Annotated Bibliography


This article titled, “Psychological Approaches to Treatment of Post-Concussion Syndrome: A Systematic Review” looked at psychological treatment from many angles. This piece included information from forty-two different studies and came to some surprising conclusions. It starts with an introduction which explains just how complicated it is to study the wide variety of “physical, cognitive and emotional symptoms complained of by patients in the aftermath of a mild traumatic brain injury” (p. 2). This particular article then discussed one perspective of researchers who believe that the severity of the symptoms patients feel after a mild traumatic brain injury is based off of a “complex interplay of biological, psychological and social factors which include prior health, life stressors and compensation/litigation issues” (p. 2). They follow then with their reasoning for looking further into this topic, which was due to the benefits of using cognitive brain therapy in other ‘functional disorders’ and their curiosity of its effects on patients with mild traumatic brain injury. Throughout their research they found that in ten of the studies they researched, three randomized and seven non-randomized, all ten came to the conclusion of positive effects due to cognitive brain therapy. Opposing to multiple other research, they found that in the studies they included, treatments of MTBI’s, such as education and reassurance, were found to be ineffective and that “the evidence to support its usefulness had been perhaps overstated” (p. 8). They also concluded that there is not enough evidence at the present time to prove psychotherapeutic and relaxation techniques to be effective either. They claim and stress the need for more research to be done on cognitive brain therapy due to their high rate of success in the studies they researched. Overall, this article, though taking a different viewpoint than other studies, agrees with the idea of cognitive therapy.


In this article titled, “Acute Relationship between Cognitive and Psychological Symptoms of Patients with Mild Traumatic Brain Injury” the researchers aim to “measure acutely, via formal neuropsychological assessment, the post-concussive complaints and the psychological and cognitive status of patients with MTBI” (p. 1). In order to do this they looked at 59 patients who were diagnosed and were experiencing cognitive, psychological, and physical impairments due to MTBI. Depression and anxiety was one of the main focuses of this study. They found that there was a correlation between anxiety and depression in patients suffering with post-concussive
symptoms. There was also a correlation between those patients who had previously experienced psychological precedents. They looked at factors such as divorce rate and vocational status. They found that the patients who had more stressful jobs and the patients who were divorced had higher levels of anxiety and depression than their opposites. They also found that these patients also had lower cognitive function rates than those who did not have previous psychological history. “Clinicians and administrators need to consider offering psychological support by trained psychologists. Brief psychological therapy would probably be effective in reducing the intensity of perceived post-concussive symptoms and lead to a more favorable outcome” (p. 11). The fact that these patients who had previous psychological history had such a significant impact on the levels of depression and anxiety shows simply the necessity and need for psychological research in this area in order to prepare people for situation like this. Also, by showing the severe impact prior to an incident, it just proves how much a necessity it is to focus on psychological treatment post accident. This article is important to my research because it agrees with my own thesis and it shows the direct impacts MTBI have on the psychological aspect of a patient.


In the article titled, “Mild Traumatic Brain Injury: Lessons Learned from Clinical, Sports, and Combat Concussions” it discusses the relationship between Concussions experienced in different areas of people’s lives. It shows how research from sports concussions is being used to in military situations to learn more about concussions from things such as bomb blasts. Even though researchers have learned a lot about how multiple concussions have affected the brain, it explains how “much is still unknown about the impact of multiple blast injuries. This article is organized neatly into eight parts that discuss different areas of their research. To begin, the introduction gives information regarding the science of brain injury as a whole and mentions historical facts such as, “As early as 1962, Symonds made the observation that any concussion, no matter how mild, may result in permanent neurologic impairment”(p. 1). It also gives background on the “SLAM” program where it discussed how they use sports as a model for research on concussions. This article is then followed by two sections discussing how “Return to Play” rules in sports, are now being transferred and used in military situations in order to “Return to Duty”. SLAM testing is also being introduced into the military with things such as baseline testing. The following, and most important section discusses the treatment of both post concussion syndrome and post traumatic stress disorder in order to show the overlap and what treatment is successful. Hopefully this research will lead to new ideas about treatment. Cognitive remediation is one of the most successful in this article. It states treatment like this will, “provide increased coping behaviors, teach skills to prevent relapse, and cope with the feelings of loss related to their decreased functioning” (p. 4). Overall this article in important because it shows how even in higher degrees of concussions, when looking at a ball to the head versus a bomb, that the emotional side of a concussion is a very successful treatment option that needs to be looked more into.

This article, titled “Treatment of Post-Concussion Syndrome Following Mild Head Injury” focuses on the specific data referring to the treatment of post concussion syndrome. One of the most common treatments of post concussion syndrome is the use of anti-depressant medication such as Zoloft or Xanax which have been effective in reducing the symptoms. Also, serotonin reuptake inhibitors... are effective therapies for anxiety and headache as well as depression” (p. 830). Anxiety, headaches, and depression are all major symptoms of post concussion syndrome. “Physicians refer about 50% of their PCS patients for neuropsychological testing, and about 40% for psychological treatment” (p. 831). This also provides information on studies that included treatments that use education, reassurance of prognosis, and resumption of activities, which showed high rates of success when compared to usual treatments. The conclusion of these researchers is that patients who undergo psychological treatment showed improved symptoms of post concussion syndrome. This research uses its statistical analysis of medication to prove that psychological treatment is very important in patients with brain trauma like concussions. This proves that more needs to be done in the research field when looking at psychological treatment. This is important to my research because it shows how important treating the emotional side of a concussion really is. This article was very organized and efficient in the information portrayed. It gave enough information and used tables to give sufficient evidence to prove its theory that psychological treatment is extremely successful. This article may be a little out of date since it was published in 2001, however in the testing being done in this research, time is not a factor. The plain truth is the treatment given is the same, and the medication given are still current medications used in today’s medicine.


This article titled, “Neuropsychological Evaluation in the Diagnosis of Management of Sports Related Concussion”, discusses neuropsychologist’s role in diagnosing and treating athletes who suffer from a sports related concussion. To start off, background is given about the statistics of sports related concussions, concluding to football being the highest for males and soccer being the highest for females. It then continues to mention the signs and symptoms of a concussion and that due to the fact that most athletes who receive concussions do not lose consciousness, that the rate of concussions goes unnoticed. It then talks about how neuropsychologists developed the baseline testing program in order to better test for concussions and to see the progress in the patient. This is then followed by information that discussed the recovery of a patient with a concussion. The final and most important part of this research article discusses how every athlete is different and each concussion needs to be treated and managed individually. It stresses how important this is especially in young athletes who suffer concussions as their brain is still developing and may have a greater impact on the patient. I agree with this article about how not enough research is being done on concussions especially with young athletes (athlete before the high school level) and how there is a lack of research even for athletes in high school. It is important that research is done early because concussions can lead to very serious affects on a person’s life. This article is important to my research because it stresses the idea that concussions need to be treated individually and how neuropsychologists are key people in the recovery of a patient. Concussions are very serious and so it is important to have a neuropsychologist as a part
of the treatment because the psychological side of treatment is one of the most important parts of recovery.

***Norris, J. (2014). White Matter Changes Due to Head Impact in Collegiate Contact Sport Athletes.***

In this article, it describes three studies that focus specifically on the impact head trauma has on the white brain matter of the brain. The first study discusses cognition and is called, “Effect of head impacts on diffusivity measures in a cohort of collegiate contact sport athletes”. This research, done at Dartmouth College, showed the damage done to the Corpus callosum, amygdala, cerebellar white matter, hippocampus, and thalamus after one season. It proved that athletes that play contact sports, or sports with more head contact, have more damage to the white brain matter. The second study focused on recovery time is titled, “Persistent, Long-term Cerebral White Matter Changes after Sports-Related Repetitive Head Impacts” and showed that even players who were not diagnosed with concussions suffered damage to the brain. Specifically, the research showed damage to the corpus callosum. The third study titled, “Detection of Central White Matter Injury Underlying Vestibulopathy after Mild Traumatic Brain Injury” focused on Vestibular and Balance. It showed the direct correlation with balance problems and the white brain matter damage done in athletes. This research is important because it shows the connection between concussions and the white brain matter damage done as a consequence. Its important to my own research because the white matter regions of the brain affected in these studies are also closely related to the emotional and fear centers of the brain. By studying more on how damage is done, it could lead to better treatment options for athletes. This article was well organized and was clear and precise in the information it was trying to give out. Overall, I feel like this article could go a little more in depth.


In this article titled, “Cognitive Behavioral Therapy and Persistent Post-Concussional Symptoms: Integrating Conceptual Issues and Practical Aspects in Treatment” focuses on the difference and impact that Cognitive Behavioral Therapy has on patients that suffer from concussions and MTBI. This piece starts off with an introduction of past research on this subject. It states that it has been argued in this field about to what extent do “persisting direct effect of traumatic brain injury are primarily responsible for these persistent post-concussional symptoms as opposed to other ‘psychological’ pre-, peri-, and post-injury variables”(p. 2). It also discusses the debate about the “treatability” of this kind of injury. Together these two points show how complex this issue really is. It then continues by referring to other studies that point to inconclusive, positive, and negative research on this topic, which in turn furthers complicates the issue at hand. This article then discusses the issue of comorbidity and how depression seems to increase the severity of post-concussion symptoms. It then follows this by digging into the psychological side of MTBI and discusses how “cognitive-behavioral mechanisms play an important role in the treatment and maintenance of post-concussive symptoms” (p. 7). This study states that the “more individuals with more severe TBI have shown strategies such as avoidance, worry, self-blame and wishful thinking to be associated with worse outcome” (p. 7). This just shows how important psychological education and treatment could easily affect the recovery of
patients with MTBI. This just goes to show that “cognitive-behaviour therapy (CBT) has provided models and methods to treat a range of problems associated with PCS including depression and anxiety, sleep problems, chronic fatigue and pain” (p. 8). This article is successful in addressing the idea of cognitive therapy and is important to my own research because it shows how successful psycho-education is in these kinds of cases.


This article titled, “A Systematic Review of Psychological Treatments for Mild Traumatic Brain Injury: An Update on the Evidence” addresses the issues and lack of research on specific treatments such as cognitive rehabilitation programs. This article seemed a little off balance as it started off by mentioning and stressing the need for psychological treatment in patients with Mild Traumatic Brain Injuries. However, by the end of the article it states, “The research evaluating the effectiveness of cognitive remediation for MTBI remains inconclusive. This article breaks down its information effectively giving the methods of the study and the rigorous process researchers did in order to control the experiment, the methods used, and also the limitations the researchers found in their study. It includes citations from many sources showing the depth of their research. It also includes helpful tables and appendix information to help understand the complexity of the research done by there particular researchers. The problem these researchers found was that due to the variation of the MTBI patients it was hard to see whether this type of therapy was extremely successful or not. It also mentions that the evidence so far in this research field shows that there may be some improvement by using this type of treatment, however researchers struggle with selecting MTBI cases specific to this cause. This article is important because it gives a different perspective on the idea of psychological treatment for patients who suffer from MBTI or concussions. If anything, this article gives off the notion that more research in this specific field in desperately needed. As shown single handedly by this article, there are many issues that need to be addressed when looking at the treatment of this kind of injury. The symptoms of this type of injury are very severe and the lacking research in this field is an issue.


This article, titled, “Effect of Head Impacts on Diffusivity Measures in a Cohort of Collegiate Contact Sport Athletes” discusses one study of athletes at a NCAA Division 1 school. Their objective in this study was to focus on the effects impact has on athletes who receive multiple head impacts over a particular season. In this case they studied football and hockey players as well as other noncontact sport athletes. In their study their methods included tests wearing specialized helmets that recorded “the acceleration-time history of the head following the impact” (pg. 2). In this particular study they found a severe difference especially in the corpus callosum. The corpus callosum, being made up of white matter, is one of the important regions of the brain that control the emotional state of a person. By this idea, we can draw the conclusion that the more impacts an athlete
withstands, the more severe the injury. And the more severe the injury, the more help for emotional and physical recovery is needed. In this sense, this article stresses the importance of attending to the post-concussion symptoms and treatment.


This article titled, “Persistent, Long-Term Cerebral White Matter Changes after Sports Related Repetitive Head Impacts” is another study that looks at the impact of repetitive head impacts “RHI” have on the white matter of the brain. They had three main objectives they focused specifically. They wanted to “characterize the magnitude and persistence of RHI-induced white matter changes… determine their relationship to kinematic measures of RHI… [and] explore their clinical relevance” (pg. 1). In this study, they focused on ten NCAA Division III schools. When compared to other similar studies, that merely focuses on one school, this study covers a more wide range of athletes, and can be considered a more useful and successful trial. In this study, they tested their athletes three times over the course of their seasons. They found a persistent course of change in the white matter of the patients each time they were tested. This study also found a correlation with the in “serum ApoA1 and S100B autoantibodies” (pg. 4). One major point brought about by this case is the fact the lack of recovery between repetitive head impacts, though individually not concussions, can add up and accumulate and effect the brain in the same ways that one hard hit a concussion can cause.


This article, “Detection of Central White Matter Injury Underlying Vestibulopathy after Mild Traumatic Brain Injury” focuses on the effect on the vestibular and balance portion of patient who suffer from Mild-Traumatic Brain Injuries. This trial included a multitude of varying patients with different symptoms as well as control groups who did not seem to show signs of vestibular or balance abnormalities. When tested over the course of the study, they saw significant differences in the neurocognitive tests scores. They specifically saw great impact in the cerebellum and fusiform gyri portions of the brain. Another significant conclusion was the fact that these findings, “support the hypothesis that posttraumatic vestibulopathy has a central axonal injury component” (Pg. 5). It can be determined from this study that there is a definite connection between the symptoms and the area of the brain that is injured. This article agrees with the conclusion of multiple other articles.


In this article, titled, “Mild Traumatic Brain Injury Screening, Diagnosis, and Treatment” it focuses on the specific process that patients go through as it picks apart the screening, diagnosis and treatment stages of people of the military community who suffer from combat related injuries. One of the major downsfalls of this report is the reliance on self-
reporting of concussions. This is considered a downfall because it fails to factor in the hundreds of other cases that are not reported. One way the military is attempting to minimize this, is by making certain situations mandatory for concussion evaluations. These include, "Any service member in a vehicle with a blast event, collision, or rollover... any service member within 50 meters of a blast... anyone who sustains a direct blow to the head... command directed-such as, but not limited to, repeated exposure" (pg. 68). This article, similar to others, stresses the need for focus on treatments on all aspects of the injury, physically and psychologically. One question this article asks, is for more research on the difference between “blunt and blast TBI” (pg. 73). This article points out many similar problems other research has. Due to the lack of self reported concussions, it hard to adjust research to actual proportions.


In this article, titled, “An Integrated Review of Recovery After Mild Traumatic Brain Injury (MTBI): Implications for Clinical Management”, it discusses the most recent breakthroughs in the science field on the study of mild traumatic brain injuries. As discussed in the introduction, brain damage such as these ones, are very sensitive and hard to study. There are still ongoing debates about the course of treatment for these patients. This piece, like others, does not focus necessarily on athletes specifically, but all MTBI patients as well, such as in the military. This article mentions the pattern of recovery in average patients. They discuss how “studies indicate a pattern of gradual symptom recovery within the first 1 to 2 weeks after MTBI in the overwhelming majority of cases” (pg. 5). This article also takes a different approach towards athlete concussions. This article almost takes a bias against sports related injuries as if they are not important. They state that the number of cases of persistent symptoms over a month after injury have most likely been inflated; a majority of these kinds of cases do not last longer than a month. This article also comes to the conclusion that there are many prior factors that can prolong symptoms. Things such as unstable relationships and lack of social support are just two of the many pre-occurring situations that lengthen the time of recovery. This article as is pro-neuropsychological treatment.


This article, titled, “Current Recommendations for the Diagnosis and Treatment of Concussion in Sport: A Comparison of Three New Guidelines” discusses the three new concussion guidelines from three different sources about the process of medically dealing with concussions. These three schools of thought were developed by the American Medical Society for Sports Medicine, The American Academy of Neurology, and the Zurich Consensus. Each specifies in detail the process of diagnosis and recovery. Through the use of a table, it compares side by side the differences between the three studies. It discusses points such as the actual definition of a concussion, the risk factors, signs and symptoms, the actual diagnosis process, imaging studies, balance testing, and a lot more. While in
some of the areas overlap ideas, some are different from each other. This information as a whole, however, does include a lot of information mentioned in other studies.