No. 16-413

In the Supreme Court of the United States

RAYMOND ARMSTRONG, *et al.*,
Petitioners,

v.

NATIONAL FOOTBALL LEAGUE, *et al.*,
Respondents.

On Petition for a Writ of Certiorari to the United States Court of Appeals for the Third Circuit

BRIEF FOR *AMICUS CURIAE* BRAIN INJURY ASSOCIATION OF AMERICA IN SUPPORT OF ARMSTRONG OBJECTOR'S PETITION FOR WRIT OF CERTIORARI

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INTEREST OF AMICUS CURIAE[1]

Founded in 1980, the Brain Injury Association of America (BIAA) is the oldest, largest, non-profit, nationwide brain injury advocacy organization, whose mission is to advance brain injury prevention, research, treatment, and education, and to improve the quality of life for the 2.5 million children and adults known to annually sustain traumatic brain injuries in the United States. This number is concededly an underreporting of incidence, as many brain injuries remain undiagnosed and uncounted.[2] Since its founding, BIAA has worked jointly with Congress, the Congressional Brain Injury Task Force, the Centers for Disease Control and Prevention, Department of Defense, National Institutes of Health, National Institute of Neurological Disorders and Stroke, and state public health agencies nationwide. BIAA's network of chartered state affiliates provides direct support, information, resources, education, and advocacy for individuals living with brain injury, their friends, family, professionals (providing research, treatment, and services) and the general public.

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[1] Pursuant to Supreme Court Rule 37.2 and 37.6, amicus curiae state that no counsel for any party authored this brief in whole or in part and that no entity or person, aside from amicus and their counsel, made any monetary contribution toward the preparation or submission of this brief. Counsel of record for all parties received timely notice of the intent to file this brief and all parties have consented to filing.

[2] Centers for Disease Control and Prevention. (2015). Report to Congress on Traumatic Brain Injury in the United States: Epidemiology and Rehabilitation.

As the leading advocate for all victims of brain injuries, BIAA's objective is to ensure this settlement fairly considers the welfare of all brain-injured players for whose benefit this action was commenced. BIAA seeks to provide the Court with unbiased, accurate information on the consequences of traumatic brain injury and to protect the integrity of traumatic brain injury scientific research. BIAA is disturbed by the manner in which traumatic brain damage has been classified, categorized, and described under this settlement, the misconceptions of the consequences of traumatic brain injury perpetuated by this settlement, the repercussions to class members, the public and to future generations of children, amateur, and professional athletes.

The extraordinary significance of this settlement, regarding the status of the parties, the allocation of the settlement funds among and between the entire class, and the far-reaching implications for all victims of traumatic brain injury, compels the association to file this brief. BIAA has significant expertise in the causes, consequences, symptoms, treatment, and related necessary remedial services of traumatic brain injury, and seeks to expose the sweeping ramifications of the settlement.[3]

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[3] The Brain Injury Association of America submitted a brief, amicus curiae in support of appellants to the 3rd Circuit Court of Appeals. The district court accepted into the record the declaration of Drs. Brent E. Masel, M.D. and Gregory J. O'Shanick, M.D. for the Brain Injury Association of America. Case: 2:12-md-02323-AB Document 6509 filed 04/21/15.

INTRODUCTION AND SUMMARY OF ARGUMENT

The Brain Injury Association of America (BIAA) submits this brief on behalf of the 89.0% of class members who will receive no benefits under the proposed settlement. The actuarial reports submitted by the NFL and players' committee corroborates that players labeled as suffering "mild" cognitive brain damage are ineligible to receive any benefits under the settlement. Although they comprise the majority of the class and have sustained brain injury, they are ineligible, merely because they do not have a "qualifying" diagnosis. [4]

The settlement neither recognizes nor compensates the majority of players suffering the long-term consequences of brain trauma, but merely rewards certain, small, discrete groups. The scientific evidence establishes that a vast majority of professional football players experiencing physical, emotional, and behavioral impairments as a consequence of repetitive concussions throughout their careers, remain excluded, ineligible, and uncompensated under this settlement.

Plaintiffs' Master Complaint states, "This action arises from the pathological and debilitating effects of mild traumatic brain injuries (referenced herein as "MTBI") caused by concussive and sub-concussive impacts that have afflicted former football players in

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[4] Report of the Segal Group to Special Master Perry Golkin at page 21. Case 2:12-md-02323-AB Document 6168 Filed 09/12/14.

the NFL."[5] The settlement intentionally ignores the science of traumatic brain injury by excluding players whose permanent brain damage flows from these impacts, despite the significant allegations in the complaint on behalf of these players. The scientific evidence, supports providing compensation for all injuries alleged in the complaint, not limited to those that appear on an arbitrary grid of enumerated conditions.

In categorizing benefits, the settlement completely disregards and omits players suffering any permanent consequences of "mild" traumatic brain injury, although "mild" brain injury often leads to permanent disability. By definition, monetary compensation is limited to players who suffer "moderate" cognitive decline. A mild brain injury is only mild if it affects someone else's brain. If a player can neither manage nor function daily with the consequences of brain injury, the label is meaningless.

Although the settlement purports to generously provide financial stability for players with traumatic brain injury, closer scrutiny reveals a systematic strategy to exclude most from participation, while reducing payments to the small group meeting arbitrary criteria. It imposes unfair and illogical restrictions on the categories of compensable injuries. The settlement requires players to have participated in NFL play for excessive periods, implicitly denying that a player can sustain a life-altering concussion after a short NFL career. The plan is replete with complex,

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[5] Paragraph 2 of the Plaintiffs Master Complaint, page 1, paragraph 2.

arbitrary, and overlapping omissions in its unwieldy and intricate criteria.

The settlement excludes many known conditions, such as seizure disorders, known complications attributable to concussions, and creates arbitrary distinctions based upon years of service and age at symptom onset.

Brain injury is a chronic disease with long-term consequences.[6] The aftereffects of traumatic brain injury are numerous and diverse, regardless of classification as "mild", "moderate," or "severe." Cognitive, emotional, and behavioral impairments are hallmarks of concussion and the post-concussive syndrome that develops. Brain damage is recognized to cause a vast array of neurological disorders, including epilepsy, sleep disorders, cognitive dysfunction, Alzheimer's disease, chronic traumatic encephalopathy (CTE), and Parkinson's disease. Neuroendocrine disorders, including thyroid and pituitary dysfunction, are linked to brain trauma.[7] Psychiatric disorders, including obsessive-compulsive, anxiety, psychosis, mood disorders, and major depression, habitually develop following traumatic brain injury. Brain injury victims may sustain sexual

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[6] Masel, BE, DeWitt, DS. Traumatic Brain Injury: A Disease Process, Not an Event. Journal of Neurotrauma. Vol. 27: 1529-1540 (August 2010).

[7] Id. See, Centers for Disease Control and Prevention (2014). Report to Congress on Traumatic Brain Injury in the United States: Epidemiology and Rehabilitation. National Center for Injury Prevention and Control; Division of Unintentional Injury Prevention, Atlanta, GA at p.18

dysfunction, incontinence, musculoskeletal dysfunction, including spasticity resulting from abnormal nerve transmission[8], and have a reduced life expectancy.[9] Developers of the Glasgow Coma Scale found most head trauma survivors have persistent disability 12-14 years after initial injury, regardless of initial classification,[10] which exacerbate the cognitive, emotional, and behavioral consequences that frequently ensue.

The settlement, as approved, is faulty in many respects, including but not limited to : 1- exclusion of players with mild brain injury; 2- failure to compensate recognized physical, behavioral, emotional, and cognitive sequelae of concussion, or mild brain injury; 3- exclusion of well-recognized neurological conditions caused by brain trauma; 4- failure to provide meaningful benefits and remediation for cognitive impairment; 5- arbitrary compensation distinctions based upon years of play and age at symptom onset; 6- implicit disregard of overwhelming medical evidence that one concussion can precipitate life-long consequences; 7- insurmountable, unscientific criteria for neuropsychological testing; 8- overemphasis on malingering tests; and 9- failure to consider alternate testing modalities, such as diagnostic imaging.

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[8] Id. at p. 1530-1535.

[9] Id. at p. 1529.

[10] McMillan, TM, Teasdale, GM, Stewart, E. Disability in Young People and Adults After Head Injury:12-14 Year Follow-Up of a Prospective Coholt. Journal of Neurol Neurosurg Psychiatry (2012).

This brief will provide the Court with essential and relevant scientific information about the physical, psychiatric, and cognitive disease symptoms and processes caused by traumatic brain injury (TBI) vis-à-vis the flawed settlement.

Indisputably football is a concussion delivery system. Despite this knowledge, over the years, players have been encouraged to "shake it off," and are rewarded for hits and violent sacks. They have been misinformed about the evidence linking concussions to long-term brain trauma. This action, commenced for the multi-faceted repercussions of brain damage as a result of longstanding NFL misconduct, fails to compensate the majority of players who have suffered the devastating and enduring effects of traumatic brain injury. The court has an obligation to protect the entire class based upon well-researched, recognized, and cogent medical science. Any settlement that does not, should be rejected as unfair and contrary to the best interests of the majority of class members.

ARGUMENT

I. The Settlement Excludes The Majority of Conditions and Consequences of Traumatic Brain Injury

Three major categories of "benefits" provided to players under the settlement are based upon arbitrary levels of impairment, denominated Level 1, Level 1.5, and Level 2. Ostensibly including all players suffering brain damage, closer scrutiny of their definition of cognitive impairment (determinative of eligibility for compensation) reveals the omission of the vast majority

of players suffering from "mild" brain injury, despite its devastating consequences.

The first and lowest category of impairment, Level 1, determined by neuropsychological testing under the Base Line Assessment Program ("BAP"), is limited to players with "moderate" cognitive impairment, excluding players suffering from "mild" brain injury.[11] Even for those who meet Level 1 criteria (moderate cognitive impairment) there is no monetary compensation. Only players with Level 1.5 cognitive impairment (early dementia), defined as "moderate to severe cognitive decline"[12] and Level 2 impairments (moderate dementia), and specified neurological disorders (ALS, Parkinson's disease, Alzheimer's disease, Death with CTE by the date of the settlement)[13] are eligible for monetary compensation.[14]

Even if a player meets the definitional criteria of injury, the applicable offsets for years of eligible play, prior injury, and age, conflict with sound scientifically-based medical principles pertaining to the causes and effects of traumatic brain injury. The settlement

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[11] Revised Settlement Ex B, Document 6073-2 filed 6/25/14 Injury Definitions at p 107 of 163.and 6073-5 filed 6/25/14. Settlement Benefits at page 26 of 91; Exhibit B-5 at page149 of 163.

[12] Revised Settlement Ex B, Document 6073-2 filed 6/25/14, Exhibit B-5 at page149 of 163.

[13] Revised Settlement Ex B, Document 6073-2 filed 6/25/14, Exhibit B-5 at page147 of 163.

[14] Revised Settlement Ex B, Document 6073-2 filed 6/25/14, §6.1 – 6.3 at page 35 of 163. Exhibit B-5 at page 147 of 163.

unacceptably elevates labels over consequences and/or symptoms of brain injury. The overwhelming majority of retired players do not meet criteria for Level 1.5 (early dementia exhibit by moderate to severe cognitive decline) or Level 2 (moderate dementia, exhibited by severe cognitive decline), Alzheimer's disease, Parkinson's disease, ALS and/or Death with CTE, and will receive no financial compensation under the proposed settlement.

A. The Settlement Improperly Excludes "Mild" Traumatic Brain Injury

Traditionally, traumatic brain injury has been classified as "mild" (MTBI), "moderate", or "severe," based upon the patient's initial presenting symptoms. As the Director for the Centers for Disease Control and Prevention, Dr. Julie Louise Gerberding, M.D., M.P.H., stated, however, "[I]t is clear that the consequences of MTBI are often not mild."[15] There is nothing "mild" about mild traumatic brain injury. "Modifiers such as subtle, minimal, and minor are to be discouraged. Practitioners must understand that the term 'mild' describes only the initial insult relative to the degree of neurological severity. There may be no correlation with the degree of short or long-term impairment or functional disability."[16]

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[15] Centers for Disease Control and Prevention, Department of Health and Human Services. Report to Congress on Mild Traumatic Brain Injury in the United States: Steps to Prevent a Serious Public Health Problem. September 2013.

[16] Zasler, M.D., NeuroMedical Diagnosis and Management of Post-Concussive Disorders, in Medical Rehabilitation of Traumatic Brain Injury 133–134 (Horn & Zasler, EDS., Hanley and Belfus 1995).

A concussion is a brain injury.[17] The term concussion and mild traumatic brain injury are synonymous, often used interchangeably. "Doctors may describe these injuries as "mild" because concussions are usually not life-threatening. Even so, their effects can be serious."[18] The Centers for Disease Control stated, "Early MTBI symptoms may appear mild, but they can lead to significant, life-long impairment in an individual's ability to function physically, cognitively and psychologically."[19] The term, post-concussive disorder, or post-concussive syndrome denotes the symptoms that develop from brain trauma

The settlement classification of injury ignores the cognitive, physical, emotional, and behavioral long-term disabilities of post-concussion syndrome that profoundly impact an individual's ability to function in everyday life. The proposed settlement eliminates the majority of players exhibiting the signs, symptoms, and consequences of post-concussive syndrome including

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[17] Facts about Concussion and Brain Injury. Centers for Disease Control and Prevention, Department of Human Services. http://www.cdc.gov/concussion/pdf/facts_about_concussion_tbi-a.pdf; Consensus statement on concussion in sport: the 4th International Conference on Concussion in Sport held in Zurich, November 2012. McCrory p, Meeuwisse WH, Aubry M, British Journal of Sports Medicine 2013; 47:250-258.

[18] Id. at 1.

[19] Centers for Disease Control and Prevention. Department of Health and Human Services. Heads Up- Facts for Physicians About Mild Traumatic Brain Injury (MTBI), http://www.brainlinemilitary.org/concussion_course/course_content/pdfs/mtbi.pdf

the most common cognitive impairments, attention difficulties, impaired short-term memory, diminished concentration, and inability to multi-task[20].

The settlement excludes most common physical symptoms associated with post-concussion syndrome, including headache, fatigue, sleep disorders, vertigo, and dizziness. The settlement omits players who experience visual difficulties and heightened sensitivity to sound (hyperacusis). Persons suffering post-concussion syndrome encounter emotional difficulties, including irritability manifested as aggression, anxiety, depression, lability, and personality changes,[21] and are rejected. The settlement disregards the permanent consequences of mild traumatic brain injury caused by a singular concussion, the cumulative effects of sub-concussive injuries or multiple concussions, and the consequences of premature return to play while still symptomatic.

B. The Settlement Omits Players Suffering Emotional, and Behavioral Disorders

A large-scale inadequacy in the settlement is the complete omission of players suffering recognized physical, emotional, and behavioral consequences across the brain injury spectrum, whether mild, moderate, or severe. This settlement is limited to those players with demonstrable cognitive injuries labeled "moderate" or "severe," regardless of severity of the

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[20] Id.

[21] Varney, Nils R., Roberts, Richard J. The Evaluation and Treatment of Mild Traumatic Brain Injury. Lawrence Erlbaum Associates, 1999 at page 108.

concomitant constellation of TBI-related impairments. Ignoring all but cognitive impairment, disregards the full array of disabling injuries. The deficient settlement criterion omits players who sustained moderate and severe brain trauma, and suffer emotional and behavioral difficulties, but are not cognitively impaired. Most physical impairments are excluded from the settlement.

The National Institute of Health's (NIH) Consensus Statement, Rehabilitation of Persons with Traumatic Brain Injury, recognizes cognitive impairment as just one of many complicated and interrelated TBI disorders. TBI may cause physical, emotional, and behavioral consequences affecting all aspects of a person's life.[22] "Rarely are the consequences limited to one set of symptoms, clearly delineated impairments, or a disability that affects only one part of a person's life. Rather, the consequences of TBI often influence human functions along a continuum from altered physiological functions of cells through neurological and psychological impairments, to medical problems and disabilities that affect the individual with TBI, as well as the family, friends, community, and society in general."[23] "All of these consequences can occur singularly or in combinations, and are variable in

[22] Rehabilitation of Persons With Traumatic Brain Injury. NIH Consensus Statement 1998 Oct 26–28; 16(1): 1-41, available at http://consensus.nih.gov/1998/1998TraumaticBrainInjury109html.htm

[23] NIH Consensus Statement, supra at page 11.

terms of their effects on individuals; furthermore, they change in severity and presentation over time."[24]

Physical sequelae "include a variety of movement disorders, seizures, headaches, ambient visual deficits and sleep disorders,"[25] yet these conditions are omitted and ineligible for compensation.

The "social consequences of mild, moderate and severe TBI are many and devastating, including increased risk of suicide, divorce, chronic unemployment, economic strain, and substance abuse."[26] Players, who manifest these symptoms now, or may suffer from their consequences in the future, are unfairly eliminated under the settlement, with no scientific foundation or rationale.

The Consensus Panel identified behavioral deficits and mood disorders as consequences of TBI. "Common behavioral deficits include[d] decreased ability to initiate response, verbal and physical aggression, agitation, learning difficulties, shallow self-awareness, altered sexual functioning, impulsivity and social disinhibition. Mood disorders, personality changes, altered emotional control, depression and anxiety are also prevalent after TBI."[27] The settlement ignores and excludes players with these impairments. The circumscribed criteria of this settlement exclude from

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[24] NIH Consensus Statement, supra at page 11.

[25] NIH Consensus Statement, supra at page 11.

[26] NIH Consensus Statement, supra at page 12.

[27] NIH Consensus Statement, supra at page 12.

compensation most of the medically-determined, well-recognized, ubiquitous sequelae of traumatic brain injury.

The most notable TBI patient was Phineas Gage. In 1848, Gage was a 25-year-old railway construction foreman, working with explosive powder and a packing rod. A sparked explosion propelled a three-foot long pointed rod through his head and brain, and exited through his temple. Prior to injury, Gage was a quiet, mild-mannered man; afterward he became obscene, obstinate, and self-absorbed. His personality and behavioral problems persisted until his death in 1861.[28] Had Phineas Gage been a professional football player, he would receive no benefit under the settlement agreement.

C. Level 2 Enumerated Injuries Omit Well-Established Neurological Disorders Caused by Brain Trauma

The settlement recognizes some neurological conditions as presumptively caused by traumatic brain injury, yet inexplicably overlooks and ignores other well-known consequential neurological conditions. The enumerated injuries eligible for compensation, moderate Dementia, Amyotrophic Lateral Sclerosis ("ALS"), Alzheimer's Disease, Parkinson's Disease and/or Death with chronic traumatic encephalopathy (CTE), exclude neurological and medical conditions, such as traumatic epilepsy, seizure disorders, hormonal deficiencies, and stroke, long known to be caused by either singular or repetitive head trauma.

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[28] http://www.ninds.nih.gov/disorders/tbi/detail_tbi.htm

Despite purportedly covering five enumerated injuries, the settlement reduces benefits for players who have sustained these injuries, under the implicit assumption that causation is related to years of service, time of onset, and the age of a player at diagnosis. There is no empirical evidence to support these assumptions.[29]

1. Epilepsy or Seizure Disorders Are Improperly Excluded

"TBI is the largest known risk factor for epilepsy."[30] Head trauma is one of the most commonly identified etiologies for developing epilepsy (defined as two or more unprovoked seizures) accounting for 20% of all symptomatic epilepsy. Epilepsy or posttraumatic seizure disorder, is omitted from the plan's list of

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[29] "[E]vidence is emerging that indicates TBI should be viewed as a chronic disease that imposed increased risk of long-term health problems for those who survive the initial injury regardless of age of onset. Therefore, TBI should not simply be viewed as an isolated event similar to a fractured bone that will heal over time but rather as a chronic disease with the traumatic event representing the initiation of the disease process. In addition to direct injury to the brain, TBI has been associated with diseases of other organ systems as well as shortened life expectancy and should be viewed as disease causative or accelerative." Zasler, ND, Katz DI, Zafone, RD. Traumatic Brain Injury Medicine: Principles and Practices, 2nd Ed. Demos Medical Publishing 2013 at p. 429.

[30] The CDC, NIH, DoD and VA Leadership Panel, Report to Congress on Traumatic Brain Injury in the United States: Understanding the Public Health Problem among Current and Former Military Personnel. Centers for Disease Control and Prevention (CDC), the Nationals Institutes of Health (NIH), the Department of Defense (DoD), and the Department of Veterans Affairs (VA), 2013, page 35.

enumerated injuries.[31] Traumatically induced seizures may not emerge for years after head trauma. All head injuries, whether mild, moderate, or severe, increase the risk for seizure disorder. The Department of Veteran Affairs presumptively considers unprovoked seizures following moderate or severe TBI to be service-connected.[32] There is neither rational nor medical basis for excluding this group of players from participating in the settlement.[33]

D. The Settlement Fails to Compensate Players Diagnosed with CTE After its Effective Date

The settlement implicitly concedes that the Chronic Traumatic Encephalopathy (CTE) diagnosed in the brains of some deceased players is caused by repetitive head trauma sustained while playing professional

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[31] Luciano, Daniel J., Alper, Kenneth, Siddhartha, Nadkarni. Posttraumatic Epilepsy in Textbook of Traumatic Brain Injury. Silver, Jonathan M., McAllister, Thomas W., Yudofsy, Stuart C. American Psychiatric Association, 2nd Ed. 2011, pages 265-275.

[32] Department of Veterans Affairs. Traumatic Brain Injury (TBI), Diagnosable Illnesses Secondary to TBI and the Defense and Veterans Brain Injury Center(DVBIC) Resource Webcenter http://www.nd.gov/veterans/files/resource/Traumatic%20Brain%20Injury%20%28TBI%29,%20Diagnosable%20Illnesses%20Secondary%20to%20TBI.pdf

[33] In addition to seizure disorders, the Veterans Administration also considers depression if it is manifest within 3 years of moderate or severe TBI, or within 12 months of mild TBI. Hormone deficiency from hypothalamo-pituitary changes are deemed to be competently caused by the initial brain trauma if they manifest within 12 months of moderate or severe TBI. Supra.

football and provides monetary compensation to this group. Yet, the settlement excludes the estates of those players who were or will be diagnosed post-settlement date. An arbitrary cutoff for compensation of brain damage manifestations of cognitive, behavioral, and emotional deficits to a living player, which can only be conclusively diagnosed following death, is palpably unfair.

Any assertion that players exhibiting symptoms of CTE are compensated by the settlement, absent a formal diagnosis, is false. The clinical presentation of CTE may cause changes in an individual's mood, behavior, memory, and cognitive abilities without ever progressing to full-scale dementia or causing premature death. Severity of impairment is the result of inevitable disease progression. The settlement fails to compensate players whose symptoms of brain injury and CTE has yet to evolve into dementia or death.[34]

E. Treatment Modalities Fail to Provide Effective Options to the Majority of Class Members

A settlement designed to compensate players who sustained traumatic brain injury should provide appropriate treatment to all players with brain damage. The purported benefits do not provide most

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[34] Stern, R. A., Daneshvar, D. H., Baugh, C. M., et. al. (2013). Clinical presentation of chronic traumatic encephalopathy. Neurology, 81(13), 1122–1129. Baugh, CM, Stamm, JM, Riley, DO, et. al. (2012) Chronic Traumatic Encephalopathy: neurodegeneration following repetitive concussive and subconcussive brain trauma. Brain Imaging and Behavior, 6:244-254.

players with the full array of required, beneficial services. Traditional medical care is insufficient to assist players in quotidian functioning and remediate the symptomatology of traumatic brain injury sustained by players during their football careers. The limited treatment modalities in the terms of the settlement fail to redress the global nature of the disabilities caused by these injuries, although recognized by the medical community as beneficial. In addition to medical care, these players require many home and community-based services supporting both individuals and caregivers. These services assist brain-injured players to live as independently as feasible, and are essential and should be required.[35] The settlement fails to provide meaningful treatment to a majority of eligible players.

Acknowledging these distinct and unique issues, New York State instituted the New York State Traumatic Brain Injury Medicaid Waiver Program, to insure persons with a brain injury, eligible for nursing home services, can live independent lives in a community setting of their choice. This program provides: Service Coordination, Independent Living Skills Training, Structured Day Programs, Substance Abuse Programs, Positive Behavioral Interventions and

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[35] One Voice for Brain Injury Consortium Recommendations to Strengthen Existing Legislation and Programs for Individuals with Brain Injury and Their Families, September 2013 has been endorsed by the American Congress of Rehabilitation Medicine (ACRM), Brain Injury Association of America (BIAA), the North American Brain Injury Association (NABIS) and the United States Brain Injury Alliance, among other disability advocacy organizations.

Supports, Community Integration Counseling, Home and Community Support Services, Environmental Modifications, Respite Care, Assistive Technology (special medical equipment and supplies), Waiver Transportation, and Community Transitional Services.[36] None are available to disabled players under the settlement.

The National Institutes of Health (NIH) advocates: "Rehabilitation services should be matched to the needs, strengths, and capacities of each person with TBI and modified as those needs change over time."[37] There is no provision within the plan for the individualization of services or the ability to modify them, as the person's condition and resultant needs change. There is no "quick fix" for TBI. There is no "one size fits all" treatment for TBI. The consequences and manifestations of TBI change prospectively, with new, different, and/or altered symptoms. There is no mechanism, under this plan, to reevaluate or recalibrate the necessary services and no means to pay for services not previously anticipated. Failing to provide meaningful services defies common medical knowledge, practice, and acceptance.

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[36] https://www.health.ny.gov/publications/1111.pdf

[37] NIH, Consensus Statement, supra at page 23.

II. The Settlement Improperly Reduces Compensation for Known Contributing Factors

The settlement, contradictory to the science of traumatic brain injury, improperly reduces compensation to otherwise eligible players, for conditions and events known to influence all classes of brain damage.

A. Benefits Are Improperly Reduced for Stroke

The settlement reduces benefits to a brain-injured player by an enormous 75% if he sustains a stroke post-concussion.[38] Individuals who have sustained a traumatic brain injury confront a markedly increased risk of stroke. In an article published in *Stroke: Journal of the American Heart Association*, researchers found 2.91% of patients suffered a stroke in the three-month period following TBI, compared with 0.30% for those with no traumatic brain injury; a tenfold difference. After one year, the risk of stroke decreased, but those with a traumatic brain injury remained at 4.6 higher risk. After five years, traumatic brain injury sufferers were 2.3 times more likely to sustain a stroke.[39]

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[38] Revised settlement Document 6073-2. §6.7(b)(ii) page 40 of 163.

[39] Chen, YH, Kan, JH., Lin HC. Patients With Traumatic Brain Injury Population-Based Study Suggests Increased Risk of Stroke July 28 online issue of Stroke: Journal of the American Heart Association http://stroke.ahajournals.org/content/early/

B. The Settlement Improperly Reduces Benefits Based Upon Years of Play and Prior TBI

Player compensation, as determined by the settlement, is based upon years of play, and reduced for any traumatic brain injury occurring before qualified NFL play.[40] This arbitrary distinction is without empirical support. Grounding compensation upon years of NFL service ignores the reality that a player can sustain a brain injury, and its permanent consequences, any time throughout his professional career, including preseason or first season play. Reducing benefits for players with fewer than six seasons' disregards the average NFL career is only 3.3 years, according to the NFL Players Association.[41] The settlement only compensates players on the team roster, ignoring those who sustained a career-ending pre-season traumatic brain injury and eliminated before the first game.

Repetitive concussions within a single season can lead to permanent brain damage. Players repeatedly sustain concussive injuries in the same game or week, in both practice and competition during a season. Repeated concussions before the brain heals, can lead

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2011/07/28/STROKEAHA.111.620112.abstract; TBI May Be An Independent Risk Factor For Stroke: http://www.neurology.org/content/81/1/33.abstract

[40] Revised settlement Document 6073-2. §6.7(b)(i) and (iii) page 40 of 163.

[41] http://www.statista.com/statistics/240102/average-player-career-length-in-the-national-football-league/

to permanent brain damage. James Kelly, MA, MD, FAAN, founder and former director of the National Intrepid Center of Excellence (NICoE), one of America's leading expert neurologists on treating concussions, observed, "The risk of sustaining a concussion in football is four to six times greater for the player who has a history of concussion, than for the player who has no history of concussion. Repeated concussions have been shown to disclose cumulative neuropsychological and neuroanatomical damage, even when incidents are separated in time by months or years."[42] Penalizing a player for an earlier concussion, rendering him more susceptible to permanent brain damage from a second concussion while in the NFL, is illogical, inequitable, and has no scientific foundation.

Data regarding military TBI victims is illustrative. A study of combat veterans returning from Iraq and Afghanistan, reported in the New York Times, found the constellation of post-concussive syndrome symptoms worse for veterans who experienced more than one traumatic brain injury, suggesting a cumulative impact of head injuries.[43]

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[42] Kelly, JP, Rosenberg, JH. Diagnosis and management of concussion in sports. Neurology 1997; 48:575-580 at page 576.

[43] Dao, James. Symptoms of Traumatic Brain Injury Can Persist for Years. New York Times. July 18, 2012 http://atwar.blogs.nytimes.com/2012/07/18/symptoms-of-traumatic-brain-injury-can-persist-for-years/?_php=true&_type=blogs&_r=0

III. The Baseline Assessment Program is Deficient

Analysis of the Baseline Assessment Program (BAP) testing protocols reveals scientific flaws calculated to exclude many players with meritorious claims. Exclusive reliance on neuropsychological testing to determine impairment ignores the physical, emotional, and behavioral injuries historically recognized, acknowledged, and treated among the full-range of post-concussive consequences. Players affected by conditions such as mood changes, depression, impulsivity, aggressive disorder, are excluded from this settlement using the BAP criteria for impairment. Persistent, debilitating headaches, dizziness and sleep disorders would not be deemed disabling utilizing the BAP criteria.[44] The Centers for Disease Control cautions, "because the brain is very complex, every brain injury is different" and "because all brain injuries are different so is recovery."[45]

In isolation, these neurocognitive tests may not detect conditions for which they were appropriately designed. Neuropsychological assessment provides one aspect of determining cognitive impairment, as a component of a comprehensive assessment, not in seclusion from all other available evidence of an

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[44] Dr. Robert A. Stern, Ph.D., supra. http://www.aging.senate.gov/imo/media/doc/Stern_6_25_14.pdf

[45] Facts About Concussion and Brain Injury. Version 2. Centers for Disease Control and Prevention. U.S. Department of Health and Human Services

individual's daily functioning.[46] The utilization of the neuropsychological assessment protocol as the sole means of determining Level I, Neurocognitive Impairment is medically unsound and unacceptable in practice.[47] In common medical practice, this type of neuropsychological assessment would comprise only one of many testing modalities and criteria for diagnosis of traumatic brain injury. This limited testing is contrary to good medical practice which seeks to include all meaningful data in arriving at a diagnosis of traumatic brain injury.

The BAP overlooks important pre-and post-injury observations of a player's family, friends, and associates. A neuropsychologist, relying exclusively on findings of the BAP to determine level of cognitive impairment, without considering these observations, is intentionally discounting the full range of evidence which forms a meaningful diagnosis.

While neuropsychological testing is approved by the American Academy of Neurology as a tool to determine cognitive dysfunction, the Academy cautions, "[L]ike other tests, neuropsychological assessments are of limited usefulness by themselves and must be

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[46] Sbordone, RJ. The Hazards of Strict Reliance on Neuropsychological Tests. Applied Neuropsychology: Adult, 21 98-107 (2014).

[47] Declaration of Brent Masel, M.D. and Gregory O'Shanick, M.D. Document 6180-2 filed 9/30/14 page 5 of 11. Declaration of Robert A. Stern, PhD., Id. at page 6 of 61.

interpreted in conjunction with other clinical, imaging and laboratory information."[48]

A. The Testing Criteria Places Unjustifiable Prominence on Tests of Exaggeration and Effort

The BAP embraces inappropriate measures of exaggeration, malingering, and effort to deny valid claims. The malingering testing protocol employs eight separate symptom validity tests including the Minnesota Multiphasic Personality Inventory (MMPI-2RF).[49] The suggestion of intentional falsehood, and perhaps even perjury, must be approached with extreme caution.[50]

A battery of "tests," purportedly formulated to distinguish the malingerer from the legitimately injured, implicitly assumes a test can differentiate between a brain-injured person and one feigning symptoms and complaints. This supposition dismisses fundamental, known truths characteristic of traumatic brain injury. Can a lack of motivation test distinguish intentional malingering from the effects of traumatic

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[48] Assessment: Neuropsychological testing of adults. Consideration for neurologists. Report of the Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology. Neurology 1996; 47:592-599 at page 592.

[49] Revised Settlement Plan Document 6073-2, Exhibit B-2 page 113 of 163.

[50] Lezak, MD, Howieson, DB, Bigler, ED, Tranel, D., Neuropsychological Assessment, Fifth Ed. Oxford University Press page 833.

brain damage itself? Should failing be attributable to chronic pain and depression, or intentional falsehoods?

There is no agreement within the scientific community regarding many aspects of effort testing.[51] The conclusion that a test-taker is malingering, scoring below the arbitrary cutoff of a symptom validity test may be inappropriate,[52] but will cause denial of any benefits to players under the BAP.

Applying malingering measures to the diagnostic testing was rejected by the United States Army. On April 10, 2012, the U.S. Department of the Army issued a "Memorandum for Commanders, Mecom Regional Medical Commands regarding posttraumatic stress disorder.[53] The Memorandum categorically asserts, "[P]oor effort testing on psychological/ neuropsychological tests does not equate to malingering, which requires proof of intent per OTSG/ MEDCOM Policy II-076."[54]

The utilization of a subtest of the Minnesota Multiphasic Personality Inventory (MMPI-2) known as

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[51] Erin D. Bigler, *Effort, Symptom Validity Testing, Performance Validity Testing and Traumatic Brain Injury,* Brain Injury, 2014. 28(13-14) 1623-1638. Accessible online at http://www.tandfonline.com/doi/pdf/10.3109/02699052.2014.947627.

[52] Id. at. 1634.

[53] Department of Veterans Affairs and Department of Defense. Va/DoD Clinical Practice Guideline for Management of Post-Traumatic Stress. http://cdn.govexec.com/media/gbc/docs/pdfs_edit/042312bb1.pdf.

[54] Id. at 7.

the Fake Bad Scale (FBS), renamed the Symptom Validity Scale to determine symptom exaggeration, is misguided and reckless.[55]

The author of the MMPI itself, James N. Butcher, has rejected the inclusion of this scale in the inventory, stating, "[T]he Fake Bade Scale (FBS; Symptom Validity Scale) had fundamental psychometric flaws, interpretive problems and potentially adverse social consequences." After almost two decades of use, the validity of the FBS has not been empirically established.[56]

B. The Testing Protocol Ignores Positive Neuroimaging Studies In Determining Eligibility

Although recent neuroimaging advances allow neuroscientists to detect structural changes in the brain, imaging such as diffusion tensor imaging (DTI), are not recognized under the settlement to confirm traumatic brain damage. DTI is an important

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[55] The scale comprises 43 questions used in the personality inventory. Patient endorsement of somatic complaints; ("Much of the time my head seems to hurt all over"); sleep disturbance complaints, ("my sleep is fitful and disturbed"); tension or stress complaints, ("I find it hard to keep my mind on a task or job"); and categories of low energy and deviant attitudes or behaviors, is supposedly characteristic of exaggeration.

[56] Gass, CS, Williams, CL, Cumella, E, Butcher JN. Kelly, Z., Ambiguous Measures of Unknown Constructs: The MMPI-2 Fake Bad Scale (aka Symptom Validity Scale, FBS, FBS-r). Psychological Injury and Law. Published online: 22 January 2010. http://link.springer.com/article/10.1007%2Fs12207-009-9063-2#page-1

diagnostic tool, alongside neuropsychological testing and family/colleague observations, to detect traumatic brain injury.[57] Not only is this evidence excluded, there is no potential to permit future use as technological improvements enhance sensitivity.

The Department of Defense believes that DTI studies are important in diagnosing and understanding the consequences of mild traumatic brain injury, contrary to the NFL settlement protocol. DTI testing was employed and relied upon by the Department of Defense, in the Afghanistan conflict, to diagnose mild traumatic brain injury.[58] The settlement prevents those retired players with positive DTI findings from submitting this evidence now or in the future to support a finding of permanent brain damage.

The absence of positive imaging data permits skeptics of the consequences of mild traumatic brain and the post-concussive syndrome to contend that no brain damage has occurred. They suggest positive findings would confirm pathological changes to the brain because of trauma. Using these new neuro-imaging modalities will provide objective evidence of

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[57] Erin D. Bigler, *Structural Imaging,* in Textbook of Traumatic Brain Injury 2nd Ed. Pages 73-90 (Jonathan M. Silver, et al. eds. 2011).

[58] Brain Injuries are seen in scans of veterans, Grady, Denise, New York Times, June 1, 2011 http://www.nytimes.com/2011/06/02/health/02brain.html?_r=0; Adam, O., et al Diffusion Tensor Imaging in Acute Blast-Related Mild Traumatic Brain Injury in Injured Service Members in Afghanistan. Neurology February 12, 2013; 80(Meeting Abstracts S14.002 http://www.neurology.org/cgi/content/meeting_abstract/80/1_MeetingAbstracts/S14.002

structural brain damage, impossible to substantiate previously.

CONCLUSION

The petition for a writ of certiorari should be granted.

Respectfully submitted,

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