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THE BRAIN OF THE COLLEGE ATHLETE

Geoffrey Rapp*

I am going to take the discussion of economic issues for college athletes and look at it from a different perspective. Rather than talking about some of the economic issues athletes face, I want to talk about how they process and deal with economic issues, and offer some preliminary thoughts about what the brain might have to say about the scandals that we observe in college athletics.

The connection between brain science and sports is a relatively hot topic. In recent years, the attention has focused on football, concussions, and long-term brain injury. Over the past few years, there were a series of articles starting in the New York Times that really launched a nationwide discussion over these issues. I have always been a somewhat of a skeptic about the concussion story and some of the claims that are made by individuals conducting scientific research in this area, research which is frequently addressed in some of the leading stories. In part, my skepticism is based on the impossibility of controlled studies when it has to do with brain injury. We are not going to subject someone to a series of tackles in a violent manner then see what their brain looks like compared to someone who is tackled in a less violent manner.

Sometimes there are assertions of links between concussions sustained over a football career and behavioral changes, suicide, domestic abuse, etc., and those links are nearly impossible to prove on a scientific level. There has also been litigation regarding concussions and brain injury. I am also somewhat skeptical about the viability of those legal claims. I am also a little bit of a skeptic about some of the possible self-interests involved in those who try to advance the concussion story.

But I will freely acknowledge that things have changed thanks to these stories. Whether or not they are scientifically reliable, the stories certainly are poignant. On this PowerPoint slide, we have brain dissection images of an NFL player – who tragically committed suicide

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151
at age 50 and left, in his suicide note, as well as a text message he sent before he committed suicide, instructions to leave his brain to the NFL’s brain bank. He expressed concern that he was suffering from a neurodegenerative disease linked to repeated brain trauma. The stories are not just poignant; they have indeed prompted some significant changes in the rules, as most are probably aware, in professional football, greater attention to impact in the head area of players both in the professional and college level. Some of this attention has even benefitted U.S. servicemen and servicewomen, who suffer brain injuries overseas, as there have been concussion studies examining long-term health consequences for GIs.

But that is not what I want to talk about in terms of the discussion about the brain and sports today. Instead, I want to talk about the connections between the brain and college athletes getting into trouble. One does not need a long a memory to know that college athletes regularly get in trouble with or violate NCAA rules on extra benefits and other aspects of the NCAA rules. For example, consider Reggie Bush or Terrelle Pryor. The stories get sadder; consider Maurice Clarett, who ended up going to jail and having his life turn in a dramatically different direction than I think he expected it to go. And just so Buckeye fans do not think I am picking on Ohio State, in my early years at Toledo, when I first started teaching there, we had a great running back, Harvey “Scooter” McDougle, who met shady characters in Detroit and, soon after, he was shaving points for football and arranging to have other athletes do the same at basketball games my own university was involved in at the time.

When college athletes get in trouble, a number of individuals, entities, and organizations suffer. The school(s) and athletic program(s) suffer when the NCAA assesses punishments, reduces available scholarships, vacates championship seasons, etc. Coaches might be banned from continuing to coach at the college level. Conferences often lose because competitive balance is upset when a school like USC or Ohio State is not able to attract the same kinds of on-field talent. Fans lose, and they have very little legal recourse when they have a team that they are following that does not get to play in the post-season. But I think it is fair to say the athletes themselves also suffer. Their draft status is affected, their character is called into question, and they lose seasons that might be helpful to have to prove their ability to play at the professional level. In the case of Reggie Bush, for example, there has certainly been a negative effect on his ability to earn money through endorsements.
The question I would ask is, whether, for these college athletes: was worth it to take whatever impermissible benefit(s) they took that led to a scandal? So, in the case of the Ohio State Buckeyes, was it worth it for Terrelle Pryor to get tattoos and $14,000 or so in benefits? The USC scandal involved a lot more money, we think, that ended up going to Reggie Bush, his friends, family and supporters. But some of the impermissible benefits in the Reggie Bush scandal seem terribly unimpressive, like the use of a 1996 Chevy Impala or a single limo ride. Typically, these are not what you think of as being really high-ticket items. In the case of Toledo, players were shaving points in exchange for groceries. And if you think about losing your college career for groceries that starts to look somewhat irrational.

Prescriptions for college athletes in trouble, and explanations for that, I will not examine in detail:

- Athletes are too easily tempted. Maybe we should pay athletes. A lot of complications arise from that.
- The compliance offices cannot really detect violations. Maybe we should add staff to compliance offices.
- Rules are too complex. We can simplify them.
- Maybe we should try to come up with some better ways to punish the coaches and administrators involved.

I want to suggest that if we think a little bit about the brain and what it might have to say about college athletes, we might develop some new understandings. These commonly offered prescriptions have limitations and maybe we should think differently.

I want to focus what the brain might have to say. We know for sure that the brain continues to develop well through one's 20s. The higher order cognitive functions do not develop until someone enters their 30s. At this age, there are dramatic changes in the prefrontal cortex. This is the part of the brain that has to do with higher order cognitive capacities, like abstract thinking, meta-cognition, which is thinking about thinking, self-regulation and goal-setting, which means that well into their 20s, athletes are as highly susceptible as other 20-year-olds are, to hot situations involving stimuli or stressful situations. Additionally, they unlikely to have reached their final stages of brain development in the time they are playing college athletics, where the average age for a starter in college football is 20 years and ten months.

We are talking about 19-, 20- and 21-year-olds. They are unlikely to have developed regulated emotions to plan and organize. These areas of the brain really do not develop until the middle of one’s 20s or even into the 30s. Brain science is backing this up. The prefrontal cortex is the part of the brain we are probably most interested in here, and it
continues to develop into the 20s. In a Dartmouth study of a brain image, the colored areas of the brain in this PowerPoint slide were areas that change dramatically during someone's freshmen year. The image shows a number of areas of the brain are still evolving in college. These areas are thought to have the most to say about our ability to take in information from the world and regulate our emotions. Perhaps the most dramatic changes in the brain during your 20s have to do with the volume of white matter in your brain. If you look at someone's brain when he (or she) is about 20 years old, he (or she) has less volume of white matter. But when he (or she) is 30, the white matter volume has increased. We do not know exactly what white matter does in your brain, but we think that, at least what science tells us so far, is that it helps brain cells communicate with one another. More white matter volume helps to regulate behavior and encourage higher order cognitive functions.

So when we think about vulnerability to hot stimuli, when we consider a car that is pretty exciting-looking like this one linked to Terrelle Pryor, we can better understand, perhaps, why people can be vulnerable. I am sure some of you have been into tattoo parlors, and noticed lots of vivid imagery. Similar to exciting cars, tattoos are something that might be hard to resist for someone with a brain that is still developing.

So what are the implications? Well, we understand the brain is still developing. We could try to implement some of the same recommendations for college athletes that are offered to those instructing college students. Drawing from that, I would make some of the following suggestions:

- Encourage thinking about thinking.
- Develop and implement strategies to try and improve cognitive control among college athletes.

If you actually look at what we hand out to college athletes, these strategies do not look like they are truly being followed. For example, a selection from Nebraska's Student Handbook, which lists impermissible benefits. There are few examples of rule violations, but there are a lot of words. This is the kind of thing that is unlikely to be well received by one of these still developing college brains.