

## **TACKLED - THE IMMERSION OF SOCIAL WORK PROFESSION INTO THE REALM OF HIGH COLLISION SPORTS**

**Tiffanie-Victoria Jones**

Howard University School of Social Work

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E-mail: tvjones@bison.howard.edu

### **—Abstract —**

Imagine a day when social work is tackled by high collision sports. Athletes actually seek services from social workers because social work profession is thoroughly immersed in the realm of these sports. Presently, that image is just that – a remote idea that, if realized, would alter the landscape of the field of mental health, for the benefit of professional athletes who play high collision sports. Undergirding this paper is a case study of a professional athlete who experienced the worst case of sports-related brain damage presently documented. This paper includes a detailed analysis of social work core values as applied to athletes. As well, mental illness and psychosocial factors, specific to athletes is analyzed. Ultimately, this paper seeks to explore the social workers' role in serving the mental health needs of an unconventional clientele – professional athletes in high collision sports.

**Key Words:** *athletes, social work profession, mental illness, early-onset dementia*

**JEL Classification:** Y80

### **1. INTRODUCTION**

In June 2007, professional wrestler, Chris Benoit, asphyxiated his wife and son, and then hanged himself (Garber, 2009). Benoit's brain was examined by the Sports Legacy Institute after the double-murder suicide, and the examination showed profound dementia. The dementia is determined to have contributed to the killings. Neurosurgeon, Julian Bailes, chair of neurosurgery at West Virginia University, suggests that Benoit's dementia would correlate with the nature of his specific sport – professional wrestling – and the consistent head trauma he experienced over his career (Cajigal, 2007). This particular dementia found in

athletes – which is distinguished from Alzheimer’s disease in the elderly – is called chronic traumatic encephalopathy (CTE).

“CTE, a progressive neurodegenerative disease caused by repetitive trauma to the brain, is characterized by the build-up of a toxic protein called tau in the form of neurofibrillary tangles (NFTs) and neuropil threads (NTs) throughout the brain” (DiGravio, 2009:para. 2). The condition is uncommon in the general population and occurs, primarily, in athletes who incur repeated trauma to the head without allowing the brain to fully recover (Talan, 2008). In 1957 renowned neurologist, MacDonald Critchley revealed that the progressive nature of the illness contributes to its debilitating effects. It is irreversible and advances steadily (Ames & Boyle, 1986). Since persistent head trauma is the underlying cause of CTE, athletes who experience frequent concussions through high-collision sports are at great risk for developing and experiencing the tremendous effects of the condition. According to Cantu et al. (2007) as cited in Cajigal, 2007, Benoit “had by far and away the greatest amount of tau protein accumulation in his brain, a marker of brain trauma” (para. 2). Loss of executive functioning leads to loss of inhibitions (2007), thus potentially, culminating in erratic behavior, in Benoit’s case, murdering his family and himself.

## **2. MENTAL HEALTH, FAMILY, SOCIAL WORK IMPLICATIONS, AND RISK/PREVENTATIVE FACTORS**

### **2.1. Chronic Traumatic Encephalopathy**

Chris Benoit’s case is not isolated. Other athletes and their families have experienced the debilitating effects of CTE. This mental illness was first noted by pathologist Harrison S. Martland in 1928 as a syndrome characteristic of boxers who took considerable head punishment (Cantu, 2007; Erlanger et al., 1999; Kain, 2009; & McCrory et al., 2007). Such fighters displayed an uncharacteristic tilting of the head, tremors, a confounding gait, Parkinsonian facial expressions, backward swaying of the body, and noticeable mental deterioration that occasionally required institutionalization (Ames & Boyle, 1986 & Kain, 2009). This syndrome, originally termed as “punch drunk” was characteristic of boxers who took substantial head punishment (Cantu, 2007). Martland suggested that approximately half of all veteran professional boxers were diagnosable for the condition (Clancy, 2006). At that time, Martland's theory was unsubstantiated by scientific data (Ames & Boyle, 1986). Martland is uncontroversially credited as the first person to describe the clinical syndrome of CTE, and in 1969 A. H.

Roberts echoed the seriousness of persistent brain damage in boxers. However, in 1973 it was Corsellis et al. who first conducted a study of this condition on 15 deceased championship boxers; through his study, he identified the neuropathology of this syndrome (Cantu, 2007).

The increasing psychological disturbances and diagnosis of CTE in these athletes has alarmed the sports community. Continuing research in this area has illuminated the neuroscience aspects of this illness, but this disease implicates several psychosocial and mental health concerns. American social workers, whose profession is virtually absent in the literature regarding this population, are adept to address the psychosocial and mental health needs implicated by this disease and its' precursors, concussion and post-concussion syndrome. The question now arises: what is the role of the social worker when such a population is unique to the social work profession?

## **2.2. Social Work Application**

American social work clientele is diverse; included are ethnic minorities, religious minorities, women, children, the elderly, those with substance abuse disorders, those who have mental illness, the poor, and a host of other disenfranchised groups (Gill, 2008). However, one segment of the population that is unlikely to be described as social work constituencies or be included in social work research is high collision athletes. This may be due in part because athletes possess unusual physical prowess and may have social worth, notoriety, and financial privilege (2008). Despite such perceptions of athletes, the nature of their work environment characterized by high collision and forceful impact, may force them into social work constituencies. These may include those who have mental illness. Athletes in high collision sports, namely football, boxing, soccer, and professional wrestling are at exceptional risk for developing mental illness (Ashman et al., 2006; Covassin et al., 2008; Erlanger et al., 1999; Fazio et al., 2007; Guskiewicz et al., 2003, Guskiewicz et al., 2007; Heilbronner et al., 2009; Kain, 2009; King, 2003; , Majerske et al., 2008; McCrory et al., 2007; Moser et al., 2007; Schoenhuber & Gentilini, 1988; & Schwenck, 2000).

Considering that this special population faces many complex concerns that are regularly addressed in the social work field, such as mental illness, substance abuse, family discord, and women and child welfare, one must question why this population is not clearly embedded within social work clientele. Though athletes are rarely considered as social work constituents, denying them service or

ignoring their unique needs because of their otherwise privileged status belies the core values of the profession. “The mission of the social work profession is rooted in a set of core values. These core values, embraced by social workers throughout the profession’s history, are the foundation of social work’s unique purpose and perspective: service, social justice, dignity and worth of the person, importance of human relationships, integrity, and competence” (Code of Ethics, 1998). Specifically, the values, service, dignity and worth of the person, and importance of human relationships, and the code of ethics addressing advocacy and evaluation and research are implicated with regard to high collision athletes who have mental illness.

### **2.3 Mental Illness Implications**

Numerous mental health implications and psychosocial disruptions exist with regard to athletes who experience dementia as a result of concussions. “There are two-dozen mental health symptoms of CTE, including memory disturbance, confusion, gait disturbances or falls, speech abnormalities and mood problems” (Talan, 2008:12). As cited in Kain, 2009, Omalu et al., 2007, examined the brains of three deceased football players to reveal a similar finding. All of these athletes “presented clinical symptoms of sharply deteriorated cognitive function and psychiatric symptoms such as paranoia, panic attacks, and major depression” (Kain, 2009:698).

Permanent brain damage through CTE is linked to early-onset dementia and considered a precursor to Alzheimer’s disease. These athletes enter the aging population much sooner than males their age. The literature is saturated and consistent on this issue. Guskiewicz et al. (2008) found that dementia-related symptoms are a result of repetitive concussions in professional athletes (Covassin et al., 2008 & De Beaumont et al., 2009). In a collaborative effort, Weir, Jackson, and Sonnega of the University of Michigan Institute for Social Research and the NFL conducted a study, consisting of 1,063 retired NFL athletes; they found that 6.1 percent of participants over age 50 received a diagnosis of dementia, Alzheimer’s disease, or another memory-related condition (Weir, Jackson, & Sonnega, 2009). The Center for Study of Traumatic Encephalopathy, located in Boston, examines the brains of deceased athletes and has discovered dementia in numerous athletes (Miller, 2009). At present, they have identified more than 30 cases of sport-related dementia in athletes across the sports of football, boxing, wrestling, soccer, and other high collision sports (Chin, Jayarao, & Cantu, 2011). De Beaumont et al. observed an earlier onset of Alzheimer’s disease in the

concussed retirees than in the general American male population (2009). According to Dr. Barry Jordan, director of the Brain Injury Program at Burke Rehabilitation Hospital, though athletes who sustain numerous head traumas may show no immediate evidence of long-term damage, they still are at great risk for having neurological problems as older adults (Talan, 2008). “TBI has been identified as a potential risk factor for the occurrence (or early expression) of neurodegenerative dementing disorders, including mild cognitive impairment (MCI), Alzheimer disease, and Parkinson syndrome” (Guskiewicz et al., 2007:904). A study conducted by Bailes and Guskiewicz (2007) found that athletes who received three or more concussions were five times more likely to develop earlier onset of Alzheimer’s disease; additionally, they were three times more likely to develop considerable memory problems (Cantu, 2007). CTE is cited as the most robust environmental factor contributing to Alzheimer’s disease in athletes (De Beaumont et al., 2009).

Besides dementia and early entrance into the aging population, athletes who have CTE experience a number of other psychosocial disturbances, including co-morbidity and difficulty re-entering the normal population. Ashman et al. (2006) have found that psychosocial factors are a function in the development and persistence of mental health disorders after brain injury. Ashman et al. found that “other frequent psychiatric disorders after injury include substance abuse, ranging from 5 – 28%, posttraumatic stress disorder (PTSD), with prevalence rates ranging from 3 – 27%, other anxiety disorders, which affect from 3 – 28% of persons with TBI and personality disorders” (2006:1001). Researchers (Ashman et al., 2006 & King, 2003) also found that though mental illness may present alone, many athletes experience co-morbidity of psychiatric disorders, including depression, anxiety and substance abuse, after they have developed brain damage. The combination of co-morbid disorders present challenges for athletes when trying to reintegrate into the normal population once their careers have ended due to CTE (Ashman et al., 2006).

In addition to the aforementioned mental health concerns, brain injury was found to be a significant risk factor for developing chronic depression (Guskiewicz et al., 2007). Along with dementia, depression was the most cited psychological disturbance of athletes who have had CTE (Ashman et al., 2006; Guskiewicz et al., 2007; Kain, 2003; McCrory et al., 2009; & Schoenhuber & Gentilini, 1988). Guskiewicz et al. (2007) characterized depression as reduced ability to concentrate, fatigue, insomnia, anxiousness, frequent headaches, and indecisiveness. Within the first year of head injury, the prevalence of depression

ranges from 6% in mild cases to 77% in more severe cases (2007). This statistic is consistent with findings presented by Ashman et al. (2006). Kain (2003) found similar results. By extension of depression, research also showed that suicide rates increase when an athlete is diagnosed with both post-concussion syndrome and depression. “Individuals who have experienced a loss of consciousness are four times more likely to attempt suicide than those who have not” (Ashman et al., 2006:1001).

## **2.4 Impact on the Family**

Another implication for social work is the impact of dementia on family members and other loved ones. The athlete and his loved ones reap the devastating consequences of dementia (Ashman et al., 2006). The most common psychosocial correlate between brain injury and depression is the disturbance of social relationships (Guskiewicz et al., 2007). Caregivers, friends, and coworkers tend to bear the burden on long-term care of the athlete (2007). Families must endure the burdens, stress, and sometimes, depression, caused by drastic changes in responsibilities, daily schedule, and activities brought on by the illness (Understanding brain injury, n.d.). Some of the complications that family members face include adjusting to the athletes’ “personality changes, rage reactions, impulsivity, and childishness” (Heilbronner et al., 2009:13). In extreme cases, family members may become victims of the athletes’ irrational behavior, as was the case with Benoit. Such a severe case suggests that the welfare of children, women, and other family members must be considered when an athlete has been diagnosed with brain damage, concussed, or exhibits symptoms of concussion. Re-entrance into the general population, aging-related issues, mental illness, co-morbid disorders, child and family welfare, and depression are all common issues social workers address. Members of social work profession can provide considerable assistance to this specific population, as they have extensive expertise in the aforementioned areas which affect these athletes.

## **2.5 Risk Factors**

Amidst a host of factors, three predominant factors contribute to the development of dementia in pro athletes. These three specific factors can be discussed in the context of person-in-environment perspective. The person-in-environment perspective considers people’s interactions within their natural settings and social environments (Dybicz, 2009). Dybicz contributes the following: people have an orientation toward their world – that they are not merely surviving, but can

interpret their “way-of-being-in-the-world” and make meanings of their relationship to their environment (2009). Person-in-environment theory is useful when exploring how athletes view mental illness within the context of their environment and the effect of various factors, including hypermasculinity on their perceptions of mental illness.

Several aspects of an athletic environment foster a breeding ground for promoting mental illness. The three factors that are addressed within the context of person-in-environment include concussion, post-concussion syndrome, and work environment. The cause of concussion must be illuminated because an athlete cannot develop CTE or post-concussion syndrome without having had multiple concussions first. McCrory et al. cites the following cause of concussion: a direct, impulsive force transmitted to the head, neck, or face (2009). Post-concussion syndrome must be addressed as a factor because it is the most contributing factor to development of CTE. This syndrome is considered a precursor for CTE. Athletes may experience a concussion and never develop CTE. It is when athletes experience multiple concussions that they are at great risk for developing extensive brain damage. “Studies indicate that CTE results from numerous subconcussive and/or concussive blows to the head” (Casson et al., 1984 & Kaste et al., 1982, as cited by Erlanger et al., 1999:194). Post-concussion syndrome occurs when symptoms from concussions, typically, two or more, linger (Erlanger et al., 1999, Fazio et al., 2007, Heilbronner et al., 2009, Majerske et al., 2008, & Schoenhuber & Gentilini, 1988). “Individuals who have a head injury may still have poor memory and concentration, headache, fatigue, and dizziness for several weeks to months” (Parmet, 2003:para. 3).

Work environment must be included as a factor because athletes’ high collision sports’ environment contributes to the very plausibility of receiving a concussion. Within the context of person-in-environment perspective, there were several reasons why athletes continued to compete while concussed. One reason is that some athletes do not recognize the symptoms of concussion. As well, many times, they may not know that they have had a concussion and therefore, do not inform their team physicians (Collins et al., 2004 & Covassin et al., 2008). However, other times, athletes and coaches may know that the athlete has had a concussion, but due to the environment in which the athlete works, he may minimize or ignore his symptoms so that he can continue to practice or compete (Covassin et al., 2004). “In a recent survey of college athletes, 28% acknowledged experiencing dizziness as a result of a hit, yet continuing to play; 19% acknowledged failing to report dizziness to coaches or athletic trainers while

playing; 30% stated that they continued to play with a headache induced by a blow to the head; and 3% failed to report next-day dizziness, headaches, or nausea” (Collins, Stump, & Lovell, 2004:103).

The athletic work environment promotes stigma, another reason athletes continue to compete while concussed. Hypermasculinity is pervasive in athletics. Meanings of what constitutes endurance of injury and manliness coincide. Idealism of manliness is displayed by the appearance of the actual athletes. One of the predominant motivations for participating in aggressive sports is for an athlete to become bigger, stronger, and faster; the result is an increase in the rapidity of collisions and severity of injuries, namely head traumas (Guskiewicz et al., 2000). The increase in injury is also due to risk compensation. “This is where the use of protective equipment results in behavioral change such as the adoption of more dangerous playing techniques, which can result in a paradoxical increase in injury rates” (McCrory et al., 2009:191). Consequently, the complacency towards injury is commonplace, as it is reflective of the nature of the sports environment. As cited in Smith (2008), “Nixon has found that sports promote a ‘culture of risk’ where injury is normalized” (Smith, 2008:2). Stigmatization is prevalent in another sense. Athletes, who experience mental illness as a consequence of concussion, do not want to be labeled. Neither the athlete nor the coaches choose to call the symptoms a mental illness. Athletes may receive labels of stale, burned-out, or over-trained, but never depressed or anxious or psychotic (Schwenk, 2000). Stigma is saturated throughout the social work profession, as much of the disenfranchisement that accompanies stereotypical social work clientele can be directly attributed to stigmatizing circumstances. As such, social workers are adequately equipped to address stigma that athletes face.

## **2.6 Preventative Measures and Protective Factors**

“All literature regarding concussion management recommends that symptomatic athletes (of any degree) be prohibited from return to play. Essentially, presence of any concussion symptom indicates impaired brain function, which certainly increases the risk for an athlete if subsequent injury occurs” (Collins, Stump, & Lovell, 2004:101). Athletes must be educated on the symptoms of concussion and post-concussive syndrome. Social workers can assuredly be useful in this capacity, as educating is a role of the social worker; similar to educating community members about HIV/AIDS prevention or women who have experienced domestic violence about the cycle of abuse, social workers can educate athletes about risk and preventative factors of early-onset dementia.



Social workers can also assist athletes who fear stigmatization, similar to the work social workers do with clients who receive welfare benefits or other stigmatized constituents.

### **3. CONCLUSION**

Social work application to this unique population is scarcely researched and documented. The cause may be that, as aforementioned, pro athletes are not universally accepted as social work clientele due to their privileged status. Services would be within the realm of clinical practice, or, the lens from which this paper is written. However, outside of knowledge for social work practice, services could be provided within the realm of knowledge of practice, especially since a considerable lack of research on social work application to this population exists. Considering that this unique population faces many multifaceted concerns that are regularly addressed in the social work field, one must question why this population is not amongst social work clientele. Excluding them based on a criterion of privilege, especially when they face other forms of disenfranchisement, including mental illness, substance abuse, re-entrance into the population, and family discord, is a violation of social work core values, specifically, service, dignity and worth of the person, and importance of human relationships. This form of exclusion has far reaching implications, including the potential of bias within the social work field.

Sports are ingrained in American society. However, when athletes are hurt or are at risk of being hurt, who assumes responsibility? What role should social workers, who advocate, educate, inform, counsel, and research, play in this public health concern? Social work's lack of provision of services or research on athletes is evident by the incredible gap in literature regarding social work's involvement with this population. The lack of literature regarding social work's role in assessment and treatment of pro athletes who have mental illness suggests that more research in this area should be accepted and conducted by the profession. Consider the opening case of Chris Benoit: an athlete competed in a sport that he loved for a number of years, only to develop severe brain damage due to the nature of the environment of that sport. This brain damage led him to not only take his life, but that of his wife and child. This case is grave and illustrates how the entire family's well-being can be compromised because of mental illness. Should his case be ignored by social workers because he has social worth when other areas of disenfranchisement are morbidly apparent, including mental illness and the welfare of women and children? Social workers

can improve the circumstances of athletes in various ways. If now is not the right time to get involved, when will the right time come?

## **BIBLIOGRAPHY**

Ames, Wilmer & Boyle, Robert (1983). *Too Many Punches, Too Little Concern*, <http://vault.sportsillustrated.cnn.com/vault/article/magazine/MAG1120728/3/index.htm>. [Accessed 11.30.2010]

Ashman, Teresa Anne, Gordon, Wayne, Cantor, Joshua & Hibbard, Mary (2006). "Neurobehavioral Consequences of Traumatic Brain Injury", *The Mount Sinai Journal*, Vol. 73, No.7, pp. 999-1005.

Cajigal, Stephanie (2007). "Football Concussions Linked to Depression, Cognitive Impairment Experts Seek Prospective Studies", *Neurology Today*, Vol. 7, No. 5, pp. 22-23.

Cantu, Robert (2007). "Chronic Traumatic Encephalopathy in the National Football League", *Neurosurgery*, Vol. 61, pp. 223-225.

Clancy, Frank (2006). "The Bitter Science: Head Blows from Boxing Can Cause Dementia and Alzheimer's. Can the Same Chronic Brain Injury Also Lead to Parkinson's"? *Neurology Now*, Vol. 2, No. 2, pp.24-25.

Collins, Mickey, Stump, Jamie, & Lovell, Mark (2004). "New Developments in the Management of Sports Concussion". *Current Opinion in Orthopaedics*, Vol. 15, pp. 100-107.

Covassin, Tracey, Stearne, David, & Elbin, Robert (2008). "Concussion History and Postconcussion Neurocognitive Performance and Symptoms in Collegiate Athletes". *Journal of Athletic Training*, Vol. 43, No. 2, pp. 119-124.

Chin, Lawrence, Jayarao, Mayur, & Cantu, Robert (2011). *Inside Sport-Related Head Injuries: Tau Inclusion Bodies and Proteins in a Tangle*. <http://www.aansneurosurgeon.org/200111/6/690>. [Accessed 6.15.2011]

De Beaumont, Louis, Théoret, Hugo, Mongeon, David, Messier, Julie, Leclerc, Suzanne, Tremblay, Sebastien, Ellemberg, Dave, & Lassonde, Maryse (2009).

Brain Function Decline in Healthy Retired Athletes Who Sustained their Last Sports Concussion in Early Adulthood. *Brain*, Vol. 132, No. 3, pp. 695-708.

Dybicz, Phillip (2009). "A Kantian-Style Critique of Person-in-Environment". *Journal of Progressive Human Services*, Vol. 20, No. 2, pp. 166-182.

Erlanger, David, Kutner, Kenneth, Barth, Jeffrey, & Barnes, Ronnie (1999). "Neuropsychology of Sports-Related Head Injury: Dementia Pugilistica to Post Concussion Syndrome". *The Clinical Neuropsychologist*, Vol. 13, No. 2, pp. 193-209.

Fazio, Vanessa, Lovell, Mark, Pardini, Jamie, & Collins, Michael (2007). "The Relation Between Post Concussion Symptoms and Neurocognitive Performance in Concussed Athletes". *NeuroRehabilitation*, Vol. 22, pp. 207-216.

Garber, Greg (2009). *Doctors: Wrestler Had Brain Damage*.  
<http://sports.espn.go.com/espn/otl/news/story?id=4724912> [Accessed 12.3.2010]

Gill, Emmett (2009). *Mental Health in College Athletics: It's Time For Social Work to Get in the Game*.  
[http://findarticles.com/p/articles/mi\\_hb6467/is\\_1\\_53/ai\\_n39397647/](http://findarticles.com/p/articles/mi_hb6467/is_1_53/ai_n39397647/). [Accessed 11.29.10]

Guskiewicz, Kevin, Marshall Stephen, Bailes, Julian, McCrea, Michael, Harding, Jr., Herndon, Matthews, Amy, Mihalik, Johna, & Cantu, Robert (2007). "Recurrent Concussion and Risk of Depression in Retired Professional Football Players". *Medicine and Science in Sports and Exercise*, Vol. 39, No. 6, pp. 903-909.

Heilbronner, Robert, Bush, Shane, Ravdin, Lisa, Barth, Jeffrey, Iverson, Grant, Ruff, Ronald, Lovell, Mark, Barr, William, Echemendia, Ruben, & Broshek, Donna (2009). "Neuropsychological Consequences of Boxing and Recommendations to Improve Safety: A National Academy of Neuropsychology Education Paper". *Archives of Clinical Neuropsychology*, Vol. 24, pp. 11-19.

Kain, Daniel (2009). "It's Just a Concussion: the National Football League's Denial of a Causal Link between Multiple Concussions and Later-life Cognitive Decline". *Rutgers Law Journal*, Vol. 40, pp. 697-736.

King, Nigel (2003). "Post-Concussion Syndrome: Clarity Amid the Controversy". *British Journal of Psychiatry*, Vol. 183, pp. 176-178.

Majerske, Cynthia, Mihalik, Jason, Ren, Dianxu, Collins, Michael, Reddy, Cara, Lovell, Mark, & Wagner, Amy (2008). "Concussion in Sports: Postconcussive Activity Levels, Symptoms, and Neurocognitive Performance". *Journal of Athletic Training*, Vol. 43, No. 3, pp. 265-274.

McCrory, Paul, Zazryn, Tsharni, & Cameron, Peter (2007). "The Evidence of Chronic Traumatic Encephalopathy on Boxing". *Sports medicine*, Vol. 37, No. 6, pp. 467-476.

Parmet, Sharon (2003). Concussion in Sports. *JAMA*, Vol. 290, No. 19, p. 2628.

Schoenhuber, Rudolf & Gentilini, Massimo (1988.) "Anxiety and Depression After Mild Head Injury: A Case Control Study". *Journal of Neurology, Neurosurgery, and Psychiatry*, Vol. 51, pp. 722-724.

Smith, Tyson (2008). "Pain in the Act: The Meanings of Pain among Professional Wrestlers". *Qualitative Sociology*, Vol. 31, No. 2, pp. 129-178.

Schwenk, Thomas (2000). "The Stigmatisation and Denial of Mental Illness in Athletes". *British Journal of Sports Medicine*, Vol. 34, pp. 4-5.

Talan, Jamie (2008). "New Report Links Sports Concussion to Chronic Traumatic Encephalopathy: Athletes Pledge to Donate Tissue for Brain Bank". *Neurology Today*, Vol. 8, No. 19, pp. 12-13.

Weir, David, Jackson, James, & Sonnega, Amanda (2009). *Study of Retired Football Players*, <http://ns.umich.edu/Releases/2009/Sep09/FinalReport.pdf>. [Accessed 1.29.11]

(1998). *Code of Ethics of the National Association of Social Workers*, <http://www.naswdc.org/pubs/code/code.asp>. [Accessed 12.1.10]

(n.d.) *Understanding Brain Injury: A Guide for the Family*. <http://www.nlm.nih.gov/medlineplus/traumaticbraininjury.html>. [Accessed 12.2.10]