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The Use of Psychological Skills and Strategies in Collegiate Strength and Conditioning

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ABSTRACT

Strength and conditioning coaches (SCCs) are in a unique position to coach psychological skills and strategies (PSS) alongside physical training to improve athlete performance (Moore et al., 2019; Radcliffe et al., 2013, 2016). The primary purpose of this study was to examine the frequency of use of PSS within collegiate strength and conditioning. A modified version of the Strength and Conditioning Sport Psychology Questionnaire (Radcliffe et al., 2013) and the Mental Skills Questionnaire (Bull et al., 1996) was completed by collegiate SCCs (N = 364). The three PSS used most frequently by college SCCs were building self-confidence, motivation, and goal setting. No significant differences (p > .01) were found between male strength and conditioning coaches (n = 290) and female strength and conditioning coaches (n = 74) in the frequency of use of PSS. SCCs who felt content knowledge was a barrier toward the use of psychological skills reported significantly lower (p < .01) use of all PSS except for self-confidence. No significant difference in PSS use (p >. 01) was found between coaches who listed lack of time as a barrier to coaching PSS with their athletes and those who did not. Advanced coaches with 10 or more years of coaching experience utilized self-talk skills more with their athletes (p < .01) than novice coaches with less than four years of coaching experience. SCCs would benefit from sport psychology professional development opportunities to improve their knowledge in coaching PSS with their athletes. Additionally, future researchers may want to analyze the differences in how and why PSS are used by SCCs across all divisions of colleges and universities.

Keywords: mental skills, motivation, confidence, strength training, weight room

INTRODUCTION

The purpose of coaching is to improve the physical, mental, and emotional performances of athletes while optimizing preparation for sport competition (Dorgo, 2009). According to Gilbert and Baldis (2014), a coach is an individual who supports and facilitates the learning of skills, tasks, or concepts through effective instruction. Strength and conditioning coaches (SCCs) are a specific type of coach that primarily educate and train athletes in proper fitness and weight training methods to enhance qualities such as strength, power, speed, agility, flexibility, and conditioning (Magnusen & Rhea, 2009; NSCA, 2017). However, the roles of SCCs are dynamic and complex, and include providing emotional and sport psychology support, shaping team dynamics, and facilitating communication between athletes and important staff members (Radcliffe et al., 2016). It has been suggested that psychosocial competence among SCCs (i.e., adequate understanding and application of psychological, pedagogical, philosophical, and sociocultural practices), may help promote an environment of trust and respect, holistic athlete development, and a more athlete-centered approach to training (Callary et al., 2024). Despite this, psychosocial coaching competencies are often overlooked in SCC education (Szedlak et al., 2024).

With increased emphasis on psychological coaching competencies, SCCs may be in an optimal position to use psychological skills and strategies (PSS) to enhance the training and performance of athletes (Ford & Gordon, 1998; Maniar et al., 2001; Moore et al., 2019). According to Callary et al. (2023), psychological coaching competencies include the ability of coaches to regulate and positively influence their own and athletes' mental status. This might include the use of PSS (e.g., skills for anxiety, mindset, motivation, focus and self-confidence; Szedlak et al., 2024). These coaching behaviors can impact athlete development, motivation, and performance, contributing to a positive coach-athlete environment (Foulds et al., 2019). Considering that athletes spend a large amount of their time either participating or preparing for their sport, the use of PSS may be warranted to maximize athletic performance within general and specific areas of physical preparation such as the weight room or other training environments.

Implementation of PSS includes the use of techniques and methods to enhance qualities of athlete performance such as sustaining motivation, remaining confident, preserving focus, and controlling the effects of anxiety (Mellalieu & Shearer, 2012). The use of PSS training programs has been found to improve running performance, enhance mental toughness, and develop self-confidence (Barwood et al., 2007; Golby & Wood, 2016; Thelwell & Greenlees, 2001), all integral areas of optimal athletic preparation and performance. Additionally, common PSS which have successfully enhanced athletic and training performance include goal-setting (Boyce & Wayda, 1994), imagery (Buck et al., 2016), self-talk (Edwards et al., 2008), arousal regulation (Tod et al., 2005), and relaxation techniques (Muangnapoe et al., 2016). Previous research indicates that SCCs use and value PSS to improve the performance of athletes (Radcliffe et al., 2013, 2015; 2016). SCCs reported using simple techniques such as goal setting and self-talk more frequently than more complex interventions such as mental imagery (Radcliffe et al., 2013) and use PSS primarily for the purpose of confidence-building more than skill-acquisition or arousal regulation (Radcliffe et al., 2015). The extent to which PSS are used in strength and conditioning appears to be related to the coaches' level of experience, with more experienced SCCs using PSS more frequently than their less experienced counterparts (Radcliffe et al., 2013).

Despite the perceived value of implementing PSS into strength and conditioning settings, many SCCs do not regularly use PSS, and there is a discrepancy between PSS used and those deemed important for athlete success (Radcliffe et al., 2013). Perceived barriers to the use of PSS reported by SCCs include a lack of knowledge and time, limited control and authority of training sessions, negative perceptions by athletes, and a lack of confidence in applying PSS (Radcliffe et al., 2018). Moreover, there has been some ambiguity surrounding the perceived responsibilities of SCCs, particularly in relation to areas that are unrelated to specific strength and conditioning objectives, such as providing emotional support to athletes, supporting the sport coach, aiding in injury rehabilitation, and supporting athletes' psychological well-being (Carson et al., 2022; Gillham et al., 2019; Moore et al., 2019; Quartiroli et al., 2022; Radcliffe et al., 2016). By understanding the use of PSS and the perceived limitations to PSS implementation by collegiate SCCs, coaches may be able to better plan, structure, and deliver their strength and conditioning sessions to provide a higher level of service to their athletes.

Although there is existing research on the implementation of PSS in strength and conditioning (Moore et al., 2019; Radcliffe et al., 2013, 2015, 2016, 2018; Quartiroli et al., 2022), an additional focus on the use of PSS in the collegiate setting is warranted. There are unique considerations in the collegiate and university setting that could impact the implementation of PSS including restricted coaching periods (e.g., discretionary periods, off/in-season schedules), governing body regulations amongst amateur athletes, administrative support, and resource constraints. While research from Radcliffe and colleagues included insights from SCCs across various accrediting bodies, such as the UKSCA, NSCA, and ASCA, the specific coaching environments (e.g., professional, collegiate, high school) in which these SCCs operated were not identified. This underscores the need for a more comprehensive examination of how PSS are utilized specifically within collegiate strength and conditioning environments to better support athletes' performance and development. Potential differences in the frequency of PSS use may impact athlete preferences for working with specific SCCs and the overall quality of the coach-athlete relationship. Additionally, research suggests that male and female athletes may have different attitudes toward male and female SCCs (Magnusen & Rhea, 2009), which emphasizes the importance of examining the possible differences in PSS use/

disuse among male and female SCCs.

The primary purpose of this study was to understand the frequency of PSS usage among SCCs in the field of collegiate strength and conditioning. In addition, PSS usage between male and female coaches, and between novice, intermediate, and advanced coaches were compared. Possible limitations toward the use of PSS in collegiate strength and conditioning were also investigated. In line with prior research (Radcliffe et al., 2018; Quartiroli et al., 2022) and as a result of upholding primary physical training responsibilities, we expected that collegiate SCCs would report limited knowledge or time to adequately provide PSS during their training sessions as primary barriers to implementation. We also hypothesized that more experienced SCCs would report using PSS more frequently than their less experienced counterparts (Radcliffe et al., 2013). The gender comparison was exploratory, and thus no a priori hypothesis was set for this comparison.

METHODS

To address the research questions, a cross-sectional, descriptive design was utilized. The study was approved by the College's Institutional Review Board. Subjects were informed of the benefits and risks of the investigation and signed an institutionally approved informed consent document prior to participation in the study.

Subjects

Subjects were recruited via emails sent to members of the National Strength and Conditioning Association (NSCA), Collegiate Strength and Conditioning Coaches Association (CSCCA), United Kingdom Strength and Conditioning Coaches Association (UKSCA), and the Australian Strength and Conditioning Coaches Association (ASCA) and via a standardized recruitment message posted on the social media platforms of Facebook, Twitter, and Instagram. To be eligible to participate, SCCs needed to be certified through a national governing body and work primarily in a college/university setting (unrestricted by location). An initial 1,117 SCCs started the survey. Subjects who did not finish the survey (n = 321), and those who did not meet the inclusion criteria (n = 432) were removed from the data set prior to statistical analyses.

A total of 364 certified college/university SCCs participated in this study. The mean age of the subjects was 32.61 ± 8.35 years. Male strength and conditioning coaches (n = 290) accounted for 79.70% of the sample and female strength and conditioning coaches (n = 74) accounted for

Table 1. Demographics for College SCCs (N = 364)

Variable	*n*	%
Gender	364	100.00
Male	290	79.70
Female	74	20.30
Certifying Organization		
NSCA	322	88.50
CSCCA	191	52.50
UKSCA	1	0.30
ASCA	1	0.30
Years of Coaching Experience		
0-4 years (Novice)	119	32.70
5-9 years (Intermediate)	114	31.30
10+ years (Advanced)	131	36.00
Highest Education Level		
Bachelor's Degree	80	22.00
Master's Degree	275	75.50
Doctoral Degree	9	2.50
Degree in Related Field		
Yes	344	94.50
No	20	5.50

21.30% of the sample. Of the 364 certified strength and conditioning coaches who participated in this study, 88.50% (*n* = 322) were certified through the NSCA, 52.50% (*n* = 191) were certified through the CSCCA, and 0.3% (*n* = 1) were certified through the UKSCA and ASCA. Additional demographic information including years of coaching experience and educational level of the subjects can be found in Table 1.

Procedures

A non-experimental descriptive survey was created and distributed online using Qualtrics (Provo, UT). The online survey consisted of the informed consent form, a demographic questionnaire and a survey of PSS use. The demographic questionnaire contained questions that pertained to age, gender, certification status, certifying organization, workplace setting, years of certified strength and conditioning experience, and formal education information (see Table 1). The PSS survey was created based upon two existing questionnaires; the Strength and Conditioning Sport Psychology Questionnaire (SCSPQ; Radcliffe et al., 2013) and the Mental Skills Questionnaire (Bull et al., 1996). The PSS survey contained questions regarding the frequency of use of PSS when coaching athletes during strength and conditioning sessions and can be found in Table 2. The items were scored on a 7-point Likert Scale, ranging from (1) *very infrequently* to (7) *very frequently*. Possible limitations for coaching psychological skills were also assessed in the survey through the question, "What reason(s), if any, do you feel limit your use of coaching psychological skills with your athletes?" Items response options

Table 2. Use of Psychological Skills and Strategies Survey for College SCCs.

Think about how often you use psychological skills when coaching your athletes. Please rate how often you incorporate the psychological skills below into your coaching as a strength and conditioning coach. (1 = very infrequently, 7 = very frequently)

Imagery (The use of all the senses to recreate or create an experience in the mind)	1 2 3 4 5 6 7
Self-Confidence (Helping athletes believe they are competent and can succeed in a particular task)	1 2 3 4 5 6 7
Arousal Regulation (The deliberate use of strategies to help athletes to reduce or elevate arousal for optimal performance)	1 2 3 4 5 6 7
Stress and Anxiety (The use of physical or non-physical processes that help athletes deal with stress)	1 2 3 4 5 6 7
Self-Talk (Self-statements or an inner dialogue that athletes might use for motivation, and/or technical instruction)	1 2 3 4 5 6 7
Concentration Ability (Helping athletes focus on relevant information during competition and to control their thoughts)	1 2 3 4 5 6 7
Mental Preparation (The use of non-physical processes such as imagery to prepare an athlete for the execution of a skill)	1 2 3 4 5 6 7
Relaxation Ability (Teaching athletes skills to help them attain physical relaxation prior to, during, or after the execution of a skill)	1 2 3 4 5 6 7
Goal Setting (Teaching athletes how to set goals that provide direction and enhance motivation towards achieving a specific objective)	1 2 3 4 5 6 7
Motivation (Enhancing the psychological factors that energize, direct, and regulate the behaviors of athletes)	1 2 3 4 5 6 7

What reason(s), if any, do you feel limit your use of coaching psychological skills with your athletes? Select all that apply:

- Lack of knowledge/formal training
- Lack of relevance to physical performance
- Lack of time
- Other – Specify
- None

included: lack of knowledge/formal training, lack of relevance to physical performance, lack of time, other (specify) and none."

Statistical Analyses

Data were analyzed using the Statistical Package for the Social Sciences (SPSS, Version 25, Armonk, NY). Descriptive statistics including means, standard deviations, and percentages were calculated on the demographic information collected. Data from the PSS survey were analyzed for group comparisons within the sample data collected. Due to unequal sample sizes, a non-parametric, Mann-Whitney U test was performed to compare the mean rank differences of PSS survey responses between male and female SCCs. An independent groups t-test was performed to compare SCCs who listed lack of knowledge as a barrier and those who did not regarding the use of PSS. An independent groups t-test was also performed to compare SCCs who listed lack of time as a barrier and coaches who did not. A one-way, independent groups analysis of variance (ANOVA) was performed to determine the effect of years of work experience (0-4, 5-9, 10+ years) on the frequency of use of PSS in collegiate strength and conditioning. Due to the large sample size, alpha level was set at p = .01 to reduce the theoretical risk of committing Type I error (Warner, 2013). Effect size (Cohen's d) was interpreted as small = .20, medium .50, and large = .80. Eta squared was interpreted as small = .01, medium = .06, and large = .14 (Warner, 2013).

RESULTS

The primary purpose of this study was to investigate the use of PSS among certified college SCCs (N = 364). SCCs reported using the following skills, from most to least: self-confidence, motivation, goal setting, arousal regulation, concentration ability, stress and anxiety management, self-talk, relaxation ability, mental preparation, and imagery. Average reported PSS use among college SCCs were calculated and can be found in Table 3.

SCCs were also asked what reason(s), if any,

Table 3. Mean Use of Psychological Skills and Strategies in College Strength and Conditioning Coaches

PSS USE	Mean	SD
Imagery	3.97	1.78
Self-Confidence	6.02	1.21
Arousal Regulation	4.80	1.65
Stress and Anxiety Management	4.64	1.62
Self-Talk	4.61	1.75
Concentration Ability	4.69	1.72
Mental Preparation	4.32	1.81
Relaxation Ability	4.37	1.76
Goal Setting	5.28	1.57
Motivation	5.91	1.29

Note. Range = 1 (very infrequently) – 7 (very frequently).

Table 4. Psychological Skill Use For Male and Female College Strength and Conditioning Coaches

Psychological Skill*	Male	Female	*Z***	*p*	*d*
Imagery	3.97	3.97	-0.19	.85	.00
Self-Confidence	5.97	6.21	-1.59	.11	.20
Arousal Regulation	4.91	4.41	-2.44	.02	.31
Stress and Anxiety Management	4.67	4.50	-0.94	.35	.11
Self-Talk	4.60	4.64	-0.01	.99	.02
Concentration Ability	4.75	4.46	-1.58	.11	.17
Mental Preparation	4.43	3.88	-2.41	.02	.31
Relaxation Ability	4.42	4.20	-0.99	.32	.12
Goal Setting	5.31	5.16	-0.77	.44	.10
Motivation	5.90	5.96	-0.49	.62	.04

*Note. Mean use reported for each group; **Z for Mann Whitney U; alpha set at .01.*

prevented the use of coaching psychological skills with athletes. "Lack of knowledge or formal training" was reported as a primary reason (n = 205; 56.3% of the sample), closely followed by "lack of time" (n = 193; 53.0%). "Lack of relevance to physical performance" was selected by 32 coaches (5.80%) and "other" was selected by 37 coaches (10.2%).

A Mann-Whitney U test was performed to compare the mean rank differences of PSS usage between male (n = 290) and female (n = 74) college SCCs. No significant differences were found between male and female strength and conditioning coaches in the use of imagery, self-confidence, arousal regulation, stress and anxiety management, self-talk, concentration ability, mental preparation, relaxation ability, goal setting, and motivation (all p > .01). See Table 4.

Independent groups t-tests were conducted to compare SCCs who identified a lack of knowledge as a limitation with those who did not, in relation to their use of psychological skills. Coaches who listed lack of knowledge or formal training as a barrier to using psychological skills reported significantly less use of PSS than coaches who did not for the following skills: imagery, arousal regulation, stress and anxiety management, self-talk, concentration ability, mental preparation, relaxation ability, goal setting, or motivation (all p < .01). No significant mean difference (p = .06) was found in the use of self-confidence strategies between coaches who listed lack of knowledge or formal training as a limitation and coaches who did not. See Table 5. Independent groups t-tests were also completed to compare SCCs who listed lack of time as a limitation and those who did not regarding the use of psychological skills. No significant mean difference (p > .01) in the use of any PSS was found between coaches who listed lack of time as a limitation and coaches who did not. See Table 5.

A one-way ANOVA was performed to determine the effect of years of coaching experience on the frequency of use of PSS. The assumption of homogeneity of variances for the ANOVA was met. A significant mean difference was found in the use of self-talk among novice (0-4 years of coaching experience), intermediate (5-9 years of coaching experience), and advanced coaches (10+ years of coaching experience), $F(2, 361) = 5.88$, p = .004, η^2 = .03. A Scheffe multiple comparison procedure was performed to determine where the significant difference existed between novice, intermediate, and advanced SCCs. Advanced coaches (4.91 ± 1.64) utilized self-talk strategies significantly more than novice coaches (4.18 ± 1.79), $t(361) = 5.88$, p = .003, d = 0.4. However, no significant mean difference was found between novice, intermediate, and advanced coaches in the use of imagery, self-confidence, arousal regulation, stress and anxiety management, concentration ability, mental preparation, relaxation ability, goal setting, or motivation (all p > .01).

DISCUSSION

The main purpose of this study was to examine the frequency of use of PSS in collegiate SCCs. Consistent with past research from Radcliffe et al. (2013, 2015), the PSS used most frequently by SCCs involved goal setting, building confidence, and motivating athletes. SCCs help athletes improve their confidence by supporting and aiding athletes to reach their goals while offering praise and incentives when accomplishments are met (McClure, 2014). Building confidence and

Table 5. SCCs Mean Use of Psychological Skills Based Upon Knowledge and Time Limitations

PSS	No Lack of Knowledge M(SD)	Lack of Knowledge M(SD)	*p*	*d*	No Lack of Time M(SD)	Lack of Time M(SD)	*p*	*d*
Imagery	4.59(1.69)	3.49(1.69)	.00	.66	4.16(1.81)	3.80(1.73)	.05	.20
Self-Confidence	6.16(1.26)	5.92(1.17)	.06	.20	6.16(1.00)	5.90(1.36)	.04	.22
Arousal Regulation	5.28(1.56)	4.43(1.63)	.00	.53	4.83(1.63)	4.78(1.68)	.78	.03
Stress and Anxiety Management	5.03(1.58)	4.33(1.59)	.00	.44	4.64(1.64)	4.64(1.60)	.99	.00
Self-Talk	5.16(1.69)	4.17(1.67)	.00	.59	4.60(1.82)	4.61(1.70)	.96	.01
Concentration Ability	5.13(1.60)	4.35(1.74)	.00	.46	4.74(1.78)	4.64(1.67)	.56	.06
Mental Preparation	4.80(1.85)	3.94(1.69)	.00	.49	4.52(1.77)	4.13(1.83)	.04	.21
Relaxation Ability	4.83(1.65)	4.02(1.76)	.00	.47	4.44(1.79)	4.31(1.73)	.47	.08
Goal Setting	5.59(1.44)	5.04(1.62)	.00	.35	5.37(1.43)	5.20(1.68	.29	.11
Motivation	6.11(1.28)	5.76(1.27)	.00	.28	6.04(1.05)	5.81(1.46	.09	.18

Note. Alpha set at .01

motivating athletes can be achieved via multiple methods and strategies which may explain the higher frequency scores. For example, the use of goal setting and motivational techniques can be a powerful tool in facilitating the self-confidence of an athlete (Bird et al., 2023; Moore et al., 2019). SCCs often use goal setting to help athletes complete specific repetitions or workloads during the active coaching session, perhaps accounting for its higher frequency of use as a foundational psychological skill (Radcliffe et al., 2015). It is also likely that greater use of goal setting is dependent upon the SCCs perception of the success of that strategy (Quartiroli et al., 2022; Radcliffe et al, 2013). According to a systematic review by Tod et al. (2015), goal setting was reliably associated with increased maximal strength, muscular endurance, and power development. Additionally, goal setting can be integrated into training and emphasized with minimal additional time and effort by the SCC (Moore et al., 2019).

Mental imagery was least frequently used by SCCs, which is consistent with previous research findings (Radcliffe et al., 2013). Less use of mental imagery by SCCs could be attributed to lack of understanding of the skill, targeted use in competition rather than training, negative perceptions from athletes and coaches, or some other unknown reason (Radcliffe et al., 2013; Quartiroli et al., 2022). Proper education of the benefits and implementation of mental imagery techniques could prove useful for SCCs, as mental imagery can be easily performed prior, during, and after strength and conditioning sessions without the assistance of a coach. Such education could also address combining PSS; for example, developing pre-lift routines that combine mental imagery and self-talk, or combining mental imagery with relaxation techniques during a cool-down. This would be particularly effective if combining a less used skill (e.g., imagery) with one that SCCs have more experience in implementing (e.g., confidence building). This use of more advanced PSS in strength and conditioning has potential for greater performance gains due to their increased influence over behavior and physical performance (Tod & Lavallee, 2013).

The frequency of use of PSS by college SCCs appears to be impacted by educational and environmental restraints. Over half the subjects surveyed listed lack of knowledge or formal training (56.3%) and lack of time (53.0%) as a major limitation to coaching PSS with athletes. The majority of coaches who felt lack of knowledge prevented the implementation of PSS was similar to the 66% of coaches reported by Radcliffe et al. (2018). Lack of knowledge likely impacted PSS usage, as coaches who reported having knowledge or training reported significantly more frequent use of PSS than coaches who did not on all strategies and skills except for improving the self-confidence of athletes. An SCC may inadvertently and naturally use positive coaching strategies to help improve the self-confidence of their athletes as a byproduct of providing traditional physical, social, and emotional support during training (Brooks et al., 2000; Radcliffe et al., 2016). To craft a more consistent athlete-centered coaching approach, SCCs may benefit from implementing a reflection process focused on their athlete's well-being and athletic abilities (Szedlak et al., 2020). Reflective questions may help SCCs adopt a more mindful approach to their coaching practices, enhancing overall connectedness and attention to their athletes, providing a more directed and natural positive coaching environment (Gillham & Szedlak, 2023).

The importance of PSS in the training of athletes is demonstrated by the fact that less than 6% of SCCs listed lack of relevance to physical performance as a limitation to coaching PSS. Although, it should be considered that survey respondents who agreed to participate in this study likely held a positive attitude toward the use of PSS. A lack of time was listed by over half (53.0%) of the subjects as a reason for not coaching PSS, which is consistent with prior studies in sport coaching (Creasy et al., 2009) and strength and conditioning (Radcliffe et al., 2018). It may be perceived that time devoted to implementing PSS will take away from time for other training requirements (Pain & Harwood, 2004) and add to the responsibilities of the already complex SCC role (Massey et al., 2009). Nevertheless, no significant differences were found in the frequency of coaching PSS between those who listed time as a barrier and those who did not. As a result, time does not appear to be a primary barrier in providing PSS within strength and conditioning sessions. One possible reason could be that SCCs may be integrating elements of PSS into their traditional group coaching strategies, maybe without explicit awareness in doing so. Therefore, although time may be perceived as a limiting factor, it is likely that SCCs may not fully understand how to integrate PSS within training sessions in a time-effective manner (Radcliffe et al., 2018). Prior research has indicated that although coaches may not have time to implement a comprehensive mental skills program, most coaches agree that 15 to 20 minutes of mental

training per week, could be feasibly implemented (Creasy et al., 2009). Based on the results of this study, lack of sport psychology content knowledge, not time, was the primary limitation in coaching PSS in college strength and conditioning.

No significant differences were found in the PSS usage between novice, intermediate, and advanced collegiate strength and conditioning coaches, except for the use of self-talk. This is contrary to previous findings by Radcliffe et al. (2013), who reported greater PSS usage, both overall and particular individual skills, in more experienced practitioners. In the present study, advanced SCCs reported more use of self-talk than novice coaches but no other differences were found. It is likely that SCCs gain more experience and confidence in implementing psychological strategies and may develop such skills through continuing education (Radcliffe et al., 2013) although the results of the present study did not support this in the college setting. A possible explanation for this alternative outcome could be that the subjects in Radcliffe et al. (2013) were not exclusively working in the college or university setting. By using broader grouping of certified and registered SCCs may have resulted in differences across years of experience that are not present solely within a population of SCCs working in the collegiate setting.

Historically, female SCCs have been marginalized and underrepresented in research. To the best of the authors' knowledge, this is the first study to compare PSS use between male and female SCCs. We did not find any significant mean differences in the use of PSS between male and female SCCs, although some none significant differences were noted (see Table 4). Male SCCs reported a higher average use of arousal regulation (p = .02, d = .31) and mental preparation (p = .02, d = .31), whereas female SCCs reported using self-confidence strategies more often than male coaches. With continued growth in strength and conditioning programs for female athletes and the number of female SCCs (Santos et al., 2022), this is an important topic for further investigation. A deeper exploration of specific coaching behaviors during active strength and conditioning coaching situations may provide additional insight into these observed differences. In interviews, female SCCs report carefully managing their coaching behavior and feeling that they have to adopt some traditional, masculine subcultural practices to fit in a male-dominated setting (Thomas et al. 2021). Thus, it is possible that female SCCs feel reluctant to use certain PSS in order to conform with the organizational culture. DI male student-athletes report more negative attitudes toward female SCCs, preferring to receive coaching and feedback from male SCCs over a female SCC regardless of their qualifications (Magnusen & Rhea, 2009). In the same study, male athletes reported being less motivated by female compared to male SCCs and less open to discussing personal issues with a female SCC. Thus, PSS use by female coaches may be influenced by the type of team and athlete gender the SCC is working with.

CONCLUSION

Based on the results of this study, college SCCs reported frequent use of a variety of PSS to help athletes improve performance. Specific use of PSS such as building confidence in athletes may be considered a universal responsibility of college SCCs regardless of sport psychology education and base knowledge. Overall findings suggest male and female SCCs use PSS similarly across years of coaching experience. Lack of knowledge and/or time were the primary reported reasons for not implementing PSS frequently, although no significant mean difference in PSS use was found between coaches who listed lack of time as a barrier to coaching PSS and those who did not. Auditing current professional development programs for college SCCs such as books, webinars, and conferences might help clarify which areas of continuing education opportunities are most beneficial for helping coaches learn more about the relationship between sport psychology and sport performance.

College strength and conditioning staffs may want to evaluate the perceived effectiveness of current programs and consider how the inclusion of PSS may further improve training and sport performance. To clarify the role and what areas are within the appropriate scope of practice of strength and conditioning coaches, national governing bodies of strength and conditioning such as the NSCA, CSCCA, UKSCA, and ASCA may benefit from an updated position statement on the roles, responsibilities, and expectations of SCCs certified by each respective organization. To date, female SCCs have been underrepresented in research; more research is needed to explore gender differences in the use of PSS in college strength and conditioning settings.

Limitations of this study include the timing of the

survey distribution and quantitative evaluation of frequency of use of PSS. The survey was distributed during the North American summer, when most collegiate athletes are not actively training with SCCs which could have affected the perception of use of PSS by SCCs. As noted earlier, individuals who already hold positive views of PSS may have been more likely to complete the surveys, thus impacting the outcome and generalizability of these findings. The primary purpose of this study was to evaluate the frequency of use of PSS in the collegiate strength and conditioning setting. While each psychological skill was operationally defined in the survey, we cannot guarantee that the subjects fully comprehended what each skill entailed.

FUTURE RECOMMENDATIONS

The primary purpose of this study was to evaluate the frequency of use of PSS in the collegiate strength and conditioning setting. However, SCCs were not asked exactly how or why each skill was specifically used, which should be examined in future research. Future researchers may want to analyze the differences in how and why PSS are used by college SCCs across Division I, II, and III colleges and universities. Individual content knowledge of sport psychology, self-efficacy in coaching PSS, and resources available to SCCs should also be explored to improve the use of PSS in strength and conditioning. As a majority of coaches reported lack of knowledge as a barrier to PSS implementation, future researchers may also examine the current content knowledge base of SCCs in sport psychology and establish an intervention of sport psychology education to improve the use of PSS in strength and conditioning. The findings from this study can be used to help further understand the content knowledge base of sport psychology and personal experiences of coaching PSS by college strength and conditioning coaches in a future study.

CONFLICTS OF INTEREST

There are no conflicting relationships or activities.

FUNDING

This study received no specific funding in order to be completed.

ETHICAL APPROVAL

The study was approved by the College's Institutional Review Board. Subjects were informed of the benefits and risks of the investigation and signed an institutionally approved informed consent document prior to participation in the study.

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