling or other people in the patient's life. Creating this personalized environment where the patient feels cared for is a beneficial part of the healing process.

Another factor that physical therapists should take into consideration when creating a treatment plan is at home exercises. Most therapists only see patients a few days a week so it is important that they send home exercises which can be practiced at home on the days patients do not attend a treatment session. While some patients are very diligent about completing their exercises, others rarely complete their exercises at home. One study conducted by Elliott et al. (2011) looked at patients who were given an eight-week training program to complete after being discharged from the intensive care unit. This study found that there was no significant correlation between recovery and physical ability when completing the home-based exercise program. It was concluded a factor in this could have been the fact that patients were not supervised, aside from three home visits by a physical therapist, which may have led to them not completing the exercises (Elliott et al., 2011). This is an important factor for physical therapists to note. When asking patients to perform home exercises, close monitoring of whether they are completing these exercises could affect their success rate. If the patient does not have a lot of supervision, and therefore does not complete the recommended exercises, they may not see the amount of benefit from exercise the therapist is expecting them to see.

Another study that assessed the use of home-based exercises was conducted by Brewer, Cornelius, Raalte, Tennen & Armeli (2013). Some of the results of this study contradicted the results of the previously mentioned study by Elliott et al. (2011). In the study conducted by Brewer et al. (2013), the compliance with home-based exercise prescription was tested. Of the patients tested in this study, there was a high adherence to the prescribed exercise treatment. As patients progressed further into treatment and the quantity of prescribed exercises decreased,

patients became more compliant. This study also looked at personal factors such as age, athletic identity, neuroticism, optimism, and pessimism. These personal factors did not have a significant effect on whether patients were likely to perform their exercises at home or not. This study did find, however, that when patients were stressed or had a negative mindset, they were less likely to be compliant with the prescribed home exercise treatment (Brewer et al., 2013). This information is beneficial for physical therapists to understand when creating an exercise plan for patients. This study indicates that there are still benefits to having patients complete exercises at home, however, therapists must understand that if patients are undergoing a lot of stress or have a negative mindset after their injury, they may not be as compliant with these programs. This further emphasizes the need for therapist involvement in the process, and follow up to ensure patients are completing these home exercises.

### Best Practices Based on Psychology

Best practices in physical therapy have been established but they do not always take into consideration the psychological factors discussed previously. In previous sections of this paper, it was made clear that concussions, PTSD, depression and anxiety could all be contributing factors to the recovery process of an individual recovering from an injury. The following section will analyze how physical therapists can create their exercise prescriptions with these factors being taken into consideration.

When creating a treatment plan for patients who have recently been through a traumatic event leading to injury, there is a myriad of factors that therapists should take into consideration. A study conducted by Tuyal-Mashiach et al. (2014) looked at the importance of the time immediately following the trauma on the recovery process. In the first couple weeks following a traumatic event, people are usually piecing together the details of the event. During this time,

the individual's story is usually developing and growing. The community surrounding the individual at this time can be extremely vital in shaping this story and how they progress through this story in the long term. Over time, the significance of this event may change for the patient. As the patient processes through what they have experienced, describing a narrative of the story may be a beneficial factor in the recovery process (Tuyal-Mashiach et al., 2014). This is an important aspect for physical therapists to take into consideration when working with patients who have experienced trauma. While it is not a physical therapist's responsibility to counsel the individual through this traumatic event, they do need to understand their role in the individual's natural healing process. They are a part of the community that surrounds an individual following the traumatic event and may help them recover from the injury. Traditionally, encouraging patients to talk about something not related to their injury was seen as a distraction, although this step in the healing process may substantially help patients who are struggling to cope with this trauma. Even if this process takes away from exercise time, it may be beneficial in the long term as it will result in psychological healing. If the individual is able to overcome this psychological obstacle it could ultimately benefit their physical healing as well.

In a longitudinal study conducted by Castillo et al. (2013), the researchers analyzed the relationship between depression, anxiety and chronic pain following a traumatic event. Patients' pain was recorded on a "present pain intensity" scale. These analyses were conducted 3, 6, 12 and 24 months following the event causing pain. The results from this study found that right after the event causing trauma, pain is able to predict the presence of anxiety and depression. The results of this study also found that at the beginning of the recovery process, there is not a significant correlation between anxiety and pain, however, as time goes on, the effect of anxiety on pain almost doubles (Castillo et al., 2013). This is yet another reason physical therapists need

to take anxiety into consideration when creating an exercise plan with patients. If patients are experiencing anxiety, they may have more complaints of pain during their treatment session. However, it is important to encourage patients to continue to push themselves through some of these smaller aches and pains, since exercise is known to have positive effects on anxiety (Bixby & Hatfield, 2011).

Another factor therapists should take into consideration when creating an exercise plan for patients is giving patients back a sense of purpose. In a narrative of two men's lives post-trauma conducted by Day & Wadey (2016), the motivating factors behind healing were examined. These two men were soccer players prior to their injury and it was determined that positive accommodation through sport was a large factor in determining post-traumatic growth. Using sport as a source of positive accommodation is beneficial since sport provides mastery experiences, enhanced relationships, corporeal understanding and enhanced life philosophies. Additionally, assimilation was found to play a role in resilience after trauma. When patients have a history with sport, challenges occur in the rehabilitation setting and sporting environment since it often reminds the patient of their life before their life altering event (Day & Wadey, 2016). Physical therapists should take studies like this one into account when creating a treatment plan for patients. Using reminders of the things that created meaning in life may motivate patients to push themselves through treatment. However, these things may also bring back negative feelings as they serve as a reminder of the things patients can no longer do. While it is beneficial for physical therapists to set goals with their patients, they should be aware of these triggers that could occur in a rehabilitation or sporting environment.

Physical therapists play a vital role in the community that helps patients recover from an event that leads to injury. In a study conducted by Claydon, Robinson & Aldridge (2015),



patients reported the importance of the physical therapist in their recovery process. Three major themes were indicated as motivators in the recovery process: getting back on their feet, getting the right help to get there, and regaining a sense of normality. It was also found that through regaining physical function, a sense of emotional well-being was restored. This may be a factor in why the patients in this study reported orthopedic consultants and physical therapists as having the largest role enabling them to help themselves. While many of the people who participated in this study saw rehabilitation to be their individual responsibility, physical therapists were the people that equipped patients with the tools to get back on their feet and care for themselves (Claydon, Robinson & Aldridge, 2015). This is important for physical therapists to consider when they are working with patients. While they may feel as though they play an insignificant role in the patient's life, only seeing them a couple times a week, they are a huge part of the recovery process. Through making each patient feel as though they are an individual and cared for, the results could be greater success for the individual in their treatment. While creating a proper rehabilitation plan is an important part of the recovery process, creating a relationship with them that makes them feel valued and comfortable can be just as beneficial as finding the right exercises.

Finally, creating a hope-filled environment is an important factor for physical therapists to take into consideration when establishing their physical therapy practices. A study conducted by Tutton, Seers & Langstaff (2012) looked at the importance of moving forward, finding a future and realistic hopefulness as a part of the rehabilitation process. Through moving forward, those who were struggling with the rehabilitation process could search for the things that brought meaning to their life. These things may have been lost in the psychological challenges brought on by their injury and its debilitating effects. In finding a future, patients were challenged to act

on these thoughts by moving towards the things that bring them meaning in life. Working towards these things can have a major impact on patient's psychological struggles with the rehabilitation process. Finally, realistic hopefulness allowed health care providers to facilitate emotional and physical progression by helping patients work between feelings of hope and despair (Tutton, Seers & Langstaff, 2012). All of these things are important for physical therapists to take into account when treating patients. It is especially important that physical therapists ensure the hope they are giving patients is realistic hopefulness. While they want to encourage patients to set goals and work towards the things in their life that bring them purpose and meaning, this is not always realistic for every patient. Some patients have debilitating injuries that will keep them from ever returning to the things they love. In these situations, it is just as important that physical therapists help the patient find hope in what their life ahead looks like.

#### **IV. Methods**

This project was completed in three steps: the proposal, the project and the oral presentation. This project began during the spring semester of 2017. With the help of the student's advisor, an idea was created for the project. An annotated bibliography was created that included sources the student could potentially utilize for this review. These sources were found using the BGSU library site. A wide variety of sources were found that looked at both the psychological aspects and the physical aspects affecting physical therapy. Each source included a citation followed by a short summary of the source and information from the source that could be useful for this project. A proposal was also created, including the research question, a small literature review,

proposed activity, methodology, and the expected results. This allowed the student and the advisor to have a better idea of what needed to be done to complete this project successfully.

For the final project, all of the proposed methodology was completed. This began with finding additional research to help support the research already included in the annotated bibliography. From there, an outline of the paper was created. This allowed the student to determine where all of the sources fit together and gave a better idea of where there were gaps in the literature. The student continued to review more articles until all of these gaps were filled. Finally, once the outline was complete, the paper was then created. The student went through each section and filled in information from the sources where appropriate to compile the paper. The research mostly fit into three main categories: psychology of injury, physical therapy practices and best practices based on psychology. This allowed results to be drawn on how all of these aspects fit together to create best practices in physical therapy based on the psychology of an injury. Edits to the paper were suggested by the student's primary advisor, and the advisor assisted the student in finding additional information to expand upon any areas where research was lacking.

For the oral presentation portion of this project, a defense was given. For the defense, a presentation was compiled with the help of the student's advisor. This presentation included a brief summary of each section in this paper. This created a visual while the student presented on the information found in their research.

## **V. Results**

The research compiled in this paper summarizes the best practices in physical therapy based

on the psychology of an injury. It was found that psychological issues such as concussions, PTSD, depression and anxiety have an effect that could influence a person's recovery. Concussions are found to affect a person's recovery process both physically and emotionally. Individuals who have sustained a concussion may be more emotional than patients with other conditions, and may experience enhanced feelings of irritability, sadness and nervousness/anxiousness (Howell et al., 2016). These negative effects in mood could contribute to an individual's outlook on injury treatment. PTSD is another psychological factor that could follow an event leading to injury and that could have an effect on the recovery process. Individuals suffering from PTSD may experience emotional problems, such as anxiety and flashbacks, that could have an effect on their healing process. PTSD has also been found to have an effect on the physical healing process through increasing musculoskeletal pain, and increasing cardio-respiratory, gastrointestinal and general health complaints (Pietrzaka, Goldstein, Southwick & Gran, 2011). Additionally, it was found that roughly 19.6% of patients were suffering from depression when they came in for physical therapy treatment (Walsh & Abbott, 2008), however, through participating in exercise in a rehabilitation setting, patients felt greater feelings of physical ability and liveliness (Danielsson, Kihbom & Rrosberg, 2016). Patients also reported needing people there to support them which indicates the importance of physical therapists serving as a support system, especially when working with patients who may be experiencing symptoms of depression. Finally, the results of physical therapy on patients suffering from anxiety was established. It was found that anxiety may stem from individuals not being able to perform all normal activities. Through exercising at a low-intensity, such as in a physical therapy setting, individuals often see a decrease in anxiety below baseline following exercise (Bixby & Hatfield, 2011).

When reviewing physical therapy practices, it was found that who referred the treatment can have an effect on the treatment. Patients who were self-referred commonly had more recurrent complaints about therapy and their injury and attended fewer treatment sessions than those who were referred by a medical professional (Barten et al., 2015). It was also found that many surgeons who had been practicing for 20 or more years found physical therapy to be less beneficial and were therefore, less likely to prescribe it (Dusik, Buckley & Robertson-More, 2013). These surgeons' opinions of physical therapy could affect an individual's perception and may lead to the patients being less compliant. Reviewing the source of referral is important for physical therapists because it may affect how the patient responds to treatment.

It was also found that the treatment site may have an effect on patients' success. While patients had mixed reviews on the hospital setting, some found it to be depersonalizing and the staff to be overworked. Overall, no matter what the site, patients seemed to want physical therapists to put their injuries into terms they could understand and information provided in a timely manner (Sloney et al., 2014). By creating an environment that is more personal, therapists are able to talk to patients to ensure they understand their injury and any questions they have regarding their treatment are addressed. This information should be given in a timely manner and should allow the patient to feel as though the therapist is part of their support system.

At home exercises are common when working with patients and can be helpful for patients who are home-bound or unable to come in for treatment. However, the downfall to this type of approach is that patients are less likely to complete these treatments and see the benefits of them if they are not being monitored (Elliott et al., 2011). For this reason, it is helpful for therapists to follow up with patients to ensure they are completing these treatments and they are able to get answers to any questions they have about how these exercises should be performed.

Patients were also less likely to complete their home-based treatment when they were stressed or had a negative mindset (Brewer et al., 2013) which further proves the importance of therapists being a support system to combat feelings of anxiety and depression that may come along with injury.

During the time following an injury, patients are often piecing together the events that have occurred. An important part of the natural healing process is shaping this story (Tuyal-Mashiach et al., 2014). For this reason, it is important that physical therapists encourage patients to talk about the events so they are able to create their story and experience natural healing. Along with supporting patients through their recovery in this way, therapists should also help give patients a sense of purpose. Through using activities that previously created meaning of life for patients as motivation, patients may be more driven to succeed in their treatment. However, therapists also need to be aware that these things may bring back negative memories of activities patients can no longer perform, therefore their mental state should be closely monitored throughout their treatment (Day & Wadey, 2016).

Finally, physical therapists play a vital role in the community surrounding a patient as they recover from injury. Patients reported orthopedic consultants and physical therapists as having the largest impact on enabling them to help themselves, through equipping them with tools to get back on their feet and care for themselves (Claydon, Robinson & Aldridge, 2015). For this reason, it is important that physical therapists are invested in the patients' treatment and create a relationship with patients that help them feel cared for during the rehabilitation process. It was also found that creating a hope-filled environment can play an important role in the healing process. In finding a future, patients were able to move towards goals that brought their life meaning. Therapists should surround patients with realistic hopefulness so they may move

towards realistic goals and see progress in their recovery (Tutton, Seers & Langstaff, 2012).

Therapists play an important role in helping patients create these goals and move toward them as they continue through the recovery process.

## **VI. Discussion**

The hypothesis of this study stated: it is expected that practices which create an encouraging, hope-filled environment, focusing on the future and getting patients back to doing the things that they love, is the best environment. It is also expected that home-health physical therapy under the careful observation of a therapist or an outpatient clinic will be the best setting for success. This hypothesis was able to be mostly accepted based on the literature collected in this review. The research article conducted by Tutton, Seers & Langstaff (2012) was an indication that a hope-filled environment is the most successful at returning patients to health. It was established that a patient's mental state can have an effect on their physical healing process. For this reason, it can be confirmed that through creating a more positive, hope-filled environment, patients will potentially see more progress in their physical healing in addition to their mental healing. It is also confirmed that patients will have more success under careful observation in a home-health or outpatient clinic, however, any setting can be a positive setting, as long as therapists are able to communicate with patients in terms they understand and information is provided in a timely manner (Sloney et al., 2014). The best practices section of the literature review also stresses the importance of a well-monitored environment (Dusik, Buckley & Robertson-More, 2013; Elliott et al., 2011). Home-health, while more personal and potentially beneficial, requires the therapists to ensure the patient is being more closely monitored. Home-exercises also are found to be more beneficial if the therapist is following up with patients and monitoring them closely.

Additionally, it was established that many patients see hospitals as being “depersonalizing” so receiving treatment through home-health or an outpatient clinic may give patients a better care experience (Sleney et al., 2014).

Strengths of this project, were in the confirmation that there is in fact a strong correlation between mental health and physical healing. Physical therapists play a large role in being a support system to patients who may be experiencing a variety of mental health struggles following an injury. Many patients may not have a support system who is understanding of the psychological challenges the individual is facing as a result of no longer being able to participated in the activities that brought their life meaning. For this reason, it is important that physical therapists have an understanding of these challenges so they are able to provide a hope-filled environment where realistic goals can be established and accomplished. By allowing patients to talk through the events leading to the injury, natural healing may occur. Through mentally healing from the event, patients may experience more physical healing as well. A more positive attitude and reduction of mental health symptoms may promote compliance to treatment as well as promoting less barriers to physical healing.

Another strength of this study is how well the results seemed to align with the student’s past field experience. Some physical therapists tend to connect very well with patients and provide a firm support system. From experience, these therapists are often the ones that see the highest success rates in their patients. Therapists who set realistic goals with their patients and remember these goals so they may help patients work towards these goals seem to also have more success when working with patients. Patients also seem to connect better with therapists who understand their goals and are helping them work toward them. This creates a more personal environment since the patient feels valued and as though they are not just another check



on the therapist's to do list. Finally, past experience in a variety of settings helps to confirm that outpatient and home-health settings are most likely a better environment for success. While these settings often have a limit on the number of patients they will accept, it is not uncommon for hospital employees in physical therapy to be overworked because other departments take on patients who could potentially be referred to physical therapy.

Some of the results were a little unexpected based on the students past field experience. One statistic that was especially surprising was that 19.6% of patients are suffering from depression in an outpatient setting (Walsh & Abbott, 2008). This means almost one in five patients are struggling with depression when they attend therapy. While it is not surprising that a lot of patients suffer from depression due to the consequences of their injury, this number seems higher than suspected. This could explain a very low compliance rate that is not uncommon to see in outpatient settings. If patients are suffering from symptoms of depression, this could be a factor in compliance. Along with this, it is surprising that some studies found that there was such a high adherence to home-based exercise plans (Brewer et al., 2013). From past experiences, it seemed very rare that patients completed their home-based treatments. They often found excuses for lack of participation such as being too busy or simply choosing not to do them. Additionally, Brewer et al. (2013) found that personal factors such as age, athletic identity, neuroticism, optimism, and pessimism did not have a significant effect on whether patients were likely to participate in home-based treatment which was surprising.

In the future, there could be a great benefit from conducting more research in this field. The importance of mental healing in correlation with physical healing could provide better results in a physical therapy setting. More research should be conducted on the benefits of equipping our physical therapy students with more mental health training. Since there are currently no

psychology classes required in most doctorate of physical therapy programs, it would be beneficial to see if adding a class or two into the curriculum better prepared physical therapists for the mental health problems they could potentially observe in patients. More research should also be done on the benefit of having mental health counselors on staff in rehabilitation settings. This is something that is not currently protocol, but if patients had the opportunity to talk to licensed mental health counselors about the feelings they had about their injury, an increase in inter-professional communication between these counselors and physical therapists could lead to better results in physical healing as well as mental healing.

## **VII. Conclusion**

In conclusion, there are many psychological effects that are evident in patients who have experienced a traumatic event leading to injury. Physical therapists play a large role in the community surrounding patients following trauma. It is important that they are aware of the psychological effects an individual may be experiencing so they may assist in addressing these problems, in addition to providing physical healing. Creating a personal environment, where patients can set realistic goals and imagine hope for their future could have a large impact on patients' recovery.

There is a great deal of research that still needs to be conducted to determine how physical therapists can most effectively incorporate mental healing with physical healing. Other countries have found ways to tie the two concepts together through practices such as psychosomatic physical therapy and other practices of that nature (Shridhar, 2015). If these practices could be expanded, there is potential to observe growth in the field of physical therapy in the near future. The mind and body are so interconnected; this is something that will likely help increase

physical healing as well. Physical therapists should be very aware of the mental effects of exercise and how they may make an impact on these effects as a patients completes the rehabilitation process.

## References

- American Psychological Association [APA] (2018). Post-traumatic stress disorder.  
Retrieved from <http://www.apa.org/topics/ptsd/>.
- American Psychiatric Association [APA] (2000). Diagnostic and statistical manual of mental disorders: DSM-IV-TR. American Psychiatric Association, Washington, DC.
- Barten, D. A., Swinkels, I. S., Dorsman, S. A., Dekker, J., Veenhof, C., & Bakker, D. H. (2015). Treatment of hip/knee osteoarthritis in Dutch general practice and physical therapy practice: an observational study. *BMC Family Practice, 16* (1), 1-8. doi: 10.1186/s12875-015-0295-9.
- Berger, B. G., Weinberg, R. S., & Eklund, R. C. (2015). *Foundations of Exercise Psychology* (3rd ed.). Morgantown, WV: FiT Publishing.
- Bixby, W. R., & Hatfield, B. D. (2011). A dimensional investigation of the state anxiety inventory (SAI) in an exercise setting: cognitive vs. somatic. *Journal of Sport Behavior, 34*, 307-324.
- Brewer, B. W., Cornelius, A. E., Raalte, J. L., Tennen, H., & Armeli, S. (2013). Predictors of adherence to home rehabilitation exercises following anterior cruciate ligament reconstruction. *Rehabilitation Psychology, 58*(1), 64-72. doi:10.1037/a0031297.
- Castillo, R. C., Wegener, S. T., Heins, S. E., Haythornthwaite, J. A., Mackenzie, E. J., & Bosse, M. J. (2013). Longitudinal relationships between anxiety, depression, and pain: Results from a two-year cohort study of lower extremity trauma patients. *Pain, 154*(12), 2860-2866. doi:10.1016/j.pain.2013.08.025.

- Claydon, J., Robinson, L., & Aldridge, S. (2015). Patients' perceptions of repair, rehabilitation and recovery after major orthopaedic trauma: A qualitative study. *Physiotherapy, 103*(3), 322-329. doi:10.1016/j.physio.2015.11.002.
- Danielsson, L., Kihlbom, B., & Rosberg, S. (2016). "Crawling out of the cocoon": Patients' experiences of a physical therapy exercise intervention in the treatment of major depression. *Physical Therapy, 96*(8), 1241-1250. doi:10.2522/ptj.20150076.
- Day, M., & Wadey, R. (2016). Narratives of trauma, recovery, and growth: The complex role of sport following permanent acquired disability. *Psychology of Sport and Exercise, 22*, 131-138. doi:10.1016/j.psychsport.2015.07.004.
- Dusik, C. J., Buckley, R. E., & Robertson-More, C. (2013). Orthopedic surgeon perspectives on appropriate referral of trauma patients to physical therapy (PT). *Archives of Orthopaedic and Trauma Surgery, 133*(5), 603-608. doi:10.1007/s00402-013-1706-9.
- Elliott, D., Mckinley, S., Alison, J., Aitken, L. M., King, M., Leslie, G. D., . . . Burmeister, E. (2011). Health-related quality of life and physical recovery after a critical illness: a multi-center randomized controlled trial of a home-based physical rehabilitation program. *Critical Care, 15*(3). doi:10.1186/cc10265.
- Howell, D. R., O'Brien, M. J., Beasley, M. A., Mannix, R. C., & Meehan, W. P. (2016). Initial somatic symptoms are associated with prolonged symptom duration following concussion in adolescents. *Acta Paediatrica, 105*(9), e426-e432. doi:10.1111/apa.13486.
- Pietrzaka, R. H., Goldstein, R. B., Southwick, S. M., Gran, B. F. (2011). Prevalence and axis

- I comorbidity of full and partial posttraumatic stress disorder in the United States: Results from Wave 2 of the National Epidemiologic Survey on Alcohol and Related Conditions. *Journal of Anxiety Disorders*, 25 (2011), pp. 456-465, 10.1016/j.janxdis.2010.11.010.
- PTCAS (2017). *Program Prerequisites*. Retrieved from <http://www.ptcas.org/ProgramPrereqs/>.
- Rumke, M. (2015). Unexplained physical complaints in everyday physical therapy practice in The Netherlands. *Physiotherapy*, 101, 1302-1304. doi:10.1016/j.physio.2015.03.1221.
- Shridhar, U. (2015). Management and prevention of negative emotions by introducing positive attitude awareness (PAA) technique in psychosomatic physical therapy. *Physiotherapy*, 101, 1395-1397. doi:10.1016/j.physio.2015.03.1343.
- Slaney, J., Christie, N., Earthy, S., Lyons, R. A., Kendrick, D., & Towner, E. (2014). Improving recovery—Learning from patients' experiences after injury: A qualitative study. *Injury*, 45(1), 312-319. doi:10.1016/j.injury.2012.12.025.
- Tutton, E., Seers, K., & Langstaff, D. (2012). Hope in orthopaedic trauma: A qualitative study. *International Journal of Nursing Studies*, 49(7), 872-879. doi:10.1016/j.ijnurstu.2012.01.013.
- Tuyal-Mashiach, R., Freedman, S., Bargai, N., Boker, R., Hadar, H., & Shaley, A. Y. (2014). Coping with trauma: narrative and cognitive perspectives. *Psychiatry*, 67(3), 280-293.
- Walsh, R. M., & Abbott, J. H. (2008). Screening for depression in a musculoskeletal outpatient physical therapy clinic: Point prevalence and comparison of two instruments. *Journal of Back and Musculoskeletal Rehabilitation*, 21(3), 171-174. doi:10.3233/bmr-2008-21304.