Playing With Pain:
Social Class and Pain Reporting Among College Student-Athletes*

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Abstract
Socio-economic class affects a variety of health outcomes – this includes the experience of pain. Little work, however, explores how class affects pain experiences of college student-athletes. This gap is notable given injuries frequently occur in this population. We argue that lower class student-athletes will ironically be more likely to experience pain but less likely to report it. We find evidence for this claim with a large survey of student-athletes from a major National College Athletic Association conference. We further present evidence that class may influence pain reporting via identity, experiential, and social pathways. Our results highlight how potentially vulnerable student-athletes may "play with pain."

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"No pain, no gain." "Play through the pain." These are common retorts when an athlete injures him- or herself. Yet, ignoring pain can have severe consequences for one's long-term performance, health, and overall well-being. It is thus not surprising that scholars and practitioners have paid particular attention to the causes and consequences of pain (e.g., Institute of Medicine, 2011). Scholars have identified a host of factors that influence pain perceptions (e.g., Wandner, Scipio, Hirsh, Torres, & Robinson, 2012) and pain reporting in different domains (e.g., Fillingim, Loeser, Baron, & Edwards, 2016). Yet, we are unaware of any work on the correlates of pain self-reports among college student-athletes. How do these individuals experience pain, and what factors account for variation? Moreover, which of these student-athletes are more or less likely to report pain? Sports medical personnel often rely on self-reports when caring for student-athletes (e.g., Saw, Main, & Gastin, 2015) – knowing the factors that lead to under-reporting would allow practitioners to be vigilant and potentially preempt long term student-athlete health problems.

In what follows, we first discuss pain reporting. We explain why college sports presents a unique domain where socio-economic class may affect pain reports. We then test our predictions with a novel data collection from a large sample of Division 1 National Collegiate Athletic Association student-athletes. Our results reveal a troubling paradox such that those who identify as being lower or working class anticipate experiencing more pain but also are likely to under-report the extent of the pain. We conclude with a discussion of implications and suggestions for future work.

Socio-Economic Status and Pain

Lower socio-economic status leads to poorer health outcome – as one's socio-economic status increases, one's health improves (e.g. Adler et al., 1994). Chen and Miller (2013: 724)

state, "Pervasive and striking disparities in physical health outcomes exist by socioeconomic status (SES) in our society." Not surprisingly, socio-economic status also matters when it comes to experiencing pain, with those of lower status experiencing more pain and feeling more disabled by pain (e.g., Dorner et al., 2011; Thomtén, Soares, & Sundin, 2012; Miljković et al., 2014). This relationship exists not just for objective status (e.g., education, wealth, education), but also for subjective socio-economic status (e.g., self-perceived social class) (e.g., Wakefield, Sani, Madhok, Norbury, & Dugard, 2016).[1] For example, Brown-Iannuzzi (2015) shows that subjective low socio-economic status leads to an increase in pain and pain symptoms; this effect occurs because those of lower perceived status are hyper-vigilant to threat meaning they exhibit particular sensory sensitivity and greater readiness to respond to stimuli.[2]

This dynamic should extend across settings including when it comes to injuries experienced by college student-athletes (which is our focus). We thus expect as one's subjective social status (i.e., class) increases, the experience of pain should decrease, all else constant (hypothesis 1). One important extension in the athletic context is to consider the likelihood that the student-athlete *reports* the pain. Extant studies typically focus on the experience of pain, concern about pain, the intensity of pain, life disruption and suffering due to pain, and the use of pain medications. In many domains, individuals have little incentive to knowingly misreport pain – such motivations do exist, however, for athletes. In sports, reporting pain flags a potential injury, which in turn can limit or end participation. Therefore, athletes may feel incentivized to conceal the extent of their pain or other injury-related symptoms. Under-reporting of concussions occurs with some frequency, for example, and reflects "a desire to continue playing, with

[1] In some cases, subjective status appears to be a better health predictor than objective status (e.g., Singh-Manoux, Marmot, & Adler, 2005).

[2] Alternatively, Chou, Parmar, & Galinsky, (2016) suggest that economic insecurity (which is presumably related to status) leads to a lack of control that in turn produces physical pain.

awareness that self-reporting symptoms will prolong return-to-play decisions…" (Meier et al., 2015: 507; also see Kroshus, Garnett, Hawrilenko, Baugh, & Calzo, 2015).

How might socio-economic status affect pain reporting among college student-athletes in particular? Consider that students of lower socio-economic status face unique challenges in navigating most university environments. Jury et al. (2017: 25, 26) explain that there are "*psychological* barriers that low-SES students face in higher education as a result of the foundational cultural practices that guide how universities function… Identity management is one of the toughest challenges low-SES students face when entering the cultural context of higher education…. [There is] the feeling of being disconnected…" (emphasis in original) (also see Reay, Crozier, & Clayton, 2009). For a low status student-athlete, the transition to college is likely facilitated by his or her identity as a student-*athlete* – most view their identity as athletes as equally salient, if not more salient than, their identity as students (NCAA, 2013; also see Brown, Glastetter-Fender, & Shelton, 2000; Burns, Jasinski, Dunn, & Fletcher, 2012; Rees, Haslam, Coffee, & Lavallee, 2015). Student-athletes with lower socio-economic status will perceive their identities as athletes as particularly salient and take steps to protect that identity even if it includes mis-reporting injuries that can limit or end participation.[3]

Beyond identity management, individuals from lower classes typically experience more hardship, which can increase their perceived ability to withstand pain.[4] They believe they can tolerate pain and thus report it less. Social pressures also can affect pain reporting – that is, "the pressure that athletes experience from individuals in their sport environment to continue playing with symptoms…" (Kroshus et al., 2015: 67; also see Trawalter et al,. 2012: 2). Pressure comes

[3] A large percentage of student-athletes live at levels below the poverty line, meaning they may, on average, be of lower status than non-athlete students (Huma & Staurowsky, 2012).
[4] Perceptions of hardship often underline perceptions of pain in other people (e.g., Tratwalter, Hoffman, & Waytz, 2012; Hoffman & Trawalter, 2016, Druckman et al., in press).

from multiple sources including one's coaches or one's family and friends. Low-status student-athletes may feel particular pressure to not disappoint family and friends who have supported them to enter what is often a new cultural and social world with unique opportunities (Jury et al. 2017). In short, psychological (identity), experiential (hardship/tolerance), and social (pressure) factors lead us to predict that student-athletes with lower socio-economic status will be less likely to report pain, all else constant (hypothesis 2).[5] In other words, the very people who experience more pain may ironically be less likely to report it.

Survey

We tested our hypotheses with a survey in which we solicited participation from NCAA Big Ten Athletic Conference student-athletes (i.e., our population is Big Ten student-athletes). We e-mailed an invitation to current student-athletes on March 30th, 2016, asking them to take part in a survey on college athletics. A total of 1,615 student-athletes completed (at least a portion of) the survey. Survey implementation details, and an explanation for our approach appear in the supplementary appendix.

To gauge pain reporting, we offered each respondent the following vignette (on using such vignettes, see Hébert, Meslin, Dunn, Byrne, & Reid, 1990; Druckman et al., in press). The exact text read:

> We are next going to ask you to imagine a hypothetical scenario and then we will ask you some questions about it. Do your best to imagine this actually occurred.
>
> *Imagine that you sustained an injury at the start of your team's season. There is not a strict protocol for how long it will take to return to play. Your team's medical personnel expect you to make a full recovery; however, they predict you will miss practice and competition for at least 4 and up to 8 weeks.*

[5] It also may be the case that lower socio-economic status generates feelings of a lack of control a la Chou et al. (2016); being unable to participate in sports may be exacerbate that feeling and thus be avoided.

Three sets of outcome variables followed this vignette. First, we asked two questions about *pain experience*: how painful the respondent through the initial injury would be and how painful the recovery process would be (both on 4-point scales, ranging from "not painful" to "extremely painful"). We recognize that this measure concerns the anticipation of pain rather than the actual ongoing experience of pain; however, we suspect it maps onto actual experiences insofar as most student-athletes likely have had some type of injury in the past and thus will imagine pain similar to what they previously experienced. The measures are similar to those used to capture perceptions of others' pain (e.g. Trawalter et al., 2012), but in this case, instead of others, it is a self-assessment.

Second, we asked two items that explicitly address *pain reporting*: would the respondent report the pain to medical personal (yes/no), and in reporting pain, would the respondent accurately report, under-report, or over-report the pain (on a five-point scale, ranging from "under-report a lot" to "over-report a lot"). Third, we sought to provide some insight into the proposed mechanisms. For identity, we asked respondents how unimportant or important their performance as a college athlete would be to their success after college (on a four-point scale, ranging from "very unimportant" to "very important"), how much desire they would have to return to play after an injury (on a five point scale, ranging from "no desire at all" to "a great desire"), and how much anxiety they would have from the injury and recovery process (on a five-point scale, ranging from "none at all" to "a great deal"). To measure hardship, we asked respondents how hard their lives have been (on a four-point scale, ranging from "not at all" to "extremely"); additionally, we asked about their expected tolerance for pain resulting from the injury in the vignette (on a four point scale, ranging from "very low tolerance" to "very high tolerance"). We further asked respondents how disappointed they thought their coaches, parents,

and family and friends would be if they did not return quickly from the injury (on five point scales, ranging from "not disappointed at all" to "extremely disappointed") (see Kroshus et al., 2015).[6]

We measured respondents self-perceived socio-economic status by asking whether they would describe themselves as being in the lower class, working class, middle class, upper middle class, or upper class; we coded this on a 5 point scale from lower to upper class (e.g., Druckman et al, in press). In focusing on self-perceived socio-economic status, as opposed to objective status, we follow the aforementioned work of Brown-Iannuzzi (2015) who argues subjective class is the more relevant construct when it comes to pain perceptions. We also asked respondents whether they had a partial or full athletic scholarship (coded 0 for no and 1 for yes). We suspect those on athletic scholarship to be less likely to report pain; as with student-athletes from lower socio-economic backgrounds, pain from an injury could hamper the scholarship-supported athletes' careers, which are presumably central to their identities (relative to those not on scholarship).

We additionally asked about each respondent's familial income, ethnicity, gender, year in school, in what sport(s) the respondent competes, highest level of education by one's parents, and the university the respondent attends. The inclusion of income allows us to ascertain whether subjective class is indeed a more salient factor than objective status. Prior work suggests that Black respondents may experience more pain (e.g., Anderson et al. 2009) but be less likely to report it (Wandner et al., 2012: 226; also see Trawalter et al., 2012: 2), and that women respondents are more willing to report pain (Wandner et al., 2012: 225). We suspect year in school to matter insofar as one may be more willing to report pain later in one's career. Finally,

[6] The scales varied across measures because we largely are adopting distinct questions from prior work and kept them consistent with that prior work.

we control for sport played, because sports for which injuries are more common may affect pain experiences and reporting behaviors. We sorted each sport into a low injury or high injury category, based on whether the number of reported injuries is below or above the mean score for NCAA sports (based on the NCAA's Injury Surveillance Program; see Kerr et al., 2014).[7] We provide full survey question wordings in the supplementary appendix.

Results

We expect pain reports to depend, in part, on gender and sport. As is true in virtually any survey, our sample did not perfectly represent the population on these important factors. Thus, we follow common practice, and, for all analyses, weight the data based on gender, sport, and university. This method facilitates generalization to the population of Big Ten student-athletes (see the supplementary appendix for weighted sample comparisons with the population).[8] All of the data we present in our descriptions of the sample and analyses are weighted.

Our sample is 45% female and 9% Black. Fifty-three percent are on at least a partial athletic scholarship, just over 50% come from sports we categorized as "high injury," and 47% are beyond their sophomore year of college. When it comes to income and class, the average respondent reports, respectively, a 3.67 on a scale where a 3 = $70,000 - $99,000, and a 3.53 on a scale where 3 = middle class. The break-down for class is 2% lower class, 9% working class, 33.5% middle class, 46.5% upper middle class, and 9% upper class.[9] The small percentages of

[7] The high injury sports include football, field hockey, soccer, volleyball, basketball, wrestling, gymnastics, ice hockey, and lacrosse. The NCAA data only include sports for which there are NCAA championships. Our data included additional sports, although only one stood out as a high injury type – water polo – and so we include it as such.

[8] Specifically, we apply inverse probability weights to our sample (see Steinmetz, Bianchi, Tijdens, & Biffignandi, 2014); for population statistics, we relied on the information we gathered to obtain the sample, which involved identifying the population of student-athletes from available schools (see the supplementary appendix). We did not record and were unable to identify data on other demographic attributes of the population.

[9] The correlation between class and income in our data is .66 ($p \leq .01$). We also correlated class with each sport and each school. None of these correlations exceeded .10. The strongest positive correlation for sport is tennis (.08) and

lower and working class student-athletes mean they may stand out and consequently be particularly vulnerable to the aforementioned identity and social pressures. Even middle class student-athletes have large enough peer groups to vitiate these dynamics. This coheres with the reality of vast underrepresentation of lower and working class individuals in college settings (such as the Big Ten schools we study) (e.g., Draut, 2016; Leonhardt, 2017): "the central divide between the working class and the middle class now is college" (Williams, 2016: 1).[10] Along these lines, we find a stark divide in our data when it comes to the highest level of education by one's parents. For lower and working class respondents, the respective percentages of parental college graduates are 48% and 59% whereas the percentages for middle, upper middle, and upper are 84%, 94%, and 94%. This suggests lower class and working class individuals are substantially more likely to be entering a new cultural domain.

When it comes to reporting pain, nearly 82% of respondents state that they would report the pain; however, the average respondent score for how much they would report is 2.32 (std. dev. = .75), where 2 = "under-report a little" and 3 = "accurately report."[11] Thus, student-athletes tend to be open to reporting their pain but also tend to under-report it. The impact of class is notable – those from the lower and working classes have a 70% chance of reporting pain, while those from the middle, upper middle, and upper classes have an 84% chance of doing so (z = 4.08, $p \leq .01$).[12] The respective scores for the accuracy of reporting are: 2.13 (.90; 128), and 2.34 (.72; 1,258) ($t_{1384} = 3.06$, $p \leq .01$).

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the lowest is track and field (-.09). The strongest positive correlation for school is Michigan (.07) and the lowest is Rutgers (-.09).

[10] That said, middle class individuals can experience some identity challenges in college, particularly when attending elite schools (see Johnson, Richeson, & Finkel, 2011).

[11] Only one respondent reported that he/she would "over-report a lot."

[12] Recall there are not many respondents in the lower classes and thus the skew in the overall percentage to 84%.

These figures offer preliminary evidence that class matters for pain reporting. We next present regressions of each outcome variable on the aforementioned explanatory variables.[13] In Table 1, we present the results for experiencing pain and reporting. The first column shows that, consistent with hypothesis 1, as one moves from lower to upper class, he or she expects to experience less initial pain. Put another way, lower socioeconomic status leads to the expectation of greater pain from an injury. A working class student-athlete has a 93% chance of feeling moderate or extreme pain compared to an upper middle class student-athlete whose chance is 88% – a small but significant effect.[14] The second column of Table 1 shows that the class relationship does not hold for expected recovery pain; this accentuates the importance of distinguishing between types of pain (Druckman et al, in press). We find that female student-athletes display significantly greater expectation of both initial and recovery pain.

[Insert Table 1 About Here]

The next two columns provide strong support for hypothesis 2. Student-athletes with lower socio-economic status are significantly less likely to report pain from an injury and, when they do report it, they are more likely to under-report. We also find that those on athletic scholarship are significantly less likely to report pain and likely to under-report it. To get a sense of the substantive impact of class, consider that, holding all other variables at their mean levels, a lower class student-athlete has a 75% chance of reporting pain and an 72% chance of under-reporting pain (either a little or a lot). The respective percentages for an upper middle class student-athlete are 85% and 60%. Thus, the shifts are quite substantial – much greater than the effects on the experience of pain.

[13] It is worth noting that we find virtually no correlation between any of our pain measures other than initial pain and recovery pain (which correlate at .37).
[14] We compute probabilities using *Clarify* (King, Tomz, & Wittenberg, 2000).

We earlier speculated that the effects may not be monotonic but rather could stem from a divide between lower/working class student-athletes and middle/upper middle/upper class student-athletes. In the supplementary appendix, we provide some suggestive, albeit not definitive, evidence along these lines. When we re-run the pain reporting models (which are presented in last two columns of Table 1) but differentiate the impact of *each* class (rather than treating it as a single continuous variable), we see that, for the amount of pain, the lower and working classes significantly differ from the other classes, which do not differ among themselves (see Table A-3). For reporting pain, the results are more ambiguous with middle class student-athletes marginally differentiating from higher class individuals.[15] Clearly, more work is needed to isolate particular class differences – other work on socio-economic and health suggests a gradient such that the effects cover the full range of status and are not concentrated among only those with few resources (e.g., Adler et al., 1994). This dynamic may differ, however, in the domain of college athletics: lower and working class student-athletes enter an unfamiliar world when starting college, and their identity as student-athletes may facilitate adaptation.

[Insert Tables 2-3 About Here]

We suggested three dynamics drive this behavior: the salience of athletic identity, having experienced a harder life and having more pain tolerance, and social pressure. We present results for each of these outcome variables in Tables 2 and 3. We find evidence consistent with all explanations. Lower socio-economic status leads to significant increases in the importance of one's sport, the desire to return to play, and anxiety due to the injury. Class additionally (negatively) correlates with perceptions of having a harder life and being tolerant of pain; moreover, those from lower classes are significantly more likely to believe that their family and

[15] Lower class student athletes do not significantly differ from upper middle class student-athletes in pain reporting; however, this result likely stems from the tiny number of lower class student-athletes in the sample.

friends will be disappointed should they be unable to play due to an injury. They do not, however, feel added pressure from coaches. We further find that scholarship athletes display the same dynamics when it comes to identity – sports are significantly more important and they have greater desire and anxiety, than non-scholarship athletes. However, they do not report lower pain tolerance than non-scholarship athletes, and fear disappointment not only from family and friends but also from coaches. The other significant variables do not display a consistent pattern across models, and thus, we are cautious in drawing any additional conclusions.[16]

In sum, subjective socio-economic status has notable effects when it comes to student-athlete injuries. Lower and working class student-athletes are more likely to anticipate feeling initial pain but less likely to report it accurately.[17] This behavior likely reflects unique psychological (i.e., identity), experiential (i.e., hardship/pain tolerance), and social (i.e., expectations) dynamics present in the lives of lower status student-athletes.[18]

Conclusion

College is often viewed as a path to upward mobility. Yet, for those of lower socio-economic status, it can be a challenge (e.g., Johnson et al., 2011). These hurdles can manifest in a variety of ways including academic performance, socialization, and health. We find that among college student-athletes, lower class individuals tend to under-report injury pain – even though they anticipate experiencing more pain from an injury. The irony, of course, is that "playing

[16] That said, most of the results seem quite sensible. For example, Black student-athletes view sports as more important consistent with the reality the percentage of Black-student athletes proportionally outweighs the number of Black non-student athletes. Also, as one gets later in his or her career, the importance of sport declines (i.e., as the end of career is in sight), pain tolerance increases (perhaps reflecting the experiences of other injuries), and coach expectations increase (likely due to being more instrumental to the team's success). Those from high injury sports exhibit less anxiety, which is sensible as injuries are more common in those sports (by definition).

[17] The lack of results on recovery pain likely reflect a canceling dynamic such that lower status individuals anticipate more pain *per se*, but also believe they will be able to withstand the pain through the recovery process.

[18] Our data do not allow us to test for causal mediation (see Bullock & Ha, 2011). However, in the supplementary appendix, we present some tentative results. These analyses suggest that it is anxiety and family expectations that lead lower status individuals to not want to report pain at all, while it is pain tolerance that drives under-reporting. Thus, there may be distinct pathways at work on these separate variables.

through the pain" appears to be more of mantra for those most vulnerable from a general health perspective. Lower class individuals strive to adapt to their own detriment (see Wickrama, O'Neal, & Lee, 2016).

We view our study as the first in what we hope will be a line of inquiry that explores pain reporting among student-athletes. Self-reports are widely used (e.g., Saw, Main, & Gastin, 2017) and so understanding what leads one to under-report is critical. Practitioners who anticipate under-reporting among certain populations, such as low socio-economic individuals, can monitor carefully and probe deeper when injuries do occur. We find it is self-perceived class rather than objective standing (i.e., income) that matters. This conclusion coheres with some prior work (e.g., Brown-Iannuzzi, 2015) and means that one could intervene by altering student-athletes' perceptions of their standing. Interventions, though, require a deeper understanding of mechanisms – we presented suggestive evidence of psychological, experiential, and social mediators – but much more work is needed to understand how to create a salubrious college environment that facilitates upward mobility.

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Table 1: Pain Experience and Pain Reporting

	(1) Initial Pain	(2) Recovery Pain	(3) Reporting Pain	(4) Amount of Pain Reported
Class	-0.125**	0.074	0.181**	0.159**
	(0.060)	(0.060)	(0.084)	(0.065)
Athletic Scholarship	0.025	0.095	-0.377***	-0.240***
	(0.076)	(0.075)	(0.104)	(0.075)
Female	0.275***	0.236***	-0.038	-0.039
	(0.074)	(0.072)	(0.101)	(0.071)
Black	0.059	0.191	-0.021	-0.093
	(0.143)	(0.127)	(0.192)	(0.143)
Year in School	0.030	0.016	0.035	-0.003
	(0.031)	(0.031)	(0.043)	(0.030)
Income	0.049	-0.005	-0.004	-0.066
	(0.041)	(0.043)	(0.060)	(0.045)
High Injury Sport	-0.071	-0.119	-0.107	-0.051
	(0.075)	(0.076)	(0.099)	(0.073)
Cut Point 1	-2.792***	-1.460***		-1.120***
	(0.274)	(0.217)		(0.216)
Cut Point 2	-1.326***	0.119		0.458**
	(0.224)	(0.191)		(0.209)
Cut Point 3	0.328	1.903***		1.723***
	(0.211)	(0.195)		(0.214)
Constant			0.520*	
			(0.270)	
Observations	1,363	1,362	1,361	1,336

All models are ordered probits, except model 3 which is a probit. Standard errors in parentheses;
*** p<0.01, ** p<0.05, * p<0.1 for two-tailed tests.

Table 2: Sport Identity

	(1) Sport Importance	(2) Desire	(3) Anxiety
Class	-0.123**	-0.127*	-0.187***
	(0.059)	(0.068)	(0.066)
Athletic Scholarship	0.249***	0.211***	0.225***
	(0.073)	(0.081)	(0.082)
Female	-0.092	-0.004	0.269***
	(0.070)	(0.075)	(0.078)
Black	0.354**	-0.098	0.083
	(0.155)	(0.198)	(0.203)
Year in School	-0.105***	0.036	0.021
	(0.029)	(0.032)	(0.034)
Income	-0.052	0.034	-0.090*
	(0.043)	(0.048)	(0.049)
High Injury Sport	0.115	-0.040	-0.216***
	(0.073)	(0.079)	(0.081)
Cut Point 1	-1.972***	-2.551***	-2.992***
	(0.196)	(0.258)	(0.259)
Cut Point 2	-1.190***	-1.961***	-1.794***
	(0.195)	(0.215)	(0.223)
Cut Point 3	0.047	-1.283***	-1.026***
	(0.194)	(0.226)	(0.222)
Cut Point 4		-0.368*	
		(0.220)	
Observations	1,372	1,364	1,363

All models are ordered probits. Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1 for two-tailed tests.

Table 3: Life Experience, Pain Tolerance, and Expectations

	(1) Hardship	(2) Pain Tolerance	(3) Coaches Expect	(4) Family Expect
Class	-0.326***	-0.140*	-0.025	-0.173**
	(0.066)	(0.073)	(0.067)	(0.073)
Athletic Scholarship	0.067	0.146*	0.189**	0.125*
	(0.076)	(0.078)	(0.075)	(0.073)
Female	-0.147**	0.016	0.016	0.169**
	(0.071)	(0.074)	(0.070)	(0.069)
Black	0.163	0.411**	0.256	-0.079
	(0.142)	(0.198)	(0.175)	(0.173)
Year in School	-0.021	0.078**	0.071**	-0.038
	(0.032)	(0.034)	(0.030)	(0.030)
Income	-0.031	-0.003	-0.046	0.004
	(0.047)	(0.048)	(0.048)	(0.049)
High Injury Sport	0.067	0.107	-0.125*	-0.111
	(0.074)	(0.076)	(0.072)	(0.072)
Cut Point 1	-2.197***	-2.660***	-1.717***	-1.423***
	(0.208)	(0.280)	(0.207)	(0.206)
Cut Point 2	-1.025***	-1.314***	-1.010***	-0.744***
	(0.202)	(0.220)	(0.207)	(0.205)
Cut Point 3	0.619***	0.382*	-0.057	-0.144
	(0.197)	(0.216)	(0.202)	(0.205)
Cut Point 4			0.680***	0.542***
			(0.201)	(0.207)
Observations	1,373	1,361	1,357	1,362

All models are ordered probits. Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1 for two-tailed tests.

Supplementary Appendix

I. Survey Implementation and Sample

Our ideal population is all college student athletes. We opted to focus on a single major NCAA Division I conference for two reasons. First, we are unaware of an available list of contact information for all NCAA student-athletes, which means that we had to obtain contact information by visiting each school's website, identifying student-athletes, and obtaining their e-mail addresses. Practical concerns about time and resources prevented us from drawing a random sample from the more than 170,000 student-athletes who participate on one of the more than 6,000 Division I teams (from roughly 350 schools; http://www.ncaa.org/about?division=d1). Second, these constraints meant one approach could have been to randomly select schools and then sports, and then student-athletes (or to target all student-athletes from a selected team given time constraints of searching for rosters and then e-mails). We opted to not take this approach as we wanted to ensure a sufficient number of student-athletes from all sports since we suspected the injury rate of the sport could have affected our outcomes (in theory). For these reasons, we opted to focus on a single Division I conference – the Big Ten – where our sampling frame could be the universe of student-athletes with publicly available contact information. Our population is thus Big Ten student-athletes.

The Big Ten Conference includes 14 major research universities located in the Midwest and Eastern parts of the country. We believe this conference is a strong starting point as it includes a large amount of variance among universities and includes schools that recruit nationally and internationally. Our focus on a single conference also follows other studies of student-athletes (e.g. Druckman et al., 2014; Fountain & Finley, 2009). That said, we also recognize that the Big Ten may differ from other conferences/schools due to having relatively rigorous academic standards. This reality may mean that class differences are accentuated more at these schools relative to others.

In the winter of 2016, we accessed the athletic websites of all the Big Ten schools and obtained the full rosters for all sports at every school. We then accessed each school's website to locate and record the email address (and sport and gender) of every student-athlete listed on those rosters. This information was publicly available at all schools except for the University of Nebraska and the University of Maryland. These two schools thus are excluded from our sample. Overall, we located 7,977 names on rosters (which we believe is the full population of Big Ten student-athletes at the time, from all but the two schools). We found no e-mails for 788 student-athletes and subsequently we sent out 7,189 e-mails. Of them, 1,678 bounced back as no longer in service (which could be due to the students no longer being enrolled, database errors, website errors, or some other reason). Thus, we successfully sent (on March 30th, 2016) a total of 5,511 e-mails that, to our knowledge, reached their intended targets. We also sent out one reminder (on April 4th, 2016) to all respondents. The invitation letter (and the reminder) asked the student-athletes to participate in a survey aimed at understanding student-athletes' opinions and experiences. They were directed to an encrypted link and assured of anonymity.

In the end, we received 1,615 responses leading to response rate of 1615/5511 = 29.3%. This rate exceeds the typical response rate in e-mail surveys of this length, especially those that do not employ incentives (see Couper, 2008; Ritter & Sue, 2007: 36; Shih & Fan, 2008 for discussion of typical response rates in similar surveys). Tables A-1 and A-2 report the

percentages of our sample from each school and sport. Sample size varied across schools due to variations in the number of sports each school sponsors. As explained in the text, we weighted all of our analyses so that our sample approaches population figures on gender, sport, and school (obtained from our download of the rosters).

Table A-1. Sample Composition by University (Weighted)

School	Percent of Sample	Percent of Population
Illinois	5.66%	6.09%
Indiana	7.16%	7.99%
Iowa	7.92%	8.22%
Michigan	10.29%	10.24%
Michigan State	8.60%	8.95%
Minnesota	8.70%	8.89%
Northwestern	6.96%	6.12%
Ohio State	10.56%	10.49%
Penn State	9.77%	9.62%
Purdue	6.34%	6.52%
Rutgers	7.86%	7.31%
Wisconsin	10.00%	9.55%

Table A-2. Sample Composition by Sport (Weighted)[1]

Sport	Percent of Sample	Percent of Population
Baseball	4.08%	4.43%
Basketball	3.58%	4.21%
Cross Country	8.56%	6.61%
Fencing	1.76%	1.59%
Field Hockey	2.65%	2.24%
Football	18.82%	16.64%
Golf	2.74%	2.81%
Gymnastics	3.12%	3.06%
Ice Hockey	3.51%	3.13%
Lacrosse	4.96%	4.46%
Lightweight Rowing	0.83%	0.66%
Pistol	0.14%	0.13%
Rifle	0.15%	0.18%
Rowing	7.70%	6.62%
Soccer	5.93%	6.59%
Softball	3.51%	3.10%
Swimming and Diving	12.38%	8.81%
Synchronized Swimming	0.50%	0.35%
Tennis	2.72%	2.85%
Track and Field	15.19%	14.04%
Volleyball	2.65%	2.32%

Water Polo	0.38%	0.29%
Wrestling	5.55%	4.88%
Other Sport	0.18%	0.00%

[1]Of the total who participate in either cross-country or track, 54% (weighted) do both. Otherwise, less than 1% of the sample participates in more than one sport.

II. Question Wording

What University do you attend?

☐ Indiana University	☐ Ohio State University	☐ University of Illinois	☐ University of Minnesota
☐ Michigan State University	☐ Purdue University	☐ University of Iowa	☐ University of Wisconsin
☐ Northwestern University	☐ Pennsylvania State University	☐ University of Michigan	☐ University of Nebraska
☐ Rutgers University	☐ University of Maryland		

Which sport(s) do you or did you play at a varsity level this past academic year? (If you played on multiple varsity sports teams, select all teams on which you played.)

☐ Baseball	☐ Fencing	☐ Lacrosse	☐ Softball	☐ Volleyball
☐ Basketball	☐ Field hockey	☐ Lightweight Rowing	☐ Swimming	☐ Water polo
☐ Beach Volleyball	☐ Football	☐ Pistol	☐ Synchronized Swimming	☐Wrestling
☐ Bowling	☐ Golf	☐ Rifle	☐ Tennis	☐Other
☐ Cross country	☐ Gymnastics	☐ Rowing	☐ Track and Field	
☐ Diving	☐ Ice Hockey	☐ Soccer		

Are you male or female?

_____ _____
Male *Female*

Which of the following do you consider to be your primary racial or ethnic group (*you may check more than one*)?

_____ _____ _____ _____ _____ _____
White *African American* *Asian American* *Hispanic* *Native American* *Other*

What is your current year in school?

_____ _____ _____ _____ _____ _____
First year *Sophomore* *Junior* *Senior* *Graduate student* *N/A*

What is your estimate of your family's annual household income (before taxes)?

_____ _____ _____ _____ _____
< $30,000 *$30,000 - $69,999* *$70,000-$99,999* *$100,000-$200,000* *>$200,000*

What is the highest level of education completed by one of your parents? (Think about the parent who has received the highest level of education.)

_____ _____ _____ _____ _____

Less than high school *High school* *Some college* *4 year college degree* *Advanced degree*

Are you on a full or partial scholarship?

_____ _____ _____

No Scholarship *Full Scholarship* *Partial Scholarship (including partial tuition and/or book scholarship)*

If you have a scholarship, is it for academics and/or for athletics?

_____ _____ _____ _____

No Scholarship *Academic Scholarship* *Athletic Scholarship* *Both (mix of Academic and Athletic)*

We are next going to ask you to imagine a hypothetical scenario and then we will ask you some questions about it. Do your best to imagine this actually occurred.

Imagine that you sustained an injury at the start of your team's season. There is not a strict protocol for how long it will take to return to play. Your team's medical personnel expect you to make a full recovery; however, they predict you will miss practice and competition for at least 4 and up to 8 weeks.

If you had experienced the described injury, how painful do you think the initial injury would be?

_____ _____ _____ _____

Not painful *Slightly painful* *Moderately painful* *Extremely painful*

If you had experienced the described injury, how painful do you think the recovery process would be?

_____ _____ _____ _____

Not painful *Slightly painful* *Moderately painful* *Extremely painful*

There are many reasons why people choose to report or not report pain. Given your personal preferences and situation, if you had experienced the described injury, would you report your pain to medical personnel?

_____ _____

Yes *No*

Even when reporting pain, there are many reasons why people choose to under-report or over-report their pain. Given your personal preferences and situation, do you think that you would under-report, accurately report, or over-report your pain from the described injury to medical personnel?

_____ _____ _____ _____ _____

Under-report A lot	*Under-report a little*	*Accurately report*	*Over-report a little*	*Over-report a lot*

If you had experienced the described injury, how much pain do you think you would be able to tolerate (i.e., live with, without having to delay rehabilitation processes)?

Very low tolerance	*Somewhat low tolerance*	*Somewhat high tolerance*	*Very high tolerance*

Do you think you would have no desire at all or great desire to return to play?

No desire at all	*Not much desire*	*a moderate desire*	*a good deal of desire*	*a great desire*

How much anxiety do you think you would have due to the injury and recovery process?

None at all	*A little amount*	*A moderate amount*	*A good*	*A great deal*

Please rate the extent to which you think your coaches would be disappointed if you did not return quickly (e.g., in 4 weeks rather than 8 weeks).

Not disappointed at all	*Slightly disappointed*	*Moderately disappointed*	*Very disappointed*	*Extremely disappointed*

Please rate the extent to which you think your family and friends would be disappointed if you did not return quickly (e.g., in 4 weeks rather than 8 weeks).

Not disappointed at all	*Slightly disappointed*	*Moderately disappointed*	*Very disappointed*	*Extremely disappointed*

How hard do you think your life has been?

Not At all	*A little*	*Somewhat*	*Extremely*

If you were asked to use one of five names to describe your social class, which would you say: the lower class, the working class, the middle class, the upper middle class, or the upper class?

lower class	*working class*	*middle class*	*upper middle class*	*upper class*

How unimportant or important do you think your performance as a college athlete is to your success after college?

Very unimportant	*Somewhat unimportant*	*Somewhat important*	*Very important*

III. **Additional Analyses (Specific Class Effects and Mediation)**

Table A-3 replicates the analyses in the second two columns of Table 1, although instead of using a single variable for class, it breaks out each individual class, using upper middle class (the largest class) as the benchmark. Table A-4 also replicates the analyses in the second two columns of Table 1, but adds the mechanism variables. We discuss the results in the text – notably, class becomes insignificant in the reporting pain regression which is suggestive that it is mostly mediated by anxiety and family expectations.

Table A-3: Specific Class Effects

VARIABLES	(1) Reporting Pain	(2) Amount of Pain Reported
Athletic Scholarship	-0.368***	-0.237***
	(0.104)	(0.075)
Female	-0.044	-0.042
	(0.101)	(0.071)
Black	-0.014	-0.069
	(0.192)	(0.144)
Year in School	0.034	-0.001
	(0.042)	(0.030)
Income	-0.006	-0.062
	(0.060)	(0.045)
High Injury Sport	-0.103	-0.056
	(0.099)	(0.073)
Lower Class	-0.552	-0.595*
	(0.416)	(0.327)
Working Class	-0.494**	-0.374**
	(0.213)	(0.192)
Middle Class	-0.238*	-0.061
	(0.133)	(0.091)
Upper Class	-0.036	0.188
	(0.187)	(0.135)
Cut Point 1		-1.709***
		(0.222)
Cut Point 2		-0.128
		(0.219)
Cut Point 3		1.137***
		(0.218)
Constant	1.302***	
	(0.302)	
Observations	1,361	1,336

Model 1 is a probit and model 2 is an ordered probit. Standard errors in parentheses; *** p≤0.01, ** p≤0.05, * p≤0.1 for two-tailed tests.

Table A-4: Mediation

	(1) Reporting Pain	(2) Amount of Pain Reported
Class	0.143	0.128**
	(0.087)	(0.064)
Athletic Scholarship	-0.322***	-0.183**
	(0.105)	(0.076)
Female	-0.011	-0.035
	(0.102)	(0.074)
Black	0.000	0.009
	(0.200)	(0.138)
Year in School	0.034	0.016
	(0.045)	(0.030)
Income	-0.023	-0.070
	(0.061)	(0.046)
High Injury Sport	-0.123	-0.043
	(0.103)	(0.075)
Sport Importance	-0.103	-0.041
	(0.063)	(0.043)
Desire	0.055	-0.064
	(0.064)	(0.049)
Anxiety	-0.211***	-0.017
	(0.076)	(0.048)
Hard Life	0.041	-0.017
	(0.070)	(0.052)
Pain Tolerance	-0.078	-0.211***
	(0.085)	(0.061)
Coaches Expect	-0.030	-0.112***
	(0.052)	(0.034)
Family Expect	-0.083**	0.007
	(0.041)	(0.032)
Cut Point 1		-2.718***
		(0.441)
Cut Point 2		-1.100**
		(0.431)
Cut Point 3		0.178
		(0.426)
Constant	1.970***	
	(0.599)	
Observations	1,335	1,311

Model 1 is a probit and model 2 is an ordered probit. Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1 for two-tailed tests.

Appendix References

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