Effort-Reward Imbalance Among Student Athletes: Relationships with Exploitation, Well-being, Performance Satisfaction, and Burnout

Joseph Michael White

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EFFORT-REWARD IMBALANCE AMONG STUDENT ATHLETES: RELATIONSHIPS WITH EXPLOITATION, WELL-BEING, PERFORMANCE SATISFACTION, AND BURNOUT

by

Joseph M. White

A Dissertation
Submitted in Partial Fulfillment of the
Requirements for the Degree of
Doctor of Philosophy

Major: Counseling Psychology

The University of Memphis
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Abstract

College athletics has changed dramatically since the first conception of “sports clubs” centuries ago. The effort required by student-athletes and the rewards they receive for participation have increased in tandem with the money involved in college athletics. Recent changes that allow student-athletes to be paid for use of their name, image, and likeness have further complicated relationships among effort, reward, and outcomes. In the effort-reward imbalance (ERI) model, effort without adequate reward produces stress and poor health-related outcomes, and research has supported this contention with regard to outcomes such as lower well-being and poorer performance among workers. However, few studies have investigated the relationship between ERI and outcomes among student athletes. Using a sample of 187 NCAA student-athletes recruited from throughout the United States, this study used a cross-sectional design to investigate whether stress and burnout serially mediate the relationship between ERI and both well-being and athletic performance satisfaction. The relationship between ERI and perceived exploitation, as well as the differences in perceptions of exploitation among groups of student-athletes with and without name, image, and likeness (NIL) contracts, were explored. Consistent with hypotheses, relationships between ERI and well-being, and ERI and athletic performance satisfaction, were both serially mediated by stress and burnout. Additionally, ERI was positively related to perceived exploitation. Contrary to the hypothesis, there was no difference in perceived exploitation across groups of student-athletes with and without NIL contracts. Implications and limitations of these results are discussed.

Keywords: effort-reward imbalance, well-being, performance satisfaction, burnout, perceived exploitation
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Introduction

Today, nearly half a million collegiate student-athletes compete under the National Collegiate Athletic Association (NCAA), the primary governing body of collegiate athletics in the United States (NCAA, 2021). The NCAA is comprised of three divisions, each with different rules and regulations that are typically differentiated by the level of competition and the level of athletic scholarships available to students (NCAA, 2021). Among the NCAA’s three divisions are 102 multisport conferences, 1,082 active university and college members, and over 19,886 different men’s and women’s teams in more than 24 sports.

Apart from providing student-athletes with opportunities to compete in sports beyond high school, colleges and universities have learned that, by heavily marketing their athletic programs to the public, they are able to increase their overall revenue from tuition and fees by attracting non-athlete students who are fans of the athletic programs (Nevius, 2020). In order to be competitive, schools recruit the best high school athletes, persuading them to join their athletic teams by highlighting the benefits of being a student-athlete while downplaying the actual efforts and costs (Gayles & Baker, 2015). To be more appealing to prospective recruits, athletic departments must also engage in a yearly “arms race” that consists of improvements to staff, equipment, and facilities (Nevius, 2020).

What began as enjoyable competition between students has evolved over the years into the popular multibillion-dollar industry that we see today (Associated Press, 2022). This fast-paced, high-stakes environment has left high school recruits with the pressure of making life-changing college commitment decisions based on limited information regarding which school is the perceived best fit. The full impact of that decision may depend on whether or not the various
rewards associated with being a student-athlete are in balance with the amount of effort required to participate.

**Rewards**

There are numerous reasons why individual students may choose to participate in college athletics. For one, varsity college athletics provides a chance for elite high school athletes to continue competing in sports that they have dedicated much of their lives to perfecting (Cash et al., 2021). It is a rare opportunity that only an estimated 5% of high school seniors will have (Gayles & Baker, 2015). The already prestigious environment combined with the popularity of college sports results in student-athletes receiving substantial public attention and often being worshipped on college campuses (Hagiwara et al., 2017). Additionally, by participating on a college team, student-athletes may also feel a sense of belonging within an athletic subculture community that has been related to increased confidence and feelings of self-worth (Gayles et al., 2018).

In addition to the various potential intrinsic and social rewards to participation for student-athletes, there are also compelling educational benefits. American institutions rank among the highest in the world in quality; however, the cost of tuition has exploded, far outpacing the rate of inflation for the last 30 years, which makes attending college an expensive venture (Ehrenberg, 2021). Participating in collegiate athletics is one way to reduce that cost. Division I student-athletes have the potential to be awarded athletic scholarships that cover portions (or all) of tuition, fees, room and board, books, and a stipend to help offset costs (NCAA, 2022). Like Division I, Division II also offers partial athletic scholarships to student-athletes (NCAA, 2022). Although Division III programs do not offer athletic scholarships (NCAA, 2022), some student-athletes benefit from admission to higher-quality academic
institutions that may have been otherwise out of reach if based solely on their academic records (Osborne et al., 2020). Once admitted, many schools offer academic support services that are exclusive to student-athletes, including specialized athletic advisors, learning assistants, tutors, psychological providers, and class checkers (Rubin & Moses, 2017).

Perhaps the most compelling rewards for some student-athletes come as a result of the recently signed California law, *The Fair Play Act*, which made it illegal for any California institution to prevent student-athletes from benefiting from their name, image, and likeness (NIL; Kunkel et al., 2021). The California law forced the NCAA to act, and on June 30th, 2021, the NCAA’s Board of Directors adopted an interim policy that allows college student-athletes to benefit financially from their NIL without fear of NCAA penalty, effectively ending the long-standing precedent of purely amateur college athletics (Murphy, 2021). The implications of the NIL change have yet to be fully examined, with differences expected in NIL values across institutions, sports, and individual athletes (Kunkel et al., 2021). However, select student-athletes have already begun to profit from million-dollar contracts, luxury cars, social media deals, and marketing opportunities that provide immediate financial rewards to participating in collegiate athletics (Escarpio, 2022). Following the NIL decision in May of 2024, the House v. NCAA lawsuit settled with the NCAA set to pay Division I college athletes over 2.75 billion dollars for damages (Auerbach & Williams, 2024). Although the exact nature of the rewards associated with college athletics and their perceived value depend on the specific individual, it is undeniable that there are many benefits to being a student-athlete.

**Efforts**

As the popularity of college athletics has grown, so too have the demands placed on college athletes. In addition to managing many of the same responsibilities as their non-athlete
peers, student-athletes are also expected to put in extra effort for playing time, injury management, teammate relationships, and coach directives (Holden et al., 2019). Elite athletes are already subject to high amounts of physical and mental stress, are at increased risk for injury, and often suffer from over-training (Theberge, 2008); however, with billions of dollars at stake, athletic departments and coaches have only increased the pressure on student-athletes to perform and win (Roxas & Ridinger, 2016). Due to the high-pressure environment, verbal and emotional abuse of student-athletes by coaches is common—so much so that it is considered part of the “culture” of college sports. Because coaches oversee scholarships, playing time, transfer opportunities, and the overall quality of daily life for their players, many student-athletes must find ways to manage the stressful environment.

In life outside of sport, student-athletes hardly have time to be college students (Cutler & Dwyer, 2020). Due to extensive time and energy demands, student-athletes have less time for self-care, sleep, and socializing (Egan, 2019). Travel time can lead to missed classes and, because of their already packed schedules, it can be hard to find time to make up what was missed. For first year, first generation, at-risk, and low-income student athletes, the lack of time for academics and outside experiences can be especially challenging (Gayles & Baker, 2015).

Despite numerous similarities to workers, student-athletes have never been categorized as employees. The term “student-athlete” was originally used as part of an intentional propaganda scheme set in motion for the NCAA to avoid paying workers compensation benefits (Byers & Hammer, 1995). However, like employees, student-athletes must report to a boss (i.e., coach), there are consequences for poor performances (i.e., not starting or being removed from the team), and there are similar time constraints (Staurowsky, 2014). In America today, a regular full-time employee is scheduled to work around 40 hours a week. In 2015, Division I student-athletes
reported they spent a median of 34 hours per week in season on athletics and 38.5 hours per week on academics, roughly the time equivalent of nearly two full-time jobs (Egan, 2019). Although the amount of effort required to be a student-athlete varies depending on the individual, school, and sport played, it is clear that there are significant demands related to athletic participation.

**Theoretical Framework**

The effort-reward imbalance (ERI) model is frequently cited in occupational health research and may be applicable to student-athletes (Siegrist et al., 1986). The model examines the psychological and physical health-related impacts associated with an imbalance between perceived work efforts and perceived rewards (Siegrist, 1996). The ERI model implies that when there is an imbalance in the reciprocal relationship between work effort and reward, workers are unable to fill important self-regulatory needs such as self-esteem, self-efficacy, and self-integration (Siegrist et al., 1986). The imbalance between work costs and work gains leads to an “active state” of distress that Siegrist and colleagues suggest gives rise to strong negative emotions and stress, eventually resulting in health problems (1986). When ERI is high among individual workers, research suggests negative associations with factors such as well-being (Cho et al., 2021) and job performance (Feuerhahn et al., 2012). Due to the complex and unique nature of rewards and efforts among student-athletes, a holistic approach that measures the overall balance between the efforts and rewards among student-athletes is warranted.

People have a tendency to avoid such an imbalance by cognitively and behaviorally decreasing their effort or increasing their reward (for details about these methods, see the cognitive theory of emotion [Lazarus, 1991] and the expectancy theory of motivation [Schönpflug & Batmann, 1989]); however, Siegrist proposed three conditions where workers are
unable to avoid the high cost/low gain imbalance: (1) if there is no alternative choice in the labor market, (2) when there are expected future gains, and (3) when employees are overcommitted to their work (Siegrist, 1996). Similar to workers, student-athletes also appear to be unable to avoid the high cost/low gain imbalance. Among a sample of student-athletes, Simons and colleagues (1999) found that a higher level of commitment to sport was positively related to higher feelings of exploitation, which appears to align with Siegrist’s third condition and suggests similarities between perceived exploitation and the ERI model. It is also fair to assume that student-athletes are unable to avoid the high cost/low gain environment both of Siegrist’s first and second conditions due to a lack of marketplace alternatives (i.e., the NCAA is the main organization for college athletics) and for strategic reasons such as playing professionally after school, obtaining a degree using athletic scholarships, or using their competitive expertise in future employment (e.g., coaching). For example, between 46% and 72% (depending on the sport) of male Division I student-athletes expected that their job following college would involve their sport (NCAA, 2020).

Originally created to predict cardiovascular-related outcomes among workers, the model has since been applied to numerous behavioral and psychological related outcomes (Van Vegchel et al., 2005). There is support for the application of the ERI model with numerous occupations including police officers (Cho et al., 2021; Wolter et al., 2021), nurses (Bakker et al., 2000), teachers (Derycke et al., 2013), hotel staff (Krause et al., 2010), freelance media workers (Ertel et al., 2005), university students (Wege et al., 2017), and jockeys (Landolt et al., 2017). However, although research exists on how rewards impact motivation among student-athletes (Readdy et al., 2014), few studies have examined ERI in the context of athletes (Park & Kim, 2021). In one study, Landolt and colleagues (2017) found that ERI was associated with
decemnts in decision-making abilities among jockeys, a component critical to one of the most dangerous sporting jobs in the world. The only study to examine the ERI model in relation to student-athletes was conducted with a sample of Korean university athletes to develop a measure to evaluate athletes’ efforts and rewards (Park & Kim, 2021). Results supported the use of the ERI model on student-athlete populations. Of note, the study also called for more research in order to gain a more comprehensive understanding of the suitability of the ERI model for athletes.

**Well-being**

Diener and colleagues (1999) suggested that an individual’s self-evaluation of well-being will be influenced by different contextual aspects of their life situation. Student-athlete well-being has received increased attention in recent years, and literature on well-being among athletes has become an important focus in the field of sports psychology. A recent study found that nearly 21% of male student-athletes and 28% of female student-athletes reported feeling depressed over the last year (Egan, 2019). Similarly, a recent NCAA survey of 37,658 student-athletes indicated that 31% of male student-athletes and 50% of female student-athletes felt overwhelmed every day (NCAA, 2020). In 2014, the NCAA initiated the Innovations in Research and Practice Grant Program to promote research designed to enhance student-athlete well-being. This attempt by the NCAA to focus holistically on student-athletes has shown promise; however, research has yet to examine the impact of the ERI in relation to well-being among student-athletes. In non student-athlete samples (i.e., police officers and health care workers), high ERI has been associated with lower levels of well-being (Cho et al., 2021; Van Vegchel et al., 2005). In the ERI model, stress is a direct result of an imbalance between high effort and low rewards that is perceived as difficult or impossible to change. Levels of stress and
pressure have continued to increase for student athletes in the last half century, and it is likely that this increase is related to heightened focus on financial gain in college sports (Staurowsky, 2014). Although stress and pressure are unavoidable in college athletics, chronic stress has been shown to be detrimental to student-athlete well-being (Hamlin et al., 2019) and the psychological well-being of college students more generally (Neely et al., 2009). Additionally, higher rates of stress are associated with higher rates of burnout (Olsson, 2022), a phenomenon that has been shown to have a negative relationship with well-being among college student-athletes (Dubuc-Charbonneau & Durand-Bush, 2015). Well-being was also negatively correlated with workers’ perceptions that their incomes were unfair in relation to their work efforts (D’Ambrosio et al., 2018).

**Athletic Performance**

Among workers in white-collar and blue-collar jobs, high levels of ERI were negatively associated with work performance (Feuerhahn et al., 2012; Rosenberg & Li, 2018). Similarly, stress and burnout are negatively related not only to well-being but to performance (for a review, see Gustafsson et al., 2017; Humphrey et al., 2000). Unsurprisingly, and partially due to the financial incentives associated with high performing athletes and teams, there is extensive literature examining student-athlete performance (Nichols et al., 2019); however, no studies have examined the relationship between ERI and performance among student-athletes. Financial support is an important component of the effort – rewards equation, and professional athletes have indicated that lack of financial support negatively impacts motivation (Harrolle & Klay, 2019). Motivation has been positively correlated with performance in elite youth athletes (Cece et al., 2020). In the vocational literature, it is well documented that financial incentives improve performance (Shaw & Gupta, 2015), and it is plausible that a perceived imbalance of financial
rewards in relation to effort will decrease performance among student athletes. Understanding the relationship between level of ERI and sport performance may help to not only improve performance among student-athletes but to form new supports.

Measuring an individual’s sport performance is challenging due to varied definitions of and perspectives surrounding what makes a successful performance (Nichols et al., 2019; Rankin et al., 2016). For example, previous studies have measured performance using objective measures like the amount of weight lifted (Catina & Iso-Ahola, 2004); however, using objective measures (e.g., weight lifted, goals scored, wins and losses) may ignore some of the multifaceted components of performance (Cece et al., 2020), especially considering differences in objective measures between sports (Nicholls et al., 2010; Saw et al., 2016). Additionally, in a meta-analysis of nearly 3,000 studies, not one study used performance outcomes such as wins and losses or personal bests as a way of measuring performance due to what the authors describe as a lack of context surrounding these outcomes (Raysmith et al., 2019). In support of subjective measures, Saw and colleagues indicated that such measures are often more effective than common physiological measures in monitoring athletes’ training effectiveness, and they suggest that self-reported subjective measures are a valid and reliable method for monitoring athletes (2015). Therefore, in this study, satisfaction with athletic performance rather than objective measurements or ratings by coaches or others was chosen as the outcome.

**Stress and Burnout as Mediators**

Stress and burnout are common among student-athletes (Armstrong et al., 2015; Silva, 1990) and may help to explain the relationship between perceived ERI and both well-being and perceptions of sport performance. Stress has been related to ERI (Siegrist et al., 1986), burnout (Olsson, 2022), well-being (Hamlin et al., 2019) and performance (Humphrey et al., 2000) and
would in theory play a key role in helping to explain relationships between ERI and both well-being and athletic performance satisfaction—most plausibly through its positive relationship with burnout.

Across varied conceptualizations, burnout has been consistently construed as a response to chronic stress (see Coakley, 1992), and empirical evidence supports this contention (Gould & Whitley, 2009). Additionally, burnout has been positively correlated with ERI in varied samples such as teachers (Tanimoto et al., 2023) and nurses (Bakker et al., 2000). Furthermore, burnout has been negatively related to both well-being (De Francisco, et al., 2016; Gustafsson et al., 2008) and performance (e.g., among healthcare workers, Parker & Kulik, 1995). Further supporting these relationships, reduction of burnout through interventions has been linked to higher well-being (Dubuc-Charbonneau & Durand-Bush, 2015) and improved performance (Gustafsson et al., 2017) among student-athletes.

Burnout, then, meets two key criteria for a mediator (Frazier et al., 2004): significant relationships with the predictors (ERI and stress stemming from ERI) and the outcomes (well-being and performance). Indeed, among student-athletes, burnout has mediated the relationship between conflict in their role as students and athletes and their commitment to their team and college or university (Rusbasan et al., 2021). Like stress, burnout is likely to mediate some of the relationship between ERI and both well-being and athletic performance satisfaction.

**Exploitation**

The debate surrounding the exploitation of collegiate student-athletes is certainly not new. Since the modern-day conception of the National Collegiate Athletic Association (NCAA) in 1946 as a way of fighting back against postwar corruption in college football, the NCAA has emphasized the idea of amateurism for its student-athletes while simultaneously downplaying the
clear relationship between revenue and college sport (Sperber, 1999). Some 70 years later, student-athletes are still denied the same rights and privileges assigned to all employees by the Fair Labor Standards Act (FSLA), even as the richest college football conferences signed network deals in 2020 worth over $1.4 billion for the year (Ozanaian, 2020). In 2020, the average college football coach in a Power Five conference earned around $4.4 million annually (Berkowitz & Schad, 2020). Although exact numbers are difficult to estimate, it is not unreasonable to assume that high-profile blue-chip recruits who go on to play in the NBA or NFL can generate between $500,000 and $1,000,000 for their respective college teams (Fish, 2009; Van Rheenen, 2011).

Despite the nearly half a century of debate, the research investigating the impact of exploitation among student-athletes is limited, and few studies have investigated exploitation from the perspective of the student-athlete (Adler & Adler, 1991; Beamon, 2008; Leonard, 1986). However, Van Rheenen (2011) indicated that, although feeling exploited was not exclusive to revenue-generating sports, student-athletes from sports such as men’s football and basketball were seven times more likely to feel exploited than student-athletes from other non-revenue-generating teams. This suggests that student-athletes who feel most exploited may perceive an unfair imbalance between their efforts and financial rewards in relation to the financial success of their coaches, teams, and university. However, due to the recent changes in the NCAA regarding payment for NIL, it is likely that student-athletes receiving compensation for their NIL may feel less financially exploited than student-athletes who do not have contracts. The exact relationship between the ERI model and feelings of exploitation among student-athletes has yet to be examined.
The Current Study

Despite the clear relationship between college athletics and financial gain, there is limited research examining this connection from the framework of the effort expended by student-athletes in contrast to the potentially limited financial or other rewards they receive. More specifically, there appear to be no studies that have investigated relationships of ERI with the important outcomes of well-being and athletic performance satisfaction among student-athletes. This study utilized a cross-sectional correlational research design to investigate whether imbalance between college student athletes’ efforts and rewards for athletic participation predicted well-being and athletic performance directly as well as indirectly via stress and burnout. Figures 1 and 2 depict these two serial mediation models.

Figure 1.

Model 1: Perceived Stress and Burnout as Mediators of the Relationship between Effort-Reward Imbalance and Well-Being
Figure 2.

Perceived Stress and Burnout as Mediators of the Relationship between Effort-Reward Imbalance and Athletic Performance Satisfaction

Additionally, in view of the recent changes that allow student-athletes to be paid for use of their name, image, and likeness that have potentially complicated relationships among effort, reward, and outcomes (Kunkel et al., 2021), this study examined the relationship between ERI and perceptions of exploitation and whether perceptions of exploitation differed between groups of student-athletes with and without NIL contracts.

Hypotheses

I hypothesize that, among student-athletes:

H1: ERI will have a negative relationship with well-being.

H2: ERI will have a negative relationship with performance satisfaction.

H3: The relationship between ERI and well-being will be mediated serially by stress and burnout, such that higher ERI will be related to higher stress, which in turn will be associated with higher burnout, thereby leading to lower well-being.

H4: The relationship between ERI and athletic performance satisfaction will be mediated serially by stress and burnout, such that higher ERI will be related to higher stress, which in turn
will be associated with higher burnout, thereby leading to lower athletic performance satisfaction.

H₅: ERI will have a positive relationship with perceived exploitation.

H₆: Perceived exploitation will be lower among student-athletes who have an NIL contract than among those who do not.

**Method**

**Participants**

A minimum sample of 135 participants was needed to achieve a power of .8 with alpha set at .05, calculated using a Monte Carlo simulation in line with recommendations from Schoemann et al. (2017) on complex mediation models. To account for missing data and incomplete data, over 200 participants were recruited from NCAA affiliated colleges and universities across the United States social via social media, email, and word of mouth. The final sample consisted of 187 student-athlete participants representing all three NCAA divisions (see results section for data preparation and screening). Most study participants identified as White (88.0%), competed on Women’s varsity teams (79.1%), and had not profited from NIL contracts (78.5%). There were equal numbers of NCAA Division I and III participants (39.6%), with fewer NCAA Division II participants (20.9%). Additional participant demographics are reported in Table 1.

**Table 1**

*Participant Demographics*

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<td></td>
</tr>
<tr>
<td>Team Gender</td>
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<tr>
<td>Men’s Team</td>
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<tr>
<td>Women’s Team</td>
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Table 1 (Continued).

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<td>Division II</td>
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<td>Division III</td>
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<td>75% - 99%</td>
<td>20</td>
<td>10.7</td>
</tr>
<tr>
<td>50% - 74%</td>
<td>29</td>
<td>15.5</td>
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<tr>
<td>35% - 49%</td>
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<td>8.6</td>
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<tr>
<td>Less than 25%</td>
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<td>8.0</td>
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<td>No Athletic Scholarship</td>
<td>80</td>
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Table 1 (Continued).

<table>
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<tr>
<th>Categorical Variable</th>
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<tr>
<td>Playing Time</td>
<td></td>
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</tr>
<tr>
<td>Started in every competition.</td>
<td>110</td>
<td>58.8</td>
</tr>
<tr>
<td>Non-starter, and competed in most competitions</td>
<td>26</td>
<td>13.9</td>
</tr>
<tr>
<td>Non-starter, but competed in half the competitions</td>
<td>21</td>
<td>11.2</td>
</tr>
<tr>
<td>I competed in a limited number of the competitions</td>
<td>15</td>
<td>8.0</td>
</tr>
<tr>
<td>I did not compete in any competitions</td>
<td>15</td>
<td>8.0</td>
</tr>
<tr>
<td>Prevented from competing due to injury</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>62</td>
<td>33.2</td>
</tr>
<tr>
<td>No</td>
<td>125</td>
<td>66.8</td>
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</tbody>
</table>

Instruments

**Demographic Questionnaire**

The demographic questionnaire included items intended to gather data on participant age, race, socioeconomic status, gender identity, year in school, sport type, scholarship status, NIL contract status, playing time during the season, injury status during the season, and international student status.

**Effort-Reward Imbalance**

**Effort and Reward Scale for Sport Contexts.** The Effort Reward Scale for Sport Contexts (ERS; Park & Kim. 2021) is a 28-item instrument developed to measure the balance between efforts and rewards among athletes. Fourteen items measure effort and 14 measure reward. Responses are measured on a 5-point Likert scale (1 = almost never to 5 = almost always). A sample item on the Effort subscale is “I try more than other athletes,” and a sample item on the Reward subscale is “As an athlete, my future is promising.” To calculate the total ERI-ratio (see Siegrist et al., 2019), the effort score is inserted as the numerator and the reward score is the denominator (1 = ER balance, < 1 = low effort and high reward imbalance, > 1 = high effort low reward imbalance). Among a sample of university athletes, ERS scores showed
strong internal consistency, with a Cronbach’s alpha of .88. Confirmatory factor analysis revealed four factors associated with the effort subscale that are combined for a total effort score and three factors related to the reward subscale that are combined for a total reward score. Test-retest reliability for the seven factors on the ERS ranged from .81 to .93 over a 2-week period. The ERS demonstrated adequate convergent and discriminant validity with the Self-Management Scale (Kim, 2003) with correlations among the sub-factors ranging from .13 to .66 (Park & Kim, 2021).

**Exploitation**

**Perceived Exploitation of College Athletes Questionnaire.** The Perceived Exploitation of College Athletes (PECA; Van Rheenen & Atwood, 2014) Questionnaire is a 3-item scale used to measure college athletes’ perceptions of exploitation by their institutions. Items include “Sometimes I feel that I am being taken advantage of as an athlete,” “I give more to the university than it gives to me,” and “This university make [sic] too much money off its athletes, who see very little of it.” Responses are on a Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree). The internal reliability of PECA scores among student-athletes is .80. Confirmatory factor analysis conducted on a sample of 750 NCAA Division I athletes revealed high factor loadings ranging from 0.83 to 0.86 for three questions. Due to lack of evidence for criterion, predictive, convergent, and discriminant validity, as well as test-retest reliability, an additional scale that measures perceived exploitation was administered.

**Well-being**

**Sport Mental Health Continuum - Short Form.** The Sport Mental Health Continuum – Short Form (Sport MHC-SF; Foster & Chow, 2019) is a 14-item sport-specific measure of well-being. This measure accounts for the uniqueness of the sport specific population and measures
the impact of sport-specific participation on well-being. Modeled after the Mental Health Continuum – Short Form (MHC-SF; Keyes, 2006), participants respond to questions that all begin with “During the last month, how often did your sport participation make you feel…(e.g., happy, interested in your sport, satisfied, that you had something to contribute to your team or sport community)” on a 6-point Likert scale (0 = never to 5 = every day). This measure was included in response to a call by Lundqvist (2011) for future studies to use single measures that more comprehensively assess the multiple aspects of well-being. Internal consistency estimates for the three Sport MHC-SF subscales all exceeded .88. Discriminant and convergent validity analyses established moderate positive correlations among MHC-SF subscales and their Sport MHC-SF counterparts. Items are summed with higher scores indicating higher well-being.

**Subjective Athletic Performance**

**Athlete Satisfaction Questionnaire.** The Athlete Satisfaction Questionnaire (ASQ; Riemer & Chelladurai, 1998) is a commonly used measure that measures athletes’ satisfaction with their sport. The Individual Performance subscale, which consists of 3 items measuring an individual athlete’s satisfaction with their performance, was used as the measure of performance satisfaction. Responses are scored on a 7-point Likert scale (1 = not at all satisfied, 4 = moderately satisfied, and 7 = extremely satisfied). A sample item is “The degree to which I have reached my performance goals.” Items are averaged, with higher scores indicating greater athletic performance satisfaction. Internal consistency coefficients for overall ASQ scores range from .74 to .95. In a sample of 84 student-athletes, Cronbach’s alpha was .89. The ASQ showed strong construct, criterion, and predictive validities (see Riemer & Chelladurai, 1998).
Stress

Perceived Stress Scale. The Perceived Stress Scale (PSS; Cohen et al., 1983) is a widely used 10-item instrument that measures self-reported perception of stress. Responses are measured on 5-point Likert scale (0 = never to 4 = very often). Sample items include “In the last month, how often have you been upset because of something that happened unexpectedly?” and “In the last month, how often have you felt nervous and stressed? Scores are averaged, with higher scores indicating higher perceived stress. Among a sample of student-athletes, PSS scores evinced reliability and validity (Chiu et al., 2016). Among a sample of 359 student-athletes, the PSS scores showed evidence of discriminant validity and convergent validity, Cronbach’s alpha was .81, and test-retest reliability was .66 over 4 weeks (Chiu et al., 2016).

Burnout

Athlete Burnout Questionnaire. The Athlete Burnout Questionnaire (ABQ; Raedeke & Smith, 2001) is a frequently used 15-item measure of athlete burnout. Responses are measured on a 5-point Likert scale (1 = almost never to 5 = almost always). Sample items include “I do not care as much about my sport as I used to” and “I feel overly tired from my sport participation.” Items are averaged, with higher scores indicating higher burnout. The ABQ measures three dimensions commonly associated with burnout: emotional/physical exhaustion, sport devaluation, and reduced sense of accomplishment. Among athlete populations, the ABQ has shown adequate reliability and validity. Positive associations of scores on these dimensions were found with scores on measures of similar constructs including perceived stress, trait anxiety, depression, and amotivation, providing evidence for convergent validity. Scores also exhibited acceptable test-retest reliabilities over one to three weeks with correlations greater than .70.
Among a sample of college athletes, internal consistencies (Cronbach’s alpha) for scores on the three dimensions were .85, .86, and .63 (Chyi et al., 2018).

**Procedure**

Permission from the University of Memphis Institutional Review Board was obtained prior to data collection. The study utilized the online survey platform Qualtrics to administer all instruments. Recruited participants received an email including: (a) a description of the study; (b) a clear statement regarding confidentiality and anonymity, in addition to information on how the data were to be stored; (c) a description of what participation entailed, and the estimated amount of time required for participation; (d) a clear description of any potential risks as a result of participation; and (e) a link to the anonymous online survey. Participants who did not meet inclusion criteria were automatically directed to the end of the survey and thanked for their time. Participants who met inclusion criteria were directed to survey items. Once the survey was completed, participants were compensated for their time in the form of a $10 Amazon gift card. Privacy was maintained by having students click a new Qualtrics link at the completion of the survey to list an email for where they wanted the gift card to be sent. Additionally, following the completion of the survey, participants were debriefed and provided links to further information regarding NCAA student-athlete mental health recommendations.

**Results**

**Data Screening**

There were 226 survey attempts. Eleven cases were excluded for not meeting the eligibility criteria of being over the age of 18 years and being a current NCAA student-athlete. An additional 10 cases met eligibility criteria but were removed due to not completing any survey items. A further 13 respondents were removed for failing to complete any items beyond
the demographic section. A final five respondents were deleted for failing to complete any items beyond the demographic section and the first measure. Little’s test was conducted and failed to reject the null hypothesis that data were missing at random, or MAR. One outlier with a significant Mahalanobis distance ($p < .001$) was removed; however, subsequent analyses without the outlier revealed no meaningful change in results, so this case was retained in the final analyses. There were two outliers with standardized residuals greater than +/- 3 in the well-being regression, and there was one such outlier in the athletic performance satisfaction regression; however, deleting the outliers had no meaningful impact on the outcomes and they were included in the final analysis. A plot examining Cook’s distance with centered leverage values revealed no outliers for either the regressions predicting well-being or athletic performance satisfaction.

The final sample consisted of 187 participants. Data met the assumption of normality, assessed with the regression histograms and normal P-P plots. Measures of skewness fell between -3 and 3, and measures of kurtosis fell between -10 and 10. Scatterplots and partial regression plots showed that the assumption of linearity was met. Quadratic and cubed values for independent variables were added to exploratory regression analyses of both criterion variables, and no curvilinear relationships were observed. Plots of standardized residuals against the unstandardized predicted values showed homoscedasticity. The variable inflation factors and condition indices showed no problematic multicollinearity among the independent variables in either multiple regression.

**Preliminary Analyses**

Because of weak but significant correlations with variables in the models, socioeconomic status and playing time were added to the third step of a preliminary hierarchical regression analysis to determine their relationship with the criterion variables of student-athlete well-being
and athletic performance satisfaction. NCAA Division was also included in the preliminary hierarchical regression analysis for model 2 due to differences between groups (see below). Although the block of demographic variables predicted significant variance in criterion variables, these demographic variables were not included in the final serial mediation analyses as covariates because they did not meaningfully impact the outcomes.

A one-way ANOVA revealed that race (White vs. other) was not significantly associated with either well-being or athletic performance satisfaction. Because 88% of participants identified as White (see Table 1), a dummy coded variable (White = 1, other = 2) was entered in the first block of hierarchical regressions predicting both well-being and athletic performance satisfaction. Race did not predict either outcome and was not included in the final analyses. In a second one-way ANOVA, NCAA Division was not associated with well-being and was not included in further analyses for this criterion variable. Mean athletic performance satisfaction differed across NCAA Divisions ($F(2, 186) = 3.24, p < .05$). Tukey’s HSD test for multiple comparisons found that mean athletic performance satisfaction score was lower for Division I student-athletes ($M = 4.41, SD = 1.28$) than Division II student-athletes ($M = 5.03, SD = 1.27$) ($p = .04, 95\% \text{ C.I.} = -1.25, - .02$). There were no significant differences between means of Division I and Division III ($M = 4.77, SD = 1.36, p = .20$) or Division II and Division III ($p = .57$) student-athletes. In a third one-way ANOVA, perceived exploitation was not associated with differences in NIL contract status [$F(1, 186) = 2.13, p = .15$].

The correlational analyses supported hypotheses 1, 2, and 5: ERI had a negative relationship with well-being ($r = -.38, p < .001$) and athletic performance satisfaction ($r = -.38, p < .001$) and a positive relationship with perceived exploitation ($r = .27, p < .01$). Table 2 presents correlations and descriptive statistics.
Table 2

Means, Standard Deviations, and Correlations

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
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</thead>
<tbody>
<tr>
<td>1. ERI</td>
<td>.76/.85</td>
<td>- .38***</td>
<td>- .38***</td>
<td>.33***</td>
<td>.38***</td>
<td>.27**</td>
<td>.12</td>
<td>.18*</td>
<td>-.06</td>
<td>-.18*</td>
<td>-.09</td>
</tr>
<tr>
<td>2. Well-Being</td>
<td>.96</td>
<td>.52***</td>
<td>-.50***</td>
<td>-.67***</td>
<td>-.39***</td>
<td>-.14</td>
<td>-.03</td>
<td>.24***</td>
<td>.05</td>
<td>.07</td>
<td></td>
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<td>3. APS</td>
<td>.85</td>
<td>-.23**</td>
<td>-.44**</td>
<td>-.15*</td>
<td>-.18*</td>
<td>-.01</td>
<td>.17*</td>
<td>.13</td>
<td>-.00</td>
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<td>4. PS</td>
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<td>.53**</td>
<td>.05</td>
<td>.14</td>
<td>-.22**</td>
<td>-.10</td>
<td></td>
<td></td>
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<td>5. AB</td>
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<td>.38**</td>
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<td>.16*</td>
<td>-.16*</td>
<td>-.09</td>
<td>-.14</td>
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<td>6. PE</td>
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<td>.03</td>
<td>-.11</td>
<td>-.06</td>
<td>-.10</td>
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<td>7. Playing Time</td>
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<td>-.06</td>
<td>-.10</td>
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<td>8. Scholarship</td>
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<td>-.18*</td>
<td>.08</td>
<td>-.20**</td>
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<td>10. Injury Status</td>
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<td>-.08</td>
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<td>11. NIL (y/n)</td>
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<td>-</td>
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<td></td>
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<tr>
<td>SD</td>
<td>1.04</td>
<td>4.53</td>
<td>4.68</td>
<td>2.87</td>
<td>2.65</td>
<td>2.99</td>
<td>1.92</td>
<td>4.13</td>
<td>6.69</td>
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<td>-</td>
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</tbody>
</table>

Note. Cronbach’s alpha coefficients are on the diagonal. Column 1 Cronbach’s alpha indicates the effort and reward subscales of ERI (effort/reward). ERI = Effort Reward Imbalance; APS = athletic performance satisfaction; PS = perceived stress; AB = athlete burnout; PE = perceived exploitation; SES = socioeconomic status; NIL = name, image, and likeness.

*p < .05. **p < .01. ***p < .001.
For hypothesis 6, the ANOVA analysis failed to reject the null hypothesis and indicated that there was no difference in levels of perceived exploitation between student-athletes with and without NIL contracts [$F(1, 186) = 2.13, p = .15$].

**Tests of Mediation**

The PROCESS Macro (Hayes, 2022) Model 6 was used to test the two serial mediation models in prediction of well-being and athletic performance satisfaction. PROCESS is a macro that uses ordinary least squares regression within SPSS (version 29) to determine direct and indirect effects (Hayes, 2022). The 95% confidence intervals (CIs) are examined using bootstrapping with 5000 bootstrap samples.

A serial multiple mediation model was constructed to investigate whether perceived stress and burnout mediate the relationship between ERI and well-being (hypothesis 3). The direct relationship of ERI with perceived stress ($a_1$: $\beta = .33, B = 1.18, t(185) = 4.72, p < .001$, 95% CI = 0.69, 1.68), burnout ($a_2$: $\beta = .21, B = 0.92, t(184) = 3.45, p < .001$, 95% CI = 0.39, 1.44), and well-being ($c'$: $\beta = -.13 B = -0.74, t(183) = -2.20, p < .05$, 95% CI = -1.40, -0.08) were all significant. Perceived stress had a direct relationship with burnout ($d_2$: $\beta = .53, B = 0.64, t(184) = 8.69, p < .001$, 95% CI = 0.49, 0.78); however, the direct relationship of perceived stress with well-being was not significant ($b_1$: $\beta = -.12, B = -0.20, t(183) = -1.83, p = .13$, 95% CI = -0.41, 0.02). Burnout was directly and negatively related to well-being ($b_2$: $\beta = -.56. B = -0.75, t(183) = -8.34, p < .001$, 95% CI = -0.93, -0.57). Figure 3 presents results for model 1.
Bootstrapping was used to examine the significance of the mediation in the serial mediation model and revealed that the indirect relationship of ERI with well-being through perceived stress was not significant as the 95% CI included 0 (β = -.04, B = -0.23, Bootstrap SE = .18, 95% CI = -0.60, 0.09). This indirect path accounted for 10.36% of the total relationship between ERI and well-being. The indirect relationship of ERI with well-being through burnout was significant (β = -.12, B = -0.69, Bootstrap SE = .21, 95% CI = -1.14, -0.30) and accounted for 31.08% of the total relationship of ERI and well-being. The indirect relationship of ERI with well-being through perceived stress and burnout as serial mediators was also significant (β = -.10, B = -0.57, Bootstrap SE .14, 95% CI = -0.87, -0.31) and accounted for 25.68% of the total relationship between ERI and well-being. The total indirect effect of ERI on well-being was significant (β = -.26, B = -1.49, SE 25, 95% CI = -1.99, -1.02) and accounted for 67.12% of the total relationship between ERI and well-being. The total effect of ERI on well-being was significant (c: β = -.38, B = -2.22, t(185) = -5.61 p < .001, 95% CI = -3.01, -1.44). Perceived
stress and burnout partially mediate the relationship between ERI and well-being, supporting hypothesis 3. Table 3 presents full results for model 1.

**Table 3**

*Bootstrap Analysis of the Magnitude and Statistical Significance of the Direct and Indirect Effects of ERI on well-being*

<table>
<thead>
<tr>
<th>Path Description</th>
<th>( \beta )</th>
<th>( B )</th>
<th>SE*</th>
<th>95% CI*</th>
</tr>
</thead>
<tbody>
<tr>
<td>a₁ (ERI → PS)</td>
<td>.33***</td>
<td>1.18</td>
<td>.25</td>
<td>.69 1.68</td>
</tr>
<tr>
<td>a₂ (ERI → AB)</td>
<td>.21***</td>
<td>.92</td>
<td>.27</td>
<td>.39 1.44</td>
</tr>
<tr>
<td>d₂ (PS → AB)</td>
<td>.53***</td>
<td>.64</td>
<td>.07</td>
<td>.49 0.78</td>
</tr>
<tr>
<td>b₁ (PS → Well-Being)</td>
<td>-.12</td>
<td>-0.20</td>
<td>.11</td>
<td>-.41 0.02</td>
</tr>
<tr>
<td>b₂ (AB → Well-Being)</td>
<td>-.56***</td>
<td>-0.75</td>
<td>.09</td>
<td>-.93 -0.57</td>
</tr>
<tr>
<td>c’ (direct effect of ERI → SMHC)</td>
<td>-.13*</td>
<td>-0.74</td>
<td>.33</td>
<td>-1.40 -0.08</td>
</tr>
<tr>
<td>c (total effect of ERI → Well-Being)</td>
<td>-.38***</td>
<td>-2.22</td>
<td>.40</td>
<td>-3.01 -1.44</td>
</tr>
<tr>
<td>Total indirect effect (ERI → Well-Being)</td>
<td>-.26***</td>
<td>-1.49</td>
<td>.25</td>
<td>-1.99 -1.02</td>
</tr>
<tr>
<td>Indirect effect 1 (ERI → PS → Well-Being)</td>
<td>-.04</td>
<td>-0.23</td>
<td>.18</td>
<td>-0.60 0.09</td>
</tr>
<tr>
<td>Indirect effect 2 (ERI → AB → Well-Being)</td>
<td>-.12***</td>
<td>-0.69</td>
<td>.21</td>
<td>-1.14 -0.30</td>
</tr>
<tr>
<td>Indirect effect 3 (ERI → PS → AB → Well-Being)</td>
<td>-.10***</td>
<td>-0.57</td>
<td>.14</td>
<td>-0.87 -0.31</td>
</tr>
</tbody>
</table>

*Note.* These values are based on unstandardized beta coefficients. CI = confidence interval. ERI = effort reward imbalance; PS = perceived stress; AB = athlete burnout.

* \( p < .05 \). ** \( p < .01 \). *** \( p < .001 \).}

To investigate the serial mediating effects of perceived stress and burnout through the relationship between ERI and athletic performance satisfaction (hypothesis 4), a serial multiple mediation model was constructed (see Figure 4). The direct relationship of ERI with perceived stress (\( a₁: \beta = .33, B= 1.18, t(185) = 4.72, p < .001, 95\% CI = 0.69, 1.68 \)), burnout (\( a₂: \beta = .21, \)
$B = 0.92, t(184) = 3.45, p < .001, 95\% \text{ CI } = 0.39, 1.44$, and athletic performance satisfaction ($c'$: $\beta = -0.26, B = -1.85, t(183) = -3.67, p < .001, 95\% \text{ CI } = -2.85, -0.85$) were all significant. The direct relationship of perceived stress with burnout ($d_{21}: \beta = .53, B = 0.64, t(184) = 8.69, p < .001, 95\% \text{ CI } = 0.49, 0.78$) was significant; however, the direct relationship of perceived stress with athletic performance satisfaction was not significant ($b_1: \beta = .08, B = 0.16, t(183) = 1.01, p = .31, 95\% \text{ CI } = -0.15, 0.48$). Burnout had a significant direct relationship with athletic performance satisfaction, ($b_2: \beta = -0.39, B = -0.64, t(183) = -4.71, p < .001, 95\% \text{ CI } = -0.91, -0.37$). Figure 4 presents results for model 2.

**Figure 4**

*Standardized Coefficients and $R^2$ for Model 2: Perceived Stress and Burnout as Mediators of the Relationship between Effort-Reward Imbalance and Athletic Performance Satisfaction*

Bootstrapping was used to examine the significance of the mediation effects in the serial mediation model for athletic performance satisfaction. Results indicated that the indirect relationship of ERI with athletic performance satisfaction through perceived stress was not significant as the 95% CI included 0 ($\beta = .03, B = 0.19, \text{ Bootstrap } SE = .18, 95\% \text{ CI } = -0.16, 0.57$). The indirect relationship of ERI with athletic performance satisfaction through burnout
was significant ($\beta = -0.08$, $B = -0.58$, Bootstrap $SE = 0.21$, 95% CI = -1.08, -0.23) and accounted for 21.24% of the total relationship between ERI and athletic performance satisfaction. The indirect relationship of ERI with athletic performance satisfaction through perceived stress and burnout serially was also significant ($\beta = -0.07$ $B = -0.48$, Bootstrap $SE = 0.15$, 95% CI = -0.81, -0.22). This mediation accounted for 17.58% of the total relationship between ERI and athletic performance satisfaction. The total indirect effect of ERI on athletic performance satisfaction was significant and accounted for 32.23% of the total relationship between ERI and athletic performance satisfaction. The total effect of ERI on athletic performance satisfaction was significant ($c: \beta = -0.38$, $B = -2.73$, $t(185) = -5.56$, $p < .001$, 95% CI = -3.69, -1.76). These results support hypothesis 4 and demonstrate that perceived stress and burnout partially mediate the relationship between ERI and athletic performance satisfaction. Table 4 presents these results.

**Table 4**

*Bootstrap Analysis of the Magnitude and Statistical Significance of the Direct and Indirect Effects of ERI on athletic performance satisfaction*

<table>
<thead>
<tr>
<th>Path Description</th>
<th>$\beta$</th>
<th>B</th>
<th>SE*</th>
<th>95% CI*</th>
</tr>
</thead>
<tbody>
<tr>
<td>$a_1$ (ERI → PS)</td>
<td>.33***</td>
<td>1.18</td>
<td>.25</td>
<td>0.69</td>
</tr>
<tr>
<td>$a_2$ (ERI → AB)</td>
<td>.21***</td>
<td>0.92</td>
<td>.27</td>
<td>0.39</td>
</tr>
<tr>
<td>$d_{21}$ (PS → AB)</td>
<td>.53***</td>
<td>0.64</td>
<td>.07</td>
<td>0.49</td>
</tr>
<tr>
<td>$b_1$ (PS → APS)</td>
<td>.16</td>
<td>0.08</td>
<td>.16</td>
<td>-0.15</td>
</tr>
<tr>
<td>$b_2$ (AB → APS)</td>
<td>-0.39***</td>
<td>-0.64</td>
<td>.14</td>
<td>-0.91</td>
</tr>
<tr>
<td>c’ (direct effect of ERI → APS)</td>
<td>-0.26***</td>
<td>-1.85</td>
<td>.50</td>
<td>-2.85</td>
</tr>
<tr>
<td>c (total effect of ERI → APS)</td>
<td>-0.38***</td>
<td>-2.73</td>
<td>.49</td>
<td>-3.69</td>
</tr>
<tr>
<td>Total indirect effect (ERI → APS)</td>
<td>-0.12***</td>
<td>-0.88</td>
<td>.27</td>
<td>-1.45</td>
</tr>
</tbody>
</table>
Table 4 (Continued).

<table>
<thead>
<tr>
<th>Path Description</th>
<th>β</th>
<th>B</th>
<th>SE*</th>
<th>95% CI*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indirect effect 1 (ERI → PS → APS)</td>
<td>0.03</td>
<td>0.19</td>
<td>0.18</td>
<td>-0.16</td>
</tr>
<tr>
<td>Indirect effect 2 (ERI → AB → APS)</td>
<td>-0.08***</td>
<td>-0.58</td>
<td>0.21</td>
<td>-1.08</td>
</tr>
<tr>
<td>Indirect effect 3 (ERI → PS → AB → APS)</td>
<td>-0.07***</td>
<td>-0.48</td>
<td>0.15</td>
<td>-0.81</td>
</tr>
</tbody>
</table>

*Note.* *These values are based on unstandardized beta coefficients. CI = confidence interval. ERI = effort reward imbalance; PS = perceived stress; AB = athlete burnout; APS = athletic performance satisfaction.

* *p < .05. **p < .01. ***p < .001.

Discussion

The college athletics industry continues to see increases in revenue stemming from the talent and efforts of hard-working student-athletes (Associated Press, 2022). Yet, there is limited research from the perspective of the student-athlete on how their efforts and the associated rewards from athletic participation impact important outcomes. With legitimate differences between NCAA Divisions, sport types, school resources, and available NIL contracts, the balance between student-athlete efforts and rewards and the relationship of this balance with well-being and athletic performance is unique to each athlete. This is the first study to examine these relationships using the effort-reward imbalance model as the framework. Since athletic teams are always seeking ways to improve performance and the NCAA has made the well-being of student-athletes a priority (NCAA, 2021), understanding the relationship of ERI with well-being and athletic performance is a critical next step in advancing these two aims.
ERI, Well-being, and Athletic Performance Satisfaction

Despite the lack of legal protection as employees, student-athletes are, for all intents and purposes, college employees. Walter Byers, the first executive director of the NCAA, admitted that the term “student-athlete” was created to disguise the fact that college players were indeed professionals who were entitled to all the benefits associated with being classified as workers (Byers & Hammer, 1995). Tests of the ERI model among workers in other occupations demonstrated that compensation for efforts is indeed important; high ERI was associated with lower well-being (Van Vegchel et al., 2005) and work performance (Landolt et al., 2017). Therefore, it was hypothesized that ERI would have a negative relationship with well-being (Hypothesis 1) and athletic performance satisfaction (Hypothesis 2) among student-athletes. As hypothesized, results indicated that ERI was negatively correlated with well-being and athletic performance satisfaction among student-athletes, supporting both hypotheses 1 and 2. These results provide further support for the negative relationship between ERI and well-being in the literature, suggesting an important new area of research to improve the well-being of student-athletes. Additionally, the results support and extend previous literature suggesting that ERI is negatively correlated with athletic performance outcomes by showing that ERI was negatively correlated with athletic performance satisfaction among student-athletes. These findings increase support for the applicability of the ERI model with student-athlete populations.

This study also sought to explain the mechanisms underlying the relationship between ERI and both well-being and athletic performance satisfaction. According to the ERI model, an imbalance between work efforts and rewards leads to strong negative emotions and stress (Siegrist et al., 1986). High stress levels over long periods of time are positively correlated with levels of burnout (Putukian, 2016). Burnout has been shown to have negative relationships with
well-being among student-athletes (De Francisco, et al., 2016; Dubuc-Charbonneau & Durand-Bush, 2015) and performance (Gustafsson et al., 2017). Therefore, it was hypothesized that stress and burnout would serially mediate the relationship between ERI and well-being, such that higher ERI would be related to higher stress, which in turn would be associated with higher burnout, leading to lower well-being (Hypothesis 3). As predicted, stress and burnout were partial serial mediators in the relationship between ERI and well-being, accounting for 67.12% of the total relationship between ERI and well-being. Also as hypothesized, stress and burnout serially mediated the relationship between ERI and athletic performance satisfaction, such that higher ERI was related to higher stress, which in turn was associated with higher burnout, leading to lower athletic performance satisfaction (Hypothesis 4). The indirect relationship of ERI through stress and burnout accounted for 32.23% of the total relationship between ERI and athletic performance satisfaction.

In both the well-being and the athletic performance satisfaction models, all predictors except perceived stress were related to these outcomes. Although it is difficult to ascertain why perceived stress was directly related to neither well-being nor athletic performance satisfaction, it is reasonable to propose that it is because most student-athletes are well versed in coping with high stress. Therefore, stress alone may have limited effects on well-being or athletic performance satisfaction except as it indirectly affects those variables via burnout. In this regard, it is well established that student-athletes are subject to high amounts of additional stress not experienced by their non-athlete peers (Holden et al., 2019; Lopes Dos Santos et al., 2020). However, if a student-athlete is unable to effectively cope with chronic stress, burnout can result (Coakley, 1992). Notably, in both serial mediation models, burnout had the strongest relationship with outcome variables. Burnout is a common experience among student-athletes, with one study
showing that almost half of all student-athletes experience burnout at some point in their athletic careers (Silva, 1990). This study builds on previous literature and highlights the negative effects of burnout on important well-being and performance outcomes.

Additionally, the NCAA Division that student-athletes competed in had no relationship with well-being. Athletic performance satisfaction was higher among Division II student-athletes when compared to Division I student-athletes but did not differ between Division I and III student-athletes or Division II and III student-athletes. The few studies that have investigated differences between divisions have focused on differences between Divisions I and III (Paule-Koba & Farr, 2013). Future studies should investigate these differences between Divisions I, II, and III, particularly in relation to athletic performance satisfaction.

The results also revealed that ERI was directly correlated with both well-being and athletic performance satisfaction, suggesting that it has important direct and indirect roles in both outcomes among student-athletes. More research is needed to understand these relationships, particularly longitudinal and experimental studies to determine causality and to investigate interventions that can help improve the balance between student-athlete efforts and rewards while reducing both stress and burnout. Additionally, these findings support the importance of regular assessment of student-athlete ERI levels by coaches, trainers, sport psychologists, and other athletics department staff. Athletics departments should also consider increasing associated athletic rewards or decreasing effort to improve mental health outcomes and overall athletic performance.

**ERI, Perceived Exploitation, and NIL**

Although there are various definitions of exploitation (Friedman, 1994; Livne-Ofer, 2019; Sakamoto & Kim, 2010), every definition involves one group or individual taking
advantage of another group or individual. It is reasonable to assume that student-athletes with a high ERI, in the context of a flourishing college athletics industry, could be construed as being taken advantage of. However, there has been no research examining the relationship between ERI and perceived exploitation among student-athletes. This was the first study to examine the direct relationship between ERI and perceived exploitation among student-athletes. Consistent with hypothesis 5, ERI was positively related to perceived exploitation. These findings extend the limited research surrounding exploitation among student-athletes and strengthen the applicability of the ERI model with student-athletes by highlighting some of the potential psychological mechanisms at play for student-athletes who feel exploited.

With recent changes to student-athletes’ ability to profit from their NIL (Murphy, 2021), arguments that student-athletes are no longer exploited have become stronger. According to Coco and colleagues (2022), the average student-athlete with a monetizable social media account earns around $50 per post; however, student-athletes in more lucrative positions like starting quarterbacks in a Power Five conference might earn upwards of $25,000 per post (Kunkel et al., 2021). Despite the variation in payment among different sports and positions (Gulavani et al., 2023), the opportunity to profit in this way is a step in the right direction towards fair student-athlete compensation for their athletic performances. This study hypothesized that perceived exploitation would be lower among student-athletes who have an NIL contract than among those who do not (Hypothesis 6). However, contrary to this hypothesis, results did not indicate any differences in perceptions of exploitation between groups of athletes with and without NIL contracts. These results may be explained by previous findings by Kunkel and colleagues (2021) which suggested around 98% of a sample of 8,000 NCAA football and men’s basketball student-athletes’ social media accounts were valued at less than $5,000. This suggests that although there
is some value gained with NIL, most student-athletes with NIL contracts are still underpaid compared to the revenue they bring into college athletics, resulting in similar feelings of exploitation. Additionally, few study respondents participated in revenue generating sports, which may have resulted in small financial NIL contracts in this sample, decreasing the likelihood of finding differences.

Implications

Beyond the theoretical implications of the ERI model’s use with student-athlete populations, the current study has practical implications for the NCAA, student-athlete stakeholders, and student-athletes. The Knight Commission on Intercollegiate College Athletics has served as an independent group promoting positive reforms in college athletics since 1989 (Knight Commission on Intercollegiate Athletics, 2024). The Knight Commission indicated that in a survey of more than 100 FBS athletic directors, more than 96% agreed with the commission’s recommendations for more transparency, oversight, incentives for education, gender equity, opportunity, and financial responsibility for athlete education, health, safety, and well-being. The results from this study support the Knight Commission’s recommendations by encouraging college athletics to invest in more incentives for student-athletes beyond what is currently being offered. Improving ERI among student-athlete populations has the potential to decrease poor mental health outcomes, improve well-being, and improve the quality of athletic performances in all NCAA Divisions. NIL changes could indirectly impact student-athlete finances without school involvement. Student-athletes’ ERI levels would be most directly decreased through direct investment (e.g., salaries) from schools. A change of this magnitude would also resolve some of the concerns regarding the exploitation of student-athletes. Additionally, conceptualizing student-athlete dissatisfaction as ERI rather than “exploitation”
may be more acceptable to financial stakeholders, potentially increasing their investment in research to further understanding of the experiences of college student-athletes. Beyond finances, rewards such meaning and relationships may be pertinent to ERI, well-being and athletic performance satisfaction. Qualitative interviews with student-athletes could broaden our understanding of such non-financial rewards and their role in important outcomes.

Additionally, results from this study have several clinical implications for sport psychologists, trainers, and coaches. Findings indicate that student-athletes with higher levels of ERI are likely more at risk for symptoms of burnout, poor athletic performances, and diminished well-being. Stakeholders who work directly with student-athletes should consider the balance of efforts and rewards for each student-athlete when implementing mental health treatment or performance strategies. Stakeholders who work directly with student-athletes should also consider time periods when it is appropriate to reduce student-athlete effort by decreasing the physical demands of certain practices, reducing the length of practice time, and prioritizing rest in the off-season rather than increasing training demands. It may also be appropriate to increase the rewards associated with participation, such as compensating student-athlete meals, providing team academic tutors to provide support in academics, and hiring athlete-specific social media and career coaches that can help student-athletes profit more easily from their NIL.

The early detection of burnout may also be a key to changing outcomes by allowing student-athletes time to learn important skills to reduce burnout symptoms. Since both stress and burnout accounted for some of the relationship with ERI and well-being and athletic performance satisfaction outcomes, direct interventions reducing stress and subsequent burnout may be appropriate. Helping student-athletes learn more effective time management strategies (Gould & Whitley, 2009), self-regulation strategies (Dubuc-Charbonneau & Durand-Bush,
2015), mindfulness (Gustafsson et al., 2015), or engage in Cognitive Behavioral Therapy interventions and Acceptance Commitment Therapy interventions as noted by Gustafsson and colleagues (2015) may all be appropriate for reducing burnout symptoms for student-athletes. Lastly, it is important for student-athletes to increase their own self-awareness regarding their individual burnout and ERI levels. Increased awareness is the first step towards making meaningful change and can help student-athletes identify areas of stress in life or sport where coping strategies may be ineffective.

**Limitations**

Several limitations should be considered when interpreting the study results. This study used a cross-sectional correlational design, which does not permit causal inference. Alternative models to each primary mediation model were tested. One model with perceived stress as the predictor and athletic burnout as the outcome showed significant serial mediation by ERI and well-being. A different model, with perceived stress as the predictor and athletic burnout as the outcome variable, also showed significant mediation by ERI and athletic performance satisfaction. Although these alternative serial mediation models are not theoretically plausible, their statistical viability highlights the need for caution in interpretation of causal direction. Future studies should manipulate the model variables using an experimental design to determine causation. The small sample size necessitated using observed variables in the context of multiple regression (implemented via the PROCESS macro) rather than structural equation modeling, which could have minimized error. Although several important covariates were controlled by inclusion in the models, it is impossible to control for all factors that may have influenced outcomes. Future studies should consider adding objective performance indices and reporting the correspondence between these measures and athletic performance satisfaction. The field would
also benefit from more longitudinal research to understand the long-term effects of ERI on the well-being of student-athletes post-graduation and later in life.

Regarding the demographics of study participants, another limitation was the low number of participants who competed in revenue-generating sports (e.g., football, basketball, hockey, and baseball). Student-athletes who compete in sports like football and basketball are far more likely to feel exploited than student-athletes from other sports (Van Rheenen, 2011). Additionally, most participants were female and White. Although the study included participants from various sports and NCAA divisions across the country, future studies should strive to obtain larger and more diverse samples that include more men, minorities, and student-athletes from revenue generating sports. In theory, however, the current findings would generalize across varied levels of ERI and perceived exploitation and across diverse student-athletes.

Despite these limitations, this is the first study to ascertain the means by which ERI is associated with and may influence well-being and athletic performance satisfaction. As college athletics continue to increase in popularity and money continues to be invested, findings of this study could play a pivotal role in directing treatment toward factors that could increase both of these vital outcomes. Further research is needed to confirm these important results.
References


NCAA. (2022) *Summary of key NCAA regulations: NCAA division I 2022-2023*. NCAA. 

NCAA. (2022) *Summary of key NCAA regulations: NCAA division II 2022-2023*. NCAA. 

NCAA. (2022) *Summary of key NCAA regulations: NCAA division III 2022-2023*. NCAA. 


Institutional Review Board  
Division of Research and Innovation  
Office of Research Compliance  
University of Memphis  
315 Admin Bldg  
Memphis, TN 38152-3370

March 24, 2023

PI Name: Joey White  
Co-Investigators:  
Advisor and/or Co-PI: Owen Lightsey  
Submission Type: Initial

Title: Factors Related to Student-Athlete Well-Being and Athletic Performance Satisfaction  
IRB ID: #PRO-FY2023-298

Exempt Approval: March 24, 2023

The University of Memphis Institutional Review Board, FWA00006815, has reviewed your submission in accordance with all applicable statuses and regulations as well as ethical principles.

Approval of this project is given with the following obligations:

1. When the project is finished a completion submission is required  
2. Any changes to the approved protocol requires board approval prior to implementation  
3. When necessary submit an incident/adverse events for board review  
4. Human subjects training is required every 2 years and is to be kept current at citiprogram.org.

For any additional questions or concerns please contact us at irb@memphis.edu or 901.678.2705

Thank you,

James P. Whelan, Ph.D.  
Institutional Review Board Chair  
The University of Memphis.