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NSAIDs are commonly used among athletes for a variety of reasons. The purpose of this research is to gain insight on Division III athletes' view and opinions of NSAIDs. A survey was developed incorporating the Theory of Planned Behavior and distributed to all winter and spring athletic teams of one Midwestern DIII University. By utilizing the Theory of Planned Behavior, this study found attitude toward behavior as the strongest predictor of behavioral intention ($p < .001$), while both Perceived Behavioral control ($p < .001$) and Intention ($p < .001$) were statistically significant predictors of behavior. Another finding from the study was that athletes perceived less than 25% of their teammates as taking NSAIDs. Displaying the importance of an athlete's own personal values and opinions of NSAID use was the strongest predictor of intentions. Further assessment should include more athletes to get a better representation of the athletic department.

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Nonsteroidal anti-inflammatory drugs (NSAIDs) are among one of the most commonly purchased over the counter (OTC) medications. NSAIDs are used for a variety of reasons including: treatment of pain, soft tissue swelling, and fever. Drug therapy is a common intervention used to help promote recovery to return one back to normal activities (Houglum, 1998). These types of drugs are sold over the counter because there is a low risk for misuse (Stasio, Curry, Sutton, & Glassman, 2008). Nevertheless, as with any drug, there are side effects if the medication is abused and it is important to ensure consumers are optimizing dosage, intervention interval, and duration of therapy (Houglum, 1998). With the proper dosage, NSAIDs can be a very beneficial intervention reducing pain and one's inflammatory response. However, pain is often a sign of an injury and when painkillers are taken they mask the injury, potentially leading towards a worse condition (Smith & Collina, 2007).

To an extent, pain is necessary for protection and avoidance of worsening an injury. When the body is injured, a series of events occur to promote the natural healing process. The inflammatory response is essential for allowing an increase of blood flow to the injured area and promotes the recruitment of inflammatory cells such as satellite cells (Smith & Collina, 2007). The human body has an enzyme called cyclooxygenase (COX). The function of this enzyme is to catalyze the transformation of ararchiodonic acids, a fatty acid released from a cellular membrane following a tissue injury, to prostaglandins (Smith & Collina, 2007). Prostaglandins have pro- inflammatory and pain- sensitizing effects on the body which explains why they are targeted by NSAIDs (Krentz, Quest, Farthing, Quest, & Chilibeck, 2008). Prostaglandins are mediators that have a direct role on platelets, endothelial cells, uterine cells, and mast cells (Chen & Dragoo, 2013). The function of COX is essential to the human body and needs to be present at all times. There are two forms of this enzyme: COX-1 and COX-2. Some of COX-1 functions would include protection of the gastric mucosa and platelet aggregation (Smith & Collina, 2007). Also, COX is responsible for triggering vasodilation and edema with the purpose of providing protection to the injured site (Ho, Bedair, Fu, & Huard, 2004). If pain ranges from mild to moderate certain medications like NSAIDs can be taken to make pain tolerable (Pawlak, 2013).

The purpose of nonsteroidal anti-inflammatory drugs is to decrease pain, stiffness, and inflammation which is achieved by suppressing the inflammatory response (Correa et al., 2012). NSAIDs have analgesic, anti-inflammatory, and anti-pyretic properties. NSAIDs work by inhibiting the action of COX-1 and COX-2. The inflammatory response is essential for natural healing to occur. COX-2 has the function of stimulating proliferation, classification, and the fusion on myoblasts and satellite cells. Inhibiting COX-2 function can interfere with muscle anabolism (Correa et al., 2012). One needs to be cautious when they are taking over the counter or prescribed doses not to exceed 3200mg/day. Taking more than the recommended doses could impairing the healing process.

NSAIDs are offered both over the counter and prescription at various doses. There have been many studies performed to determine the proper dosage of NSAIDs and if the drug is actually beneficial to the healing process (Houglum, 1998). Several studies have been performed comparing different doses of NSAIDs and its effect on the human body (Correa et al., 2012; Houglum, 1998; Krentz, Quest, Farthing, Quest, & Chilibeck, 2008). Typically normal doses of NSAIDs are between 100-200mg or 400-800mg prescribed. Studies show that large doses of ibuprofen (a one-time dose of 1200 mg) inhibit muscle synthesis immediately after the completion of an exercise program. The group that took 1200 mg of ibuprofen exhibited a 41% lower muscle protein fractional synthesis rate than the placebo group. This suggests that more moderate doses of ibuprofen will also have a negative effect on skeletal muscle protein metabolism. Therefore, to maximize pain relief using NSAIDs one should take a moderate dose (400-800mg) for optimal results (Krentz, Quest, Farthing, Quest, & Chilibeck, 2008).

There has been an increased usage of painkillers, specifically NSAIDs, over the past two decades to manage athletic injuries (Pawlak, 2013). College student athletes often face numerous stressors during their experience. Student athletes can potentially face issues such as academic difficulties, emotional difficulties, and interpersonal relationships. Compared to non- athlete counterparts, student athletes encounter harsh and heavy demands on their body including: repetitive and strenuous training, frequent away competitions, injuries, pressures to win, and competitions between teammates. All these stressors can be very taxing on an athlete's body, and injuries are often common among sports teams. In many instances, an athlete will take painkillers to play through an injury or even sometimes taken to avoid competing with pain (Lu, Hsu, Chan, Cheen, & Kao, 2012). The human body exhibits pain to alert that normal homeostasis has been disrupted. Pain is, to an extent, essential to returning back to normal health. If pain was not felt when an athlete hurt themselves, they would continue to play which would impair the body's ability to return to normal health (Pawklak, 2013).

Athletes take NSAIDs for a variety of reasons and sometimes it is questionable whether they are abusing them. A study was performed on Division I athletes focusing on their views of taking painkillers prior to a game. This study used the Theory of Planned Behavior to support and interpret the underlying motivators to why athletes are taking NSAIDs. The survey instrument in this research was the King Drug in Sport Questionnaire (KDISQ). Out of the 563 students surveyed, 165 (29%) said that they did not think anything was wrong with taking NSAIDs prior to participating in their sport (Tricker, 2000). There are many instances where an athlete feels pressured to play even though they are injured. A profession or athletic scholarship could be in jeopardy, causing an athlete to do whatever it

takes to play. A friend, teammate, or parent can often be responsible for pressuring an athlete to play through an injury. This study shows that athletes often do not want to be viewed as the person that is faking an injury or unmotivated. Former Olympian, Hal Connolly, said that the majority of athletes would do anything to improve themselves or continue playing even when injured (Tricker, 2000). Results showed athletes used painkillers for a variety of reasons including: preventing pain on competition days (29%), taking them when injured to be able to compete (21%), for recovery from previous sporting activities (33%), and undecided (33%). One of the statements included "If injured, I would take painkilling drugs so that I could continue to compete," 47.1 % athletes agreed with this statement (Tricker, 2000). This raises an ethical question if the athletes are abusing painkillers and are they worsening their injuries.

From Tricker's study there were many significant findings including over 25% of the athletes did not realize there were side effects to ibuprofen. Over 62% of the athletes reported that they have previously used painkillers after difficult workouts when their muscles were sore. More than half of the athletes obtained the painkiller from friends, teammates, and family. One of the most important findings from the study was that the majority of athletes said they were sure and also 'undecided' that they would use painkillers to mask an injury to continue to participate. Many athletes do not think there is anything wrong with taking ibuprofen before a game to reduce pain. Although some would view this ethical controversy differently, 25% of NCAA Division I athletes find no issue with taking painkillers (Smith & Collina, 2007). There comes a point when an athlete has to decide which is more important, relieving short-term pain to participate or facing possible long- term consequences of potentially increasing injury severity (Smith & Collina, 2007).

Among all of the NCAA divisions, Division III is the largest, accounting for more than 170,000 student- athletes at 444 institutions (Division III, 2014). One of these Division III institutions, the Midwestern University selected for this study holds 20 different sports teams for men and women. Currently, there are almost 500 student athletes playing sports at this university. Student athletes face many pressures that include: a reputation, pressure to compete and win, and to maintain the rigorous schedule of a student-athlete. As explained previously, Tricker's study showed that two Division I institutions and found out that 63% of their athletes said that they would take painkillers to mask an injury to continue participation. Division III institutions do not give athletic scholarships, however the question arises if Division III athletes will go to similar extremes as Division I to continue playing. There has been literature discussing the harmful effects of taking NSAIDs to perform through an injury (Houglum, 1998). However, there are gaps in the literature with regard to the intentions of Division III athletes and the determining factors that motivate these athletes to perform certain actions, specifically taking NSAIDs to continue competitive athletics.

The Theory of Planned Behavior (TPB) focuses on constructs which incorporate various factors that determine the likelihood of performing a specific behavior (Montano & Kasprzyk, 2008). This theory makes the assumption that the best indicator of whether an action will be executed or not is a person's behavioral intention. Furthermore, the various constructs that contribute to a person's intention include their attitude toward the behavior, subjective norm, and perceived behavioral control. The constructs that contribute to behavior include perceived behavioral control and behavioral intentions (Montano & Kasprzyk, 2008).

The person's attitude toward the behavior is the first construct of the Theory of Planned Behavior. This construct assesses how a person thinks and feels about a behavior. Specifically, this construct assesses the degree to which performing the behavior is positively or negatively valued. Questions regarding this construct will determine where a person falls on a semantic differential scales (Montano & Kasprzyk, 2008). Using antonyms such as: Unfavorable-Favorable, Bad-Good, Harmful-Beneficial, Unimportant-Important, and Unhelpful-Helpful can help to establish the attitude toward the planned behavior. The second construct of the Theory of Planned Behavior is the subjective norm. This construct analyzes one's perceived social pressure to engage or not to engage in a certain behavior (Montano & Kasprzyk, 2008). Subjective norm measures one's perceived support or discouragement given by significant others. Survey questions regarding this construct are scored -3 to 3 on a bipolar Disagree-Agree scale or an Unlikely-Likely scale. The last construct of the Theory of Planned Behavior is the perceived behavioral control. This refers to people's perceptions of their ability to perform a given behavior. Perceived behavioral control focuses on a person's capability and confidence about executing certain behaviors. Survey questions regarding this construct are also scored -3 to 3 on a bipolar Difficult- Easy and Not Under My Control-Under My Control scale (Montano & Kasprzyk, 2008). By utilizing the Theory of Planned Behavior it was determined what influenced an athlete to take NSAIDs and what influenced an athlete's intention to take NSAIDs.

As explained previously, athletes often experience enormous amounts of pressure to be the best they can be. The source of the pressure can either be internal or external. As seen from Tricker's study, much of an athlete's external pressure can come from coaches, teammates, friends, or family while the internal pressure to keep playing comes from the person's own passion to play. A research goal of this study is to determine if Division III athletes have the same outlooks on using NSAIDs as Division I schools. The purpose of this research is to identify the statistically significant behaviors, perceptions, and knowledge of NSAIDs between various athletic teams.

Methods

Participants

This research focused on Division III athletes. The sample for this study consisted of college students from a Midwestern private liberal arts university with an enrollment of approximately 3000 students. A meeting with the athletic director of the University was held to gain permission to use the athletic department as the subject pool. The survey was distributed to the baseball, basketball, golf, lacrosse, softball, tennis, and track and field teams. Overall, 77 student-athletes completed a questionnaire. A little over half of the participants self-identified as female (n=42; 54.4%). Four out of ten participants were 1st year students (n=32; 41.6%) followed by 2nd year (n=17; 22.1%), 4th year (n= 16; 20.8%) and 3rd year (n=12; 15.6%) students, respectively. Almost a third of the participants played baseball (n=23; 29.9%), followed by track and field (n=18; 23.4%) and basketball (n=15; 19.5%) while the average age for the entire sample was 19.7 (SD=1.32) with a range of five.

Instrument

This instrument, the College-NSAID Usage Survey, or C-NUS for short, analyzed the behavior, perceptions and knowledge of NSAID use among the university's athletic teams. Survey Monkey was used in the design of this instrument. The survey included questions from previous surveys as well as questions developed specifically for this survey instrument while incorporating the Theory of Planned Behavior. Specific questions were developed based upon the various constructs of this theory. The four constructs that were integrated in C-NUS include: attitude toward the behavior, subjective norm, perceived behavioral control, and behavioral intention. Attitude toward the behavior and perceived behavioral control utilized 7-point sematic differential scales in this survey. More specifically, the attitude towards the behavior construct included polar-opposite semantic differential anchors such as *bad-good*, *unfavorable-favorable* and *harmful-beneficial*. Perceived behavioral control was assessed using *difficult-easy* and *not under my control-under my control* anchors. Subjective norm and behavioral intentions utilized 7-point Likert-type scales in this survey. Both constructs included strongly disagree-strongly agree scales in order to assess our participants' beliefs. All scales were developed based upon the suggestions by Montano and Kasprzyk (2008) and Ajzen (2006).

This survey allowed for multiple variables to be analyzed. In addition to the questions directly targeting the Theory of Planned Behavior, questions were also included about the athlete's current behavior, perceptions, and knowledge of NSAID use. This study was approved by the University's Institutional Review Board and informed consent was given with completion of the survey.

Face and Content validity assess the accuracy of measuring the behavioral intention and behavior. Validity was established after an extensive review by a panel of six experts. The experts were composed of two professors of Public Health, one Associate Dean in Student Wellness, one Alcohol, Tobacco and Other Drug (ATOD) director, one Health and Sport Sciences professor, and one Athletic Trainer. The expert review panel all had a minimum of a health related Master's degree. The experts evaluated the survey design, format, and organization of the instrument. The experts received a letter asking for their assistance in evaluating this instrument.

Reliability analysis of C-NUS was used to evaluate the consistency in survey measurement using Cronbach's alpha (Table 1). Internal consistency measures how closely the responses provided by the participants match up with Theory of Planned Behavior constructs. The highest Cronbach's alpha value for internal consistency analysis was Subjective Norm (α=0.96), followed by attitude toward the behavior (α=0.94), behavioral intention (α=0.85), then perceived behavioral control (α=0.82).

Table 1

Internal Consistency Results

Characteristic	α
Construct	
Attitude toward behavior	0.94
Subjective norm	0.96
Perceived behavioral control	0.82
Behavioral intentions	0.85

Procedure

This study received IRB approval in September, 2014. An approved addendum for this project was approved in October of the same year. The purpose of the study was explained through the online survey and it was expressed that this study is optional, confidential, and names were not required. The College-NSAID Usage Survey was sent to the athletic director by email. The athletic director, in turn, sent an email with the link of the survey out to the coaches. The individual coaches then forwarded the email to their athletes, who then had the opportunity to access the survey by clicking on the link embedded in the email. This occurred in three different waves, one week apart from each other. Fall sports were not included due to the concern for recall bias since data collection occurred during winter and spring sports.

Data Collection

To assess the results, the Statistical Package for the Social Sciences (SPSS) v. 20 was used. Descriptive and inferential statistics were computed to determine themes or statistical significance. Descriptive statistics including means, frequencies, and standard deviations were analyzed. For inferential statistics, multiple regressions assessed the constructs with the Theory of Planned Behavior for significance. Pearson Correlations assessed the relationship between the constructs and chi-squares were used to assess the behaviors of the sample population and their use of NSAIDS for various ailments.

Results

There were a total of 77 participants in this study (Table 2). Participants included 35 males (45.5%) and 42 females (54.5%) with a mean age of 20 years (± 1 years). First-year undergraduate students made up the largest portion of respondents (41.6%; n=32), followed by 2nd year (22.1%; n=17), 4th year (20.8%; n=16), and 3rd year (15.6%, n=12) students. Athletes that played baseball made up the largest portion of respondents (29.9%; n=23), followed by track and field (23.4%; n=18), basketball (19.5%; n=15), lacrosse (14.3%; n= 11), tennis (9.1%; n=7), and softball (3.9%; n=3).

Using crosstabs to analyze NSAID usage by athletic team yielded curious results. The tennis team produced the highest percentage of players who took NSAIDs (85.7%; n=6), followed by the baseball team (73.9%; n=17), basketball (73.3%; n=11), softball (66.7%; n=2), and track and field (44.4%; n=8). A Chi-square analysis was performed and no one sport was more likely than any other to use NSAIDs.

Numerous NSAID knowledge questions existed in this survey. Although 61% (n=47) of the respondents said they took NSAIDs for athletic related issues, only two athletes said they were concerned about the frequency they use NSAIDs (3.3%). There were 22 athletes (34.9%) that had previously heard about athletes on their team using more than the recommended dose of NSAIDs. Next, the athletes were asked to identify what symptoms they thought would be reduced or eliminated from taking NSAIDs. Muscle soreness was the symptom that was identified by the most athletes (90.0%; n=63), followed by headaches (82.9%; n=58), joint discomfort (68.6%; n=48), fever (51.4%; n=36, colds (21.4%; n=15), and dehydration (7.14%; n=5), and diarrhea (2.9%; n=2). The symptoms that were only identified by one respondent included: influenza, acne, and pregnancy (1.4%; n=1).

The athletes were then asked about potential side effects from taking NSAIDs. The highest side effect identified was stomach irritations (79.4%; n=54), followed by kidney dysfunction (72.1%; n=49), allergic reactions (50%; n=34), prolonged bleeding (39.7%; n=27),

Reye's syndrome (39.7%; n=27), and sterility (16.2%; n=11). Another question related to social norming. The respondents were asked to acknowledge what percent of all athletes do they think use NSAIDS. The highest range was 1-25% of teammates (35.1%; n=27), followed by 51-75% (28.6%; n=22), 26-50% (22.1%; n=17), 0% (6.5%; n=5), unsure (5.2%; n=4), and 76%-100% (2.6%; n=2) of all teammates use NSAIDS.

Table 2

Participant Demographics (n=77)

Characteristic	Frequency	Percent	Mean (SD)
Gender			
Male	35	45.5	
Female	42	54.4	
Age	20		19.7(1.32)
Year in School			
1st Year	32	41.6	
2nd Year	17	22.1	
3rd Year	12	15.6	
4th Year	16	20.8	
Primary Sport			
Baseball	23	29.9	
Basketball	15	19.5	
Lacrosse	11	14.3	
Softball	3	3.9	
Tennis	7	9.1	
Track and Field	18	23.4	

Correlation matrices display the relationships among the Theory of Planned Behavior constructs. In Table 3, means, standard deviations, and correlations are presented for all the constructs assessing behavioral intentions. The closest relationship seen is between Attitude toward the Behavior and Subjective Norms having a Pearson Correlation value of 0.72 indicating a strong correlation between these constructs. The correlation matrix displays that Perceived Behavioral Control as the weakest construct with the smallest Pearson correlation compared with other constructs.

Attitude toward the behavior was the only statistically significant predictor of behavioral intentions (p=0.001). Subjective norms approached significance (p=0.052) while the perceived behavioral control had no influence on intentions (p=0.971) (Table 4). Furthermore, using behavioral intention as the outcome variable in the same analysis, all three constructs collectively predicted 42% (adjusted R^2) of the variance in the intention to take NSAIDs (Table 4).

According to the Theory of Planned Behavior, the main predictor of behavior is the intention to preform that behavior coupled with the perceived behavioral control one has over that behavior. In our logistic regression analysis, both the behavioral intention (p=0.001) and the perceived behavioral control (p=0.001) were statistically significant (figure 1). In addition, using behavior as the outcome variable in the same analysis, both constructs collectively predicted 62% of the variance in behavior (Nagelkerke R^2).

The main reasons for NSAID use from this research were to block pain, treat injuries (ex. sprains and strains), decrease muscle soreness, and improve performance. By completing a crosstabs analysis the athletes' behaviors were compared before practice, after practice, before a game, and after a game. Out of the 47 athletes that said they took NSAIDs for athletic reasons, 51.1% (n=24) claimed they take NSAIDs before practice to block pain. That number decreases to 44.7% (n=21) for athletes that take NSAIDs after practice to block pain. The percentage of athletes that take NSAIDs before a game to block pain increased to 48.9% (n=23). After a game 42.6% (n=20) take NSAIDs to block pain.

Of the 47 athletes who take NSAIDS, 40.4% (n=19) said they took NSAIDs before practice to treat injuries (Table 5). That number increased to 22 (46.8%) for athletes that take NSAIDs after practice to treat injuries. Thirty four percent (n=16) of athletes took NSAIDs before a game to treat injuries. While after a game, that percentage increased to 46.8% (n=22).

About 36.2% (n=17) of the athletes said they took NSAIDs before practice to decrease muscle soreness. That number increased to 53.2% (n=25) for athletes who took NSAIDs after practice to decrease muscle soreness. Thirty four percent (n=16) of athletes took NSAIDs before a game to decrease muscle soreness. While after a game, that percentage increased to 46.8% (n=22).

Table 3
Descriptive Statistics and Correlations for the ATB, SN, PBC, and BI (n=71)

Measure	1	2	3	4	Mean	SD
1. ATB	-	.72***	.41***	.66***	17.9	7.9
2. SN		-	.51***	.60***	24.8	8.6
3. PBC			-	.34**	30.8	5.7
4. BI					8.5	4.8

* Due to missing data n might not exactly equal 71; *: $p<0.05$; **: $p<0.01$; ***: $p<0.001$.
Note: ATB= Attitude toward the Behavior; SN= Subjective Norm; PBC= Perceived Behavioral Control; BI = Behavioral Intentions.

Table 4
Linear Regression on Behavioral Intentions using the TPB

IBM Construct:	Means	Standard Deviation	Beta	*p* value
ATB	17.97	0.918	0.437	0.001
SN	24.76	0.918	0.275	0.052
PBC	30.76	0.675	0.004	0.971

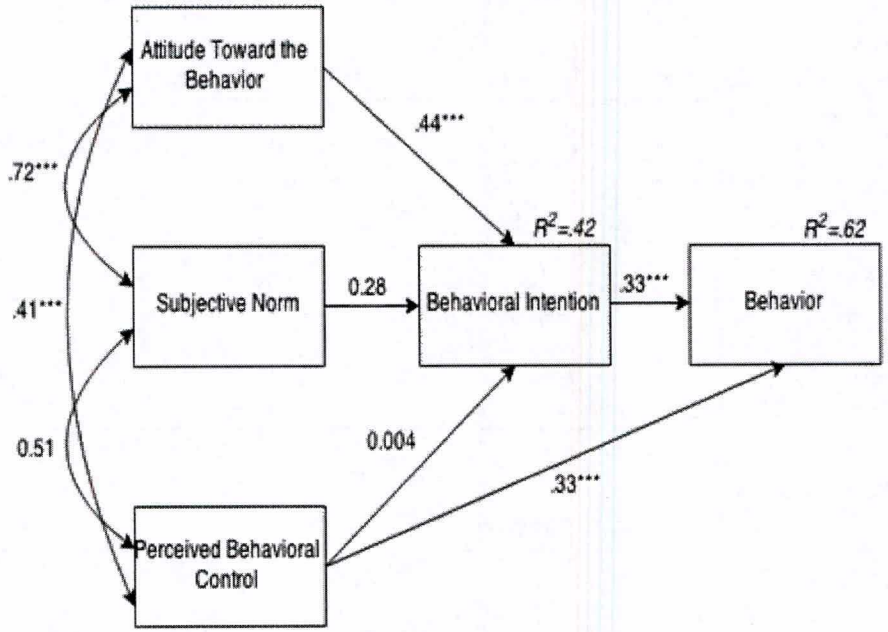
Note: $F=17.67, df=3, p<0.001$; $R^2= 0.44$, Adjusted $R^2= 0.42$

Table 5
Student Athletes' Behaviors and Uses of NSAIDs

Behavior Variable	Before Practice (Percent)	Before Game Day (Percent)	Pearson's R	Pearson's Chi-square	p value
Muscle Cramps	6.38	4.26	.807	30.637	< .001
Muscle Soreness	36.17	34.04	.861	34.835	< .001
Treat Injuries	40.42	34.04	.781	28.641	< .001
Control Swelling	36.17	23.40	.630	18.638	< .001
Block Pain	51.06	48.94	.618	17.936	< .001
Improve Performance	10.64	10.64	.776	28.316	< .001

Only 10.6% (n=5) of the 47 athletes said they took NSAIDs before practice to improve performance. That number decreases to 4.3% (n=2) for athletes that take NSAIDs after practice to improve performance. Ten percent (n=5) of athletes took NSAIDs before a game to improve performance. While after a game, that percentage decreased to 6.4% (n=3).

Figure 1: Path Diagram for NSAID Users



Note.
Double- headed arrow entries are correlations. Single- headed arrow entries are standardized regression coefficients.
* p < .05, ** p < .01, *** p < .001

Figure 1 is a path diagram with exogenous variable correlations, standard path coefficients, and R^2 estimates. Double-headed arrows represent exogenous variables and single-headed arrows present standardized regression coefficients (Mertler & Vannatta, 2002).

A statistically significant correlation existed between attitude toward the behavior and subjective norm ($r=0.72$, $p< .001$) and attitude toward the behavior and perceived behavioral control ($r=.41$, $p<.001$). Also there were moderate statistically significant direct effects of attitude toward the behavior on behavioral intention ($b_s= 0.44$, $p< .001$). Both perceived behavioral control ($b_s= .33$, $p < .001$) and behavioral intentions ($b_s= 0.33$, $p< .001$) were statistically significant and had direct effects on behavior. Additionally, the proportion of the variance in the behavioral intention associated with attitude toward the behavior, subjective norm, and perceived behavioral control was $R^2= 0.42$; the proportion of the variance in the behavior of taking NSAIDs associated with behavioral intention and perceived behavioral control was $R^2= 0.62$.

Discussion

The purpose of this research was to identify athletes' perceptions and knowledge of NSAIDs use, through the Theory of Planned Behavior's ability to statistically predict NSAID use among various DIII athletic teams. It was predicted that athletes would use NSAIDs to play through an injury in order to play on game day. According to Tricker's (2000) study, 29% (n= 165) of the athletes surveyed said they felt nothing wrong with using painkilling drugs on the day of competition to cope with pain (Tricker, 2000). In this study, the athlete's behavior was analyzed before practice and before a game. The top reasons an athlete takes NSAIDs before practice/game include: block pain (51.06%/48.94%), muscle soreness (36.17%/34.04%), treat injuries (40.42%/34.04%), and control swelling (36.17%/23.40%). Tricker et al. predicted that more athletes would consume NSAIDs before a game than practice. However, as seen in these results more athletes reported taking NSAIDs before practice, rather than on the day of competition for all examples. A Chi-square analysis revealed that statistical significance occurred, and more athletes took NSAIDs before practice than a game for all behaviors surveyed. This could suggest that athletes put a focus on playing hard in practice so they can make it to game day and thus earn a chance to compete during the actual game. Coaches also typically determine who plays by when and if their athletes can practice. If an athlete has not practiced all week, it is most likely they will not play in the game on the weekend. This gives incentive for the student-athlete to participate in practices as much as possible. Another conclusion for these results could relate to the amount of practices a team has. For example, most teams have

more practices than games throughout a year. A study from Diacin, Parks, and Allison (2003) assessed how athletes from Division I and Division III viewed drug use and drug testing during intercollegiate athletics. Results from this study showed that participants said they felt the need to take performance enhancing drugs in order to satisfy the coach and solidify playing time (Diacin et. al, 2003). These results could indicate one conceivable reason for this incidence.

Another finding from this research pertained to the concept of social norms. When athletes were asked how many of their teammates they thought used NSAIDs, 35.1% (n=27) indicated between 1-25% of their fellow teammates took NSAIDs. According to Glanz et. al. (2008), social norms are defined as "expectations about how different people will evaluate our behavior and their willingness to be guided by their evaluation" (Glanz et. al., p. 172). Further explaining the results based on that definition, if an athlete believes other athletes are taking NSAIDs they would be more inclined to also take NSAIDs. However, the results indicate that the perception of those who used NSAIDs is minimal. This could explain why fewer athletes take NSAIDs on game day since they do not think their peers are taking them on game day as well. Another plausible reason for this finding is the athletes were answering the questions the way researchers would want them to answer (social desirability).

When the Theory of Planned Behavior was assessed to elicit the statistically significant constructs, the attitude toward the behavior construct was the only statistically significant predictor of behavioral intentions. In the sample population, this illustrates that these athlete's own personal values significantly influences one's intention. The athletes' subjective norms and perceived behavioral control played no role in the intention to take the drug. Other research assessing NSAID use or other Performance Enhancing Drugs also found attitudes as the strongest predictor of intentions (Barkoukis, Lazauras, Tsorbatzoudis & Rodafinos, 2013). As seen in Diacin, Parks, and Allison's study (2003), athletes may be influenced and pressured by their coaches, parents, and teammates however they may refrain from taking performance enhancing substances because their perceptions and attitudes towards the drug. However, due to the sparse research available on this topic, it is hard to compare the results with other research available. One possible reason for subjective norm and perceived behavioral control not being statistically significant could be due to the lack of participants in the study. Interestingly, when the perceived behavioral control construct was eliminated from an additional analysis accessing the attitude toward the behavior and subjective norms constructs on intentions, both those two constructs then became statistically significant.

According to the Theory of Planned Behavior, intention and perceived behavioral control are the primary predictors of behavior (Fishbein, 2007). The results of our research

revealed statistically significant findings that also confirmed Fishbein's theory. Although the perceived behavioral control construct did not significantly predict the intention, it was however, a statistically significant predictor of the actual behavior. This indicates that while the participant does not take into account their internal or external beliefs about NSAID use when deciding whether to take the drug, these results demonstrate that these forces do act directly on an individual when taking the medicine. To sum it up differently, according to the results and the perceived behavioral control construct, taking NSAIDs is more of a "game time" decision and based on the environment around the individual more so then it is something that is purposefully thought over.

Limitations

There are several limitations to this study. One limitation of this research is attributable to low response rate (37%) and participation (n=77). Due to the lower response rate the results from this study may not be a good representation of this DIII athletic department. The monothematic nature of the project only allows the respondent to answer the question within the given responses. Social desirability may be another limitation to this study. This occurs when participants respond in accordance to social norms, over reporting social acceptable behaviors and under reporting socially undesirable behaviors (Colton & Covert, 2007). Also, due to the closed-survey format of this questionnaire, the responses were limited and additional input was not recorded. The self-reporting nature of the C-NUS enabled athletes to skip questions resulting in missing data.

Data collection occurred during the current spring semester to reduce or prevent recall bias. When a respondent forgets and cannot remember an event or behavior, this can increase the chances of recall bias and as a result, lessen the strength of the results (Portney & Watkins, 2000). Although the survey was sent to the athletic director for dispersal to the identified athletic head coaches and teams, it was still up the coaches to send the survey out to their respective athletes. In some instances, the survey was only sent once instead of three times to specific sports teams. The coaches also had the choice not to send it to their team if they so choose. This step was out of the researcher's control and they relied on the coach's participation as well.

Future Research

Future research could focus on getting more students involved in the study to gather data. This could possibly help boost response rates and strengthen the results. Also, for further research, additional survey development could be executed to ensure validity and reliability. Additional data could be gathered from more than one Division III institution

to compare how various demographics affect an athletes' behaviors and perceptions of NSAIDs. Another line of research could include examining the perceived behavioral control construct further to assess whether specifically it is the internal or external forces that act on a person and their intentions. Lastly, future research could also explore the student-athletes perceived knowledge on the use of and side effects associated with NSAIDs.

Conclusion

The use of the Theory of Planned Behavior in this study showed that the main predictor of behavioral intention is the attitude toward the behavior regardless of the internal or external pressures and their referent's approval (or disapproval) in NSAID use. Previous literature gives evidence of athletes misusing NSAIDs in order to continue playing through injuries in order to make it to game day (Diacin et. al, 2003; Tricker, 2000). This study also supports this conclusion with more athletes taking NSAIDs before practice than game day. With NSAIDs being the most commonly used drug amongst athletes, it is essential to ensure athletes are taking them for the correct reasons. To better understand why athletes take NSAIDs it is necessary to understand their intentions and what influences their behaviors.

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