

STEM CELL THERAPY FOR ATHLETES

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INTRODUCTION

In this new reality, the cutting edge is no longer just what jocks are putting into their bodies. It's about what they're *putting back* into their bodies.¹

Pittsburgh Steelers orthopedist, Jim Bradley, says that in the past year he has seen half a dozen athletes go to countries such as South Korea, Japan, Germany, and Russia in pursuit of stem cell procedures.² He believes that this is only the beginning of a growing trend.³ The questions facing professional sports leagues today are whether they should allow athletes to travel to foreign countries to undergo a treatment that is not currently legal in the United States, and whether those athletes who receive the banned treatments should then be permitted to play.

At the heart of this inquiry is whether professional sports organizations and leagues have the legal authority to regulate the use of such procedures by their athletes. Professional sports organizations *do* have the authority to make their own rules and set their own standards for types of permissible medical treatments. Although contract laws, antitrust laws, civil rights laws, and numerous other laws govern professional sports, there are currently no laws prohibiting professional athletes from seeking medical treatment abroad if permitted by their league.

This article argues that professional sports leagues should continue to allow athletes to pursue stem cell treatments in foreign countries, and return to their career in professional sports in the United States, as long as the athletes follow recommended guidelines. First, players may only seek stem cell treatment abroad if they have the approval of their team's physician or a neutral physician approved by the league. This is to protect the players as well as to ensure that athletes do not seek treatment for performance enhancing reasons. Second, the approving physician may only give his or her endorsement if it is in good faith. This good faith standard means that the physician cannot withhold treatment if it is in the player's best interest.

¹ Shaun Assael, *Chasing the Miracle Cure*, ESPN (Oct. 5, 2011), http://espn.go.com/espn/story/_id/7058209.

² *Id.*

³ *Id.*

As explained below, when determining whether a player should receive stem cell treatment, the physician should consider four factors: (1) the age of the player, (2) the availability of alternative treatments, (3) the severity of the player's injury, and (4) the recovery success of similar injuries treated using stem cell therapy. First, considering the age of the player is important to determine the potential remaining length of the athlete's career. Second, the availability of alternative treatments is important to determine if other measures can help before resorting to stem cell therapy. Third, the severity of the player's injury is significant in determining if stem cell treatment alone will make a difference. Fourth, it is important to look at the success of recovery from similar injuries treated using stem cell therapy in order to gauge the success of stem cell therapy with that particular type of injury. Finally, leagues should restrict athletes to the use of mesenchymal stem cells, which come from their own body.

In Part I, this article describes the five known types of stem cells: embryonic stem cells, fetal stem cells, stem cells found in the umbilical cord, induced pluripotent stem (iPS) cells, and adult stem cells. Part II then explains the nature of the stem cell therapy that most athletes currently receive. Part III examines the sudden expansion of stem cell therapy throughout the world of professional sports. Part IV looks at how current rules and regulations affect the use of stem cell treatments in professional sports. Finally, Part V recommends guidelines for policing this growing phenomenon. These guidelines include only allowing stem cell treatment with the approval of a team physician or league appointed physician in good faith and restricting stem cell treatments to using only mesenchymal stem cells.

I. A BRIEF OVERVIEW OF STEM CELLS

When most people think about the often-controversial practice of stem cell research, they tend to think first about the use of stem cells from aborted fetuses to do research on paralyzed rats in a lab. While this may be somewhat true, stem cells have many other uses. Some call stem cells "immature cells with life-changing potential."⁴ Despite sounding like the description of a

⁴ *Id.*

teenager who has yet to realize their full potential, this may be the most simple and most accurate way to explain what stem cells are.

The human body is composed of hundreds of specialized cells that perform specific functions according to the tissue or organ they compose.⁵ Once these cells mature and have a specific function, they cannot change into a different type of cell.⁶ Stem cells are simply cells that have not yet matured and received a specialized function in the body. There are several known types of stem cells—embryonic stem cells, fetal stem cells, stem cells found in the umbilical cord, induced pluripotent stem (iPS) cells, and adult stem cells.⁷

A. Embryonic Stem Cells

Embryonic stem cells come from very early embryos, and they divide and multiply to become a human fetus.⁸ Embryonic stem cells only last until about eight weeks after fertilization because they then become cells with specialized jobs to do as the fetus continues to grow.⁹ Researchers and doctors rarely use this type of stem cell because of the risk that the cells will continue to divide and multiply, thus forming cancerous tissue.¹⁰ This type of stem cell seems to cause the most controversy between scientists and activists because of the use of aborted fetuses in research.

B. Fetal Stem Cells

Fetal stem cells come from a fetus, generally ten weeks from gestation. Fetal stem cells are similar to adult stem cells in that they are typically tissue-specific and produce mature cell types within the exact tissue or organ where they reside.¹¹ In a fetus,

⁵ JACQUELINE LANGWITH (ED.), *OPPOSING VIEWPOINTS: STEM CELLS* 23-24 (2007).

⁶ *Id.* at 24.

⁷ *International Society for Stem Cell Research*, (APR. 24, 2012), http://www.closerlookatstemcells.org/Stem_Cell_Types.htm.

⁸ TONEY ALLMAN, *RIPPED FROM THE HEADLINES: STEM CELL RESEARCH* 9-12 (2007).

⁹ *Id.* at 12-13.

¹⁰ *International Society for Stem Cell Research*, *supra* note 7.

¹¹ *Id.*

many of the tissues contain stem cells, driving the quick growth and development of the organs.¹²

C. Umbilical Stem Cells

Cord blood stem cells are the stem cells found in the umbilical cord at birth. The umbilical cord is abundant in blood-forming stem cells that are tissue-specific, similar to those found in adult bone marrow.¹³ Scientists and doctors currently use these cells to restore the blood system after certain cancer treatments, as well as to treat other diseases and conditions of the blood.¹⁴

D. Induced Pluripotent Stem (iPS) Cells

Induced pluripotent stem cells, also called iPS cells, are a relatively new development in stem cell research. Scientists have discovered how to reprogram cells that already have a specialized function in order to make them behave like an embryonic stem cell, eliminating the controversy of using aborted fetuses. Scientists manufacture these cells “by inducing the specialized cells to express genes that are normally made in embryonic stem cells and that control how the cell functions.”¹⁵ Induced pluripotent stem cells have characteristics that are very similar to embryonic stem cells, such as the ability to become cells of any organ or tissue.¹⁶ This type of stem cell seems promising for researchers because scientists can create them for specific patients to treat certain diseases.¹⁷ Unfortunately, scientists must further refine the procedures used to create iPS cells to allow for their safe and effective use in humans.¹⁸

E. Adult Stem Cells

Adult stem cells are the type of cells most often used in stem cell therapy treatment for athletes. Adult stem cells are

¹² *Id.*

¹³ *Id.*

¹⁴ *Id.*

¹⁵ *Id.*

¹⁶ *Id.*

¹⁷ *Id.*

¹⁸ *Id.*

undifferentiated cells found among specialized cells in a tissue or organ.¹⁹ An adult stem cell is tissue-specific, meaning that it can renew itself and can become a specialized mature cell type according to the tissue or organ where it is located.²⁰ The primary role of an adult stem cell is to maintain and repair that tissue or organ.²¹ Adult stem cells are not as flexible as embryonic stem cells and cannot give rise to all types of body cells.²² Nevertheless, they can divide and multiply in order to give rise to new cells in the organs where they reside.²³ For example, bone marrow, found in the center of bones, has adult stem cells that can give rise to new blood cells and new bone cells.²⁴

Just like embryonic stem cells, adult stem cells are not yet specialized.²⁵ Instead they wait for a signal that, if it occurs, prompts the adult stem cells to multiply and give rise to new cells in the organ where they are located.²⁶ The adult stem cells that are most prevalent are the stem cells in the skin. Whenever the skin is injured, skin cells die and are replaced by adult stem cells. Before the injury, the adult stem cells are “resting.” When an injury damages the skin cells, the body signals the resting stem cells and each adult stem cell divides into two cells. One of these two cells becomes a skin cell, which moves to the wound to repair the damage to the skin. The other cell remains a stem cell.²⁷ One day, scientists may be able to use stem cells from bone marrow to cure various diseases, from leukemia and other types of cancer to diabetes, Alzheimer’s, Parkinson’s disease, and spinal cord injuries. If one cannot use their own stem cells, then they must find someone whose bone marrow matches their own. The best match usually comes from a family member.

One type of adult stem cell is the mesenchymal stem cell.²⁸ This type of adult stem cell is found in a number of tissues and

¹⁹ LANGWITH, *supra* note 5.

²⁰ *Id.*

²¹ *Id.*

²² Allman, *supra* note 8 at 13.

²³ *Id.*

²⁴ *Id.*

²⁵ *Id.* at 14.

²⁶ *Id.*

²⁷ *Id.*

²⁸ *International Society for Stem Cell Research, supra* note 7.

can produce bone, cartilage, and fat.²⁹ These cells may also aid in the regeneration of tissue.³⁰ This is the most common type of stem cell used in stem cell treatment in athletes. Doctors involved in sports medicine are particularly interested in mesenchymal stem cells because they come from fat and bone marrow in large quantities.³¹ Bone marrow is the best location to find these cells.³² These cells *might* be able to repair injured cartilage, bones, tendons, and muscles when properly cultivated and injected into the damaged area.³³ Additionally, if they are able to repair the battered and bruised body, the process can happen much more quickly than conventional surgical methods done with plates and screws.

All stem cells are either allogeneic, meaning they come from a donor or other source, or they are autologous, meaning they come from one's own body.³⁴ The best type of stem cells for regenerative treatment are autologous cells because they are the most likely to be received by one's body since they come from one's own fat or bone marrow.³⁵ Conversely, the body is likely to reject allogeneic stem cells because it recognizes them as a foreign substance, and this can lead to major health risks.³⁶

II. STEM CELL THERAPY

Bone marrow transplants and skin grafting may be vaguely familiar topics; however, one may not realize that these both involve types of stem cell therapy. Bone marrow transplants are the removal of stem cells from a donor's marrow which doctors then inject into the body of the donee in order to replace the unhealthy blood cells.³⁷ With skin grafting, usually performed on burn victims, doctors graft the new skin cells onto the injured

²⁹ *Id.*

³⁰ *Id.*

³¹ Assael, *supra* note 1.

³² Alex Martin & Devin Stone, *Is Stem Cell Therapy Safe?*, METROMD (Jan. 19, 2012), <http://metromd.net/is-stem-cell-therapy-safe/>.

³³ Assael, *supra* note 1.

³⁴ Martin & Stone, *supra* note 32.

³⁵ *Id.*

³⁶ *Id.*

³⁷ LANGWITH, *supra* note 5 at 26.

patient with the hope that the healthy cells will integrate into the patient's body and function as his own cells.³⁸

While cells are vital to the internal functions of the human body, they can function outside of the body as well. They can live and divide in special test tubes and petri dishes known as "cultures."³⁹ Scientists can then identify the stem cells and control them in order to prepare them for injection into an injured area of the body.⁴⁰

III. ATHLETES AND STEM CELL THERAPY

A. Stem Cell Treatments

In 2011, Peyton Manning traveled to Europe for a promising stem cell treatment of a neck injury. While Manning returned as a starter in the NFL, the treatment was not as successful for him as it has been for other athletes. Stem cell treatments commonly treat muscle, bone, tendon, and cartilage injuries, but very little has been done in the way of treating nerve injuries like Manning's.⁴¹ This could be the reason why his results were not what he initially sought.

One problem with these treatments is that they are all taking place overseas. While clinics worldwide have boasted dramatic results with these minimally invasive procedures, the United States prohibits doctors from culturing stem cells in any way, let alone in the advanced stages that other countries have already done. Some doctors believe that the United States is as far as ten years behind other countries in this area.⁴²

Major League Baseball pitcher Bartolo Colon has also been in the spotlight for seeking stem cell therapy. The New York Yankees starter sought treatment in March 2010 in the Dominican Republic while struggling to recover from rotator cuff surgery.⁴³ Colon's doctor, Joseph Purita, harvested marrow from the pitcher's pelvis, spun the marrow in a high-speed centrifuge,

³⁸ *Id.*

³⁹ *Id.* at 24.

⁴⁰ *Id.*

⁴¹ Assael, *supra* note 1.

⁴² *Id.*

⁴³ *Id.*

and then injected the mesenchymal-rich serum into Colon's right shoulder and elbow.⁴⁴ While Colon did travel to his home country of the Dominican Republic for the treatment, Dr. Purita stayed within FDA guidelines by opting not to wait weeks for the stem cells to multiply and grow as cultures and by choosing not to use the small amount of human growth hormone that he typically uses when performing the procedure.⁴⁵ Colon's recovery was so impressive that MLB officials reviewed the records of his treatment to make sure Dr. Purita did nothing illegal.⁴⁶

Of course, the procedure has its critics as well. Many believe that stem cell treatments are not effective and even have the potential to cause more damage to the injured area.⁴⁷ While the procedure does not seem to have worked for Peyton Manning's bulging disc in his neck, doctors believe that there was no additional harm done by the stem cell therapy.⁴⁸

B. Platelet-Rich Plasma Therapy

An alternative to stem cell therapy that is popular in other countries is platelet-rich plasma (PRP) therapy. Dr. Jim Bradley performed PRP therapy on Pittsburgh Steeler Hines Ward when he tore his MCL in January 2009.⁴⁹ Bradley performed this procedure by taking a sample of Ward's blood and placing it in a centrifuge.⁵⁰ Bradley then injected the separated platelet-rich plasma serum into Ward's injured knee.⁵¹ Ward returned to play in Super Bowl XLIII two weeks later.⁵² Had they used a conventional method, such as rest coupled with physical therapy, it is likely that Ward would have been watching the big game from the sidelines. At the time this was a groundbreaking treatment,

⁴⁴ *Id.*

⁴⁵ *Id.*

⁴⁶ *Id.*

⁴⁷ *How Safe Is Peyton Manning's Stem Cell Therapy?*, THE WEEK (Sept. 22, 2011), <http://theweek.com/article/index/219514/how-safe-is-peyton-mannings-stem-cell-therapy> (hereinafter *Manning Therapy*).

⁴⁸ *Id.*

⁴⁹ Assael, *supra* note 1.

⁵⁰ *Id.*

⁵¹ *Id.*

⁵² *Id.*

and Dr. Bradley received widespread acclaim for being a medical genius.⁵³

Other athletes that have since had PRP therapy are Tiger Woods, Kobe Bryant, Rafael Nadal, Terrell Owens, and Alex Rodriguez.⁵⁴ According to Jarvis Green, former defensive end for the New England Patriots, before he underwent PRP treatment he could barely walk up the stairs. Three weeks later he attended training camp, without missing a day.⁵⁵

Compared with current stem cell therapies, however, PRP therapy, “looks about as revolutionary as leeches.”⁵⁶ According to an article in *ESPN The Magazine*, foreign physicians are using cellular science to extract millions of stem cells out of bone marrow and fat to then engineer into “injury-fighting miracle workers.”⁵⁷ In contrast, PRP therapy relies on a comparatively small amount of stem cells that swim in the bloodstream.⁵⁸ These platelets are highly concentrated and contain about ten times the concentration that is in a person’s normal blood.⁵⁹ In Europe, professional athletes are even taking precautionary measures by having their stem cells collected and grown into lines of bone and tissue in case of injury.⁶⁰

Peyton Manning was not the only professional athlete traveling overseas in search of a miracle treatment in the summer of 2011. At the same time, Kobe Bryant traveled to Germany to receive PRP therapy in his knee. Before this, Bryant underwent

⁵³ *Id.*

⁵⁴ Damon Noto, *Kobe Bryant Undergoes Platelet-Rich Plasma Therapy*, SPINE AND JOINT CENTER (Aug. 20, 2011), <http://blog.spineandjointcenter.com/stem-cells-plasma-therapy-kobe-bryant/>; see also, Mike Puma, *Yankees’ A-Rod Saw German Doctors on Advice from Kobe*, NEW YORK POST (Dec. 28, 2011), http://www.nypost.com/p/sports/yankees/rod_goes_global_for_knee_therapy_BWap0W9IRfSkRIVybErb5J.

⁵⁵ Alex Martin & Devin Stone, *Why Stem Cells are the New Security for these Professional Athletes*, METROMD (2012), <http://metromd.net/kobe-manning-why-stem-cells-are-the-new-security-for-these-professional-athletes/>.

⁵⁶ Assael, *supra* note 1.

⁵⁷ *Id.*

⁵⁸ *Id.*

⁵⁹ David Brickley, *Dr. Raj Explains Kobe Bryant’s PRP Knee Procedure*, LAKER NATION (Jul. 8, 2011), <http://lakernation.com/2011/07/dr-raj-explains-kobe-bryants-prp-knee-procedure/>.

⁶⁰ Assael, *supra* note 1.

surgery to remove damaged fragments from the area.⁶¹ Bryant reportedly underwent PRP treatment again in October 2011, but this time for an injured ankle.⁶² Bryant seems to believe in the treatment's success so much that he has recommended it to other athletes, including Yankee third baseman Alex Rodriguez.⁶³

When speaking about Bryant's treatment, Dr. Bal Raj, a board certified orthopedic surgeon specializing in sports and fitness procedures, says that since Bryant's problem was a loss of cartilage in his knee he was left with very few options.⁶⁴ One of his options was knee replacement surgery—a career-ending option.⁶⁵ Bryant opted instead for PRP therapy—a joint preserving method as opposed to a joint replacing procedure.⁶⁶ When asked about this process, Bryant admitted to not knowing everything about it, but he said that he did know that his knee felt 90 percent better.⁶⁷ When asked what he could now do that he was unable to do before the procedure, his response was, "Anything I want. I can run. I can jump. I can run the track. I can lift weights the way I want to lift weights. I can practice every day. Those are things I couldn't do last year."⁶⁸

Stem cell therapy and PRP therapy seem to yield promising results; however, as with any "miracle cure," there are risks and possible side effects. One possible reaction to stem cell treatment is neither negative nor positive—it is just the chance that absolutely nothing will change. Still, there is also the chance that the host will reject the stem cells as a foreign substance in the

⁶¹ Brickley, *supra* note 59.

⁶² Mike Puma, *Yankees' A-Rod Saw German Doctors on Advice from Kobe*, NEW YORK POST (Dec. 28, 2011), http://www.nypost.com/p/sports/yankees/rod_goes_global_for_knee_therapy_BWap0W9IRfSkRIVybErb5J.

⁶³ *Id.*

⁶⁴ Brickley, *supra* note 59.

⁶⁵ *Id.*

⁶⁶ *Id.*

⁶⁷ Marc J. Spears, *Kobe Bryant Q&A: Laker for Life?*, YAHOO SPORTS (Dec. 19, 2011), http://sports.yahoo.com/nba/news?slug=mc-spears_kobe_bryant_interview_lakers_nba_121811.

⁶⁸ *Id.*

body.⁶⁹ This situation could lead to risks such as infection, tumors, and even cancer.⁷⁰

IV. CURRENT REGULATIONS FOR STEM CELL THERAPY

With the issue of stem cell therapy testing the ethical boundaries of sports at every level, anti-doping authorities and federal regulators are thrown into uncharted territory and left asking questions about whether they can classify one's own blood as a drug.⁷¹ Instead of the issue of an athlete's performance enhancement, the issue now turns to the potential enhancement of the recovery process. "In this new reality, the cutting edge is no longer just what jocks are putting into their bodies. It's about what they're putting back into their bodies,"⁷²

The Food and Drug Administration (FDA) has put stem cell treatments in the same category as prescription drugs—meaning the treatments must pass the rigorous trial phase that every new drug must go through.⁷³ According to the FDA, the United States' policy on stem cell cultivation is to allow the injection of cells that scientists treat with "minimal manipulation." Minimal manipulation is "processing that does not alter the relevant biological characteristics of cells or tissues."⁷⁴ This allows for the performance of procedures such as PRP in the United States. Skeptics believe that the allowed "minimally manipulated" stem cells are nothing more than a long shot for success because the cells are so unpredictable.⁷⁵ Theodore Friedmann, the head of the World Anti-Doping Agency's (WADA) gene doping panel, says there is little evidence to show that stem cells taken from the bone marrow at one area of the body and injected into another area will do anything at all.⁷⁶ In fact, he says, if you put stem cells into an

⁶⁹ *ESPN: Outside the Lines* (Jan. 27, 2012).

⁷⁰ *Bartolo Colon, Stem Cell Pioneer?*, IT'S ABOUT THE MONEY (May 12, 2011), <http://itsaboutthemoney.net/archives/2011/05/12/bartolo-colon-stem-cell-pioneer/>.

⁷¹ Assael, *supra* note 1.

⁷² *Id.*

⁷³ *Manning Therapy*, *supra* note 47.

⁷⁴ Assael, *supra* note 1.

⁷⁵ *Id.*

⁷⁶ *Id.*

environment that they are unfamiliar with, the most likely outcome is that most of them will die.⁷⁷

When the WADA first began to consider how to regulate “blood-spinning therapies,” it banned all of them.⁷⁸ Then after conducting several studies, which showed that PRP therapy did not lead to the same results that using steroids did, the WADA lifted all its restrictions in early 2011.⁷⁹ Now, the WADA and other anti-doping authorities are struggling with what they should do about stem cell therapies. Friedmann endorses doing nothing—at least for now.⁸⁰ Stemming from his skepticism of the effectiveness of stem cell treatments, he believes that it may not even be an issue in the future due to the treatment’s lack of success.⁸¹

The NFL, NBA, MLB, and other professional sports organizations currently do not ban stem cell treatment as long as the process does not involve the use of human growth hormones (HGH).⁸² Despite its illegality in the United States, most professional sports league’s steroid policies do not forbid stem cell therapy.⁸³ This is because no professional sports league considers stem cells to be performance-enhancing drugs, despite sharing some of the same characteristics as certain performance-enhancing drugs.⁸⁴ One of these characteristics is that they may allow athletes to recover from injuries more quickly than conventional methods like surgery and physical therapy.⁸⁵ According to David Epstein of *Sports Illustrated*, “Bone marrow concentrates do contain natural ‘growth factors’ that can stimulate the healing and growth of tissues, but they do not contain the kind of synthetic HGH that is banned in sports.”⁸⁶ In this way, stem

⁷⁷ *Id.*

⁷⁸ *Id.*

⁷⁹ *Id.*

⁸⁰ *Id.*

⁸¹ *Id.*

⁸² Mannie Barling, *Stem Cell and Platelet-Rich Plasma (PRP) Treatments*, BLEACHER REPORT (Sep. 19, 2011), <http://bleacherreport.com/articles/857012-stem-cell-and-platelet-rich-plasma-prp-treatments>.

⁸³ *Manning Therapy*, *supra* note 47.

⁸⁴ *Bartolo Colon*, *supra* note 70.

⁸⁵ *Id.*

⁸⁶ David Epstein, *Stem Cell Procedure Nothing New*, SPORTS ILLUSTRATED (May 2011),

cell treatments may actually provide the same type of benefits that athletes are searching for when they take various performance-enhancing drugs like HGH, without actually being a banned substance.

The controversy actually begins when stem cell treatments are present in conjunction with HGH. The WADA, as well as Major League Baseball, the National Football League, and other professional sports leagues, ban the use of HGH by athletes; however, those athletes seeking to use HGH in conjunction with stem cell therapy may seek a therapeutic use exemption (TUE) to avoid this restriction.⁸⁷ While many believe the use of HGH will improve the chances of stem cell therapy's success, it is unlikely that the governing bodies of the major sports will grant TUEs because there are a limited number of medical conditions for which HGH is an accepted form of treatment.⁸⁸ In fact, performance-enhancing drugs like HGH have *never* proven to increase an athlete's recovery time on their own. Thus, it is more than likely that league's will not grant a TUE for HGH in any case.⁸⁹ Therefore, it appears that professional athletes will have to continue to receive stem cell therapy without the use of HGH to improve their odds of a successful recovery.

V. RECOMMENDATIONS FOR STEM CELL REGULATION

Professional sports leagues should allow stem cell therapy for professional athletes because it can aid players in their recovery from injuries, prolong their athletic careers, provide greater entertainment for sports fans, and help players avoid surgeries that could have adverse effects as they grow older.

http://sportsillustrated.cnn.com/2011/writers/david_epstein/05/12/colon.stem.cells/index.html.

⁸⁷ Christian Red, *Peyton Manning's Receiving Stem Cell Therapy Thrusts Medical Procedures Back Into Sports Spotlight*, NEW YORK DAILY NEWS (Sep. 18, 2011), http://articles.nydailynews.com/2011-09-18/sports/30199401_1_cell-treatment-prp-cell-therapy/2.

⁸⁸ *Id.*

⁸⁹ *Bartolo Colon*, *supra* note 70.

A. Recovery from Injury

As previously discussed, it is possible that stem cell therapy can aid athletes in recovering from injuries more quickly.⁹⁰ While stem cell therapy did not help Peyton Manning's neck injury, it seems as though other athletes who used the PRP treatment, such as Bartolo Colon, Hines Ward and Kobe Bryant, are doing quite well. Even though it is not a miracle cure for every ailment, there have been no negative effects in professional athletes who used either treatment. This makes a strong case for at least giving stem cell treatment a shot at correcting injuries.

B. Prolonged Athletic Careers

Allowing athletes to receive stem cell treatments can prolong their careers, possibly by several years. This would prevent the premature end of promising careers because of injury, as was the case for former NFL and MLB star Bo Jackson. This could be financially beneficial for the players, teams, and leagues they play for. More importantly, it could be better for the health of the athlete.

C. Greater Entertainment for Sports Fans

Every sports fan loves to cheer for his favorite players. Consequently, no one wants to see a fan-favorite forced to retire early due to a career-ending injury that stem cell therapy could potentially correct. Thus, it is likely that most sports fans would be in favor of allowing professional athletes to seek stem cell treatments in order to repair injuries. Allowing stem cell treatments would lead to greater enjoyment for fans because they will be able to root for their favorite players for a longer period of time. Teams and professional leagues would also reap the benefits of allowing stem cell treatments because fans are more likely to support an athlete they feel will have a long, potential-reaching career. Fans will attend more games and buy more merchandise featuring their favorite player's name and number to show their support, bringing greater enjoyment—and possibly monetary gain—to all parties involved.

⁹⁰ See *supra* part II; part III.A.

D. Avoidance of Surgery with Adverse Effects

Allowing athletes to undergo these procedures may not only help correct current injuries and prolong their careers, but it may also prove to be better for the athlete in the long run by preventing the need for future corrective surgeries. This could be especially true for football players who complain of injuries caused by the constant impact of the sport long after their careers end. Additionally, by reducing the lasting impact of these injuries or possibly correcting them altogether, it could relieve tension that sometimes occurs between former players and sports organizations, particularly the National Football League.

When arguing in favor of the use of stem cell therapy for professional athletes, one author even goes so far as to say that not only should American sports leagues embrace the use of stem cell therapy, but they should require it as treatment for all of their high profile athletes whenever necessary.⁹¹ This same author also believes that not using this medical technology puts the United States at a disadvantage when competing internationally:⁹² “You can be certain that Russian, Chin[ese], German and other European athletes are taking advantage of these treatments.”⁹³

Another issue remains: Should we consider the use of stem cell treatment in younger, healthier athletes performance enhancing? This is a definite possibility. So far, only injured athletes who have already undergone surgery or some other form of treatment have resorted to stem cell therapy. If the popularity continues to grow and near-miraculous results continue to occur, it is likely that younger athletes with only minor injuries may seek out stem cell treatments. This is something that may become a problem in the future and why professional sports leagues should preempt the outbreak of stem cell treatment for a scratched arm or bruised leg and only allow this type of treatment upon the approval of a team physician or physician appointed by the league. In turn, physicians must, in good faith, use their best judgment as to which players receive treatment and which do not. Factors they should consider in this decision are (1) the age of the

⁹¹ Barling, *supra* note 82.

⁹² *Id.*

⁹³ *Id.*

player, (2) alternative treatments, (3) the seriousness of the injury, and (4) the success of stem cell therapy in the treatment of similar injuries.

E. The Age of the Player

The age of the player should be a factor in deciding who receives treatment because younger players are likely to bounce back from an injury more quickly than older players. Also, a younger player has a longer career ahead of him, which a serious injury could jeopardize. An injury to an older player, on the other hand, may only speed up a pending retirement by a few months. Professional sports leagues should allow a player who has a promising career ahead of him to receive stem cell treatment before a player whose career is nearly over.

F. Availability of Alternative Treatments

Another factor in deciding who may receive stem cell therapy should be the availability of alternative treatments. If an athlete has previously undergone surgery or some form of therapy that was unsuccessful, stem cell therapy may be one of the few, or only, options left. Peyton Manning underwent multiple surgeries and had another surgery pending when he traveled to Germany for stem cell treatment in the summer of 2011. Since none of the surgeries were successful, it seemed as if there was no harm in trying an innovative treatment like stem cell therapy. Until there is more information available about the risks associated with stem cell therapy, it should not be the first method of treatment.

G. Severity of the Injury

The severity of the injury should also be a factor. Minor injuries may be able to heal with minimal therapy or even by simply resting. Obviously, these types of injuries do not need treatment with stem cell therapy. On the other end of the spectrum, severe injuries may not have much success with stem cell therapy, either. Bartolo Colon's treatment for a torn rotator cuff was successful, but had his injury been any more severe, stem cell treatment alone may not have been able to fix it as it appears to have done.

H. Success of Similar Stem Cell Treatments

The last factor to consider is the success of stem cell therapy in the treatment of similar injuries. While success in one athlete is not a guarantee in another, even if they have similar injuries, there are some injuries that seem to have a greater success rate than others. Nerve injuries like Peyton Manning's are less receptive to stem cell treatments whereas, muscle and ligament injuries like Bartolo Colon's torn rotator cuff or a torn ACL have seen more positive results.

Arguably, stem cell therapy is no different from conventional methods like surgery and physical therapy; however, it may be a better method because it is less invasive and seems to have a faster recovery time. Neither approach uses illegal drugs as long as doctors do not use HGH in stem cell therapy, and the type of therapy that athletes are receiving is limited to stem cells from their own body. As Brandon McClintock argued, "When you view the [stem cell] procedure as an alternative to a more invasive procedure...there is little argument to be made against its use in professional sports."⁹⁴

CONCLUSION

While there will always be players who, regardless of the rules, try to enhance their performance or exploit the benefits of innovative treatment, professional sports leagues should allow the use of stem cell therapy. These innovative treatments can allow players to recover from injuries quickly, prolong their athletic careers, provide greater entertainment for sports fans, and help players avoid surgeries that, as they grow older, could have complex, adverse effects. Professional sports leagues should do their best to regulate which players receive treatment by requiring athletes to get the permission of a physician before receiving any type of stem cell therapy. In turn, physicians should allow treatment only for healing injuries and not for performance enhancement. When considering which players may receive

⁹⁴ Brandon McClintock, *Stem Cell Therapy: Acceptable Treatment or Questionable Performance Enhancer?*, BLEACHER REPORT (May 11, 2011), <http://bleacherreport.com/articles/698129-stem-cell-treatment-acceptable-treatment-or-questionable-performance-enhancer>.

treatment, physicians should consider the age of the player, alternative treatments, the seriousness of the injury, and the success of stem cell therapy in treating similar injuries. Also, professional sports leagues should only allow players to undergo stem cell treatments that use stem cells from their own body because using embryonic stem cells or even adult stem cells from a donor pose additional risks and are more controversial.

