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Strength and Conditioning Coaches' Perceptions of Sport Psychology Strategies

Alessandro Quartiroli
University of Wisconsin La Crosse

Erin Whitney Grandy Moore
Wayne State University, whitneymoore@wayne.edu

Rebecca A. Zakrajsek
University of Tennessee

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Author #1*
Institution #1

Author #2
Institution #2

Author #3
Institution #3

*Corresponding author:

Abstract

Strength and conditioning coaches (SCCs) hold a central role in the development of student-athletes. While they certainly focus on student-athletes' physical skills development, SCCs are in an ideal position to integrate mental skills into their strength and conditioning sessions. For example, sport psychology (SP) strategies can be used within strength and conditioning sessions to assist in athlete exercise execution by regulating arousal, improving concentration, confidence, as well as improve self-correction through self-talk and imagery. The purpose of this study was to assess collegiate SCCs use of sport psychology (SP) skills/strategies. A total sample of 415 SCCs (19.7% return rate) across the United States participated in an online survey. While the majority of these coaches reported having less than moderate training in SP (59.9%), they also reported a moderate to high use of certain SP strategies (e.g., goal setting, self-talk). SCCs' familiarity with, knowledge of, and confidence to use the SP strategies were found to be predictors of SCCs frequency of SP strategy use. This study aimed to provide an initial exploration of SCCs understanding and use of specific SP strategies, which was influenced by the SCCs perceived level of preparation to use these strategies. For SCCs to be able to purposefully and confidently incorporate SP strategies into training sessions, the current study suggests the need for specific training aimed to enhance the SCCs' knowledge of and confidence in using specific SP strategies.

Keywords: Coaching, College, Performance

Strength and conditioning coaches' perceptions of sport psychology strategies.

INTRODUCTION

Strength and conditioning coaches (SCCs) play a central role in the personal and athletic development of student-athletes (20, 29, 30). SCCs have the important responsibility of training athletes year-round; and since, SCCs do not make scholarship or starting position decisions, they have the opportunity to interact with athletes without the athletes feeling anxious regarding their starting position or scholarship (14). This unique role played by SCCs can benefit the development of relationships and rapport with athletes based on trust and fostering athletes' motivation and performance during training sessions (3, 14, 20, 29).

Due to the nature of the field, SCCs are required to draw on knowledge from a variety of disciplines, including sport psychology (SP) (27, 29). The importance of SP knowledge, skills and strategies (skills/strategies) as a scientific foundation of SCCs was strengthened when the National Strength and Conditioning Association (NSCA) published its Educational Recognition Program (22) and then Accreditation criterion (23). In these guidelines the NSCA suggested that the use of SP skills/strategies (SP skills/strategies) enables SCCs to enhance the training and/or performance of their athletes. Based on their constant interaction with athletes, SCCs could be in an ideal position to contribute to the SP aspects of athletes' personal development, as well as their sport performance (1, 27). For this reason, in addition to teaching athletes exercise techniques, SCCs could integrate support of athletes' development of select SP techniques and applications into training sessions (19, 27).

Despite this recognition of the value of SP skills/strategies in strength and

conditioning (S&C), the extent to which these skills are incorporated into practices is still unclear, as most research seems to predominantly focus on physical training strategies (4, 17). Only a few studies attempted to explore how SCCs use psychological strategies in their practice (8, 9). It is only recently that researchers have started to pay attention to which SP strategies were most implemented and the importance that SCCs attributed to SP strategies and services (27). As an attempt to begin bridging the gap in the literature, Radcliffe et al. (27) surveyed certified S&C practitioners from Australia, the United Kingdom, and the United States about their perceptions of SP skills in their practice. Results revealed that SCCs perceived motivation, confidence, and commitment to be the most relevant and important SP attributes for performance success within the context of S&C. In addition, participants ranked their use of SP strategies and found that certain SP strategies were used more frequently than others. Similar to research conducted with sport coaches and athletic trainers (5, 33), SCCs reported using the SP strategies of goal setting most frequently, but also unlike sport coaches, SCCs' also frequently used self-talk, adherence, activation, and stress management strategies.

These results are in line with and provide initial support for the SP skills suggested by Mellaieu and Shearer (19) as important to integrate into S&C practice: goal setting, imagery, self-talk, and activation management. Radcliffe et al.'s (27) results helped to move forward the study of SP knowledge, skills, and strategies within the S&C field. More recently, qualitative analysis of interviews with SCCs revealed two themes (i.e., internal and external sources) for barriers to SCCs' implementation of SP strategies (28). The internal barriers reported by the SCCs, included personal lack of knowledge of the efficiency of different SP strategy interventions, value of SP strategies within S&C context, and confidence to incorporate or demonstrate SP strategies. The external barriers were

primarily the buy-in and acceptance of SP within S&C from sport coaches, as well as the athletes. As Zizzi and colleagues (33) pointed out for sport coaches and athletic trainers, different SP strategies are already being regularly implemented and are most appropriate for additional training depending on the profession. Building upon the research already done by Zizzi and colleagues (33) with other sport professionals generally, and Radcliffe and colleagues (27, 28, 29) with SCCs, the purpose of the current study is to gain a more complete research-informed picture of National Collegiate Athletic Association (NCAA) SCCs' valuing of SP within S&C, as well as SCCs' preparation, familiarity, and competence to use SP strategies during S&C sessions. Finally, quantitatively examining how these potential internal barriers influence SCCs' use of SP strategies can inform future work to reduce these as barriers to SP use.

The focus of the current study is twofold. The first aim of this study was to explore NCAA SCCs' perceived level of SP knowledge, familiarity with SP, confidence to use SP skills/strategies, effectiveness of SP skills/strategies for improving performance, and their perceived personal qualification to implement SP skills/strategies. The second aim of this study was to explore the influence of NCAA SCCs' perceptions of these variables on their frequency of using SP skills/strategies in their practice.

METHODS

Experimental Approach to the Problem

To address the purposes of this study, the researchers surveyed NCAA SCCs about their training, implementation, and knowledge of SP strategies and skills. The online survey consisted of measures that have been used previously with similar populations (e.g., athletic trainers, sport coaches) (5, 33). The SCCs also answered questions about demographics and their perception of the need for training in specific SP skills/strategies.

As the purpose of this study was to examine SCCs' self-perceptions regarding their use of SP skills/strategies collecting self-report data was appropriate.

The Psychological Skills Questionnaire (33) was used to measure the SCCs' perceptions and use of SP strategies. A definition of each strategy was included to help participants understand the terminology before they were asked to rate their (1) familiarity with the SP skill/strategy [FAMILIARITY], (2) frequency of SP skill/strategy use [FREQUENCY], (3) perceptions of how much their training provided them with the knowledge of the specific SP skill/strategy [KNOWELDGE], (4) confidence with effectively using and demonstrating the SP skill/strategy [CONFIDENCE], (5) perceptions of the effectiveness of the SP skill/strategy for improving an athlete's performance [EFFECTIVENESS], (6) perceptions of how qualified they are to implement the specific SP skill/strategy [SELF QUALIFICATION] and (7) perceptions of how qualified they believe SCCs generally are with implementing the specific SP skill/strategy [COACHES QUALIFICATION]. Participants rated each of the above on a 1 to 7 Likert-type scale (e.g., FAMILIARITY anchor points: 1 (not at all), 4 (moderately familiar), and 7 (very familiar); FREQUENCY anchor points: 1 (not at all), 4 (moderately frequent), and 7 (very frequent)), which aligns with response options used previously and provided informative anchors without overly influencing participants with seven response options. Previous research with athletic trainers, collegiate sport coaches, and licensed psychologists provided support for the reliability and validity of the scores from this measure (33). This research included the development of the measure following recommended scale development steps: qualitative data inform item development, pilot testing of items (wording clarity, response option appropriateness), and then data collection with different samples to test for differences in scores based upon profession (i.e., athletic trainer, sport coach, licensed psychologist). For

example, licensed psychologists reported using hypnosis and self-talk significantly more than sport coaches or athletic trainers, which aligned with licensed psychologists also reporting significantly more training in hypnosis, imagery, and self-talk compared to the sport coaches and athletic trainers (33). Further, the sport coaches reported receiving significantly more training in time management and team building than the licensed psychologists and athletic trainers. In the current study, all the perception and use of the SP skills/strategies were reliably measured: attention, concentration, and mindfulness (Cronbach's $\alpha = .84$); time management/organization ($\alpha = .85$); self-talk ($\alpha = .83$); goal-setting ($\alpha = .87$); communication skills ($\alpha = .85$); imagery, visualization, and mental practice ($\alpha = .83$); hypnosis ($\alpha = .89$); relaxation and energy management ($\alpha = .86$); and team building ($\alpha = .84$).

Subjects

A total of 415 NCAA SCCs (19.7% return rate) participated in this study and reported a mean age of 33 years (SD = 8.6 years). The majority of these SCCs self-identified as male (83%) and White/Caucasian (86%). These participants described S&C as their primary profession (88%), were highly educated (MS = 75%; PhD = 1%), experienced (5-10 years = 35.4%; 10+ years = 39.9%), and Certified Strength and Conditioning Specialist (CSCS = 84%). These SCCs reported working primarily with collegiate athletes (99%), although some also worked with semi-professional (3%), professional (8%), national (8%) and Olympic (4%) athletes.

Procedures

After receiving Institution Review Board approval, NCAA SCCs were invited to participate in this study. A list of 2100 NCAA SCCs was developed based upon the information presented for that year's SCCs on each Athletic Department websites of

NCAA affiliated schools across the United States. A personalized email was sent to each one of these coaches inviting them to participate in this study by completing an online survey, hosted by a Qualtrics online platform (Qualtrics, Provo, UT). To protect subjects' anonymity, subjects assented to participate in the study after reading the assent form that included presenting the benefits and risks to the SCCs' participation. Therefore, coaches did not provide their name during the assent or any other portion of the online survey to ensure their survey responses could not be connected to them so that they would feel comfortable providing honest answers to the questions throughout the survey. A four-phase follow-up procedure was implemented, submitting reminder emails a total of 4 times in 1 week increment time periods, following best practice for online survey research (2).

Statistical Analyses

Analysis of the frequencies for each of the variables was conducted using SPSS 25 (IBM Corporation, Armonk, NY, USA). The variables met the assumptions for univariate and multivariate normality, including skew and kurtosis for distribution normality. The majority of the surveys (71%) were fully completed, however since there was missing data present, multiple imputation with principal component analysis factors included as informative auxiliaries (10) was conducted in the R program mice (32). The relative efficiency values of .995-.997 support the success of the approach to handling missing data employed with this dataset (13). The subsequent results are based upon the pooled results from the analysis of the 100 imputed datasets in SPSS as an imputed data file to maximize the quality of parameter estimates, power, and generalizability, while reducing bias (10). The means, standard errors, and correlations were calculated, with adjustments made for familywise Type 1 error rate (adjusted $\alpha \leq .001$). Finally, linear regressions were conducted to examine how often SCCs reported using each SP skill and strategy was predicted by the

following five predictor variables: their level of perceived familiarity, knowledge, demonstration confidence, effectiveness of the SP strategy, and their qualification to implement the SP strategy. Bonferroni correction was used to adjust alpha level to .01 for the regression coefficients to be significant.

RESULTS

Descriptive results of the SCCs' use of and preparation to use SP Skills/Strategies

The majority (59.9%) of these SCCs reported having less than moderate training in SP. The majority (92.7%) of SCCs also reported a moderate to moderately high use of many SP skills/strategies. The most frequent of these SP skills/strategies that SCCs reported using were communication skills (M = 5.63, 95%CI [5.45, 5.81]), goal setting (M = 5.24, 95%CI [5.02, 5.46]), and team building (M = 5.10, 95%CI [4.86, 5.34]). On the other hand, the SP skills/strategies they used only moderately were self-talk (M = 4.04, 95%CI [3.84, 4.24]), energy management (M = 4.04, 95%CI [3.80, 4.28]), and imagery (M = 4.15, 95%CI [3.91, 4.30]). On average, the SCCs' perceived SP skills/strategies to be moderately effective [EFFECTIVENESS] (M = 4.93, 95%CI [4.81, 5.04]), and reported moderate familiarity [FAMILIARITY] (M = 4.94, 95%CI [4.84, 5.03]) with SP skills/strategies. Moreover, they perceived to have received moderate training (M = 4.16, 95%CI [4.06, 4.26]) and be moderately qualified to use SP skills/strategies personally (M = 4.28, 95%CI [4.18, 4.37]); plus, rated other SCC's qualification to use SP skills/strategies as moderate (M = 4.06, 95%CI [3.94, 4.18]) (Table 1). *[Insert Table 1 Here]*

The following general patterns emerged between the frequency of using a SP skill or strategy and the SCCs' self-reported preparation and qualification to use that skill or strategy. The frequency that SCCs reported using six of the specific SP skills/strategies [FREQUENCY] was significantly ($p \leq .005$) correlated with their overall level of SP

training [OVERALL SP TRAINING]: self-talk (r = .18, p = .002) and attention (r = .21, p < .001). SCCs' overall level of SP training was not significantly correlated with their frequency of use the following SP strategies: goal setting (r = .13, p = .03), imagery (r = .14, p = .02), hypnosis (r = .14, p = .01), relaxation/energy management (r = .15, p = .01), time management (r = .08, p = .20), communication (r = .11, p = .07), and team building (r = .06, p = .34). SCCs' reported familiarity [FAMILIARITY] with specific SP skills/strategies was significantly ($p \leq .001$) correlated with their use of the same SP strategy [FREQUENCY] (r = .16 to .48; Table 2). The frequency [FREQUENCY] that SCCs reported using specific SP skills/strategies was significantly correlated with their self-perceived SP preparation [KNOWLEDGE] (r = .19 to .61) and confidence to use and demonstrate [CONFIDENCE] the SP skill or strategy (r = .24 to .54). The SCCs' perception of the effectiveness [EFFECTIVENESS] of specific SP strategies for performance was significantly correlated with their frequency of using [FREQUENCY] the specific SP strategies (r = .19 to .36), except for time management and imagery. The SCCs' perceptions of their own qualification to implement SP skills/strategies [SELF QUALIFICATION] to generally implement these SP strategies was significantly related to how frequently they reported using the specific strategies [FREQUENCY] (r = .21-.54).

[Insert Table 2 Here]

SCCs' perceived training for SP skill competence and need for training for SP skills/strategy competence

The need for training in specific SP skills/strategies was asked of the SCCs. First, the SCCs ranked the SP skills/strategies in order of training time necessary to be competent with delivering the skills/strategies (Table 3). Hypnosis was ranked by 59.6% of the SCCs as the SP skill needing the most training time to become competent utilizing, followed by

communication (17.7%), attentional control (14.9%), and team building (14.2%). When asked about the importance of receiving additional training for the different SP skills/strategies based upon their current, personal knowledge, SCCs perspectives varied (see Table 4). For example, 23% of the SCCs ranked self-talk as the least important for additional training, while 23.9% rated self-talk as the most important for additional training. *[Insert Tables 3 & 4 Here]*

Regression results predicting SCCs' use of SP skills/strategies by familiarity, knowledge, confidence, effectiveness, and qualification

Finally, to explore which of the factors were most predictive of SCCs' use of specific SP skills/strategies, linear regressions were conducted. Each linear regression had the frequency of using a specific SP skill/strategy [FREQUENCY] as the dependent variable being predicted by five independent variables representing the SCCs' self-reported perceived familiarity, knowledge, demonstration confidence, effectiveness, and their qualification to implement the specific SP skill/strategy. As there were five predictors in each regression model, Bonferroni correction of the alpha level (.05) resulted in significance decisions for each predictor being based upon an alpha of .01. *[Insert Table 5 Here]*

All nine regressions were significant *($p < .001$)*, and accounted for a meaningful amount of the frequency that the SP strategy was used by the SCCs (Table 5): self-talk *($F(5, 209.55) = 15.609$, $R^2 = 37\%$)*, attentional control *($F(5, 146.03) = 13.732$, $R^2 = 47\%$)*, time management *($F(5, 153.26) = 11.86$, $R^2 = 41\%$)*, goal setting *($F(5, 147.46) = 14.41$, $R^2 = 48\%$)*, communication *($F(5, 129.93) = 11.01$, $R^2 = 49\%$)*, imagery *($F(5, 147.50) = 10.168$, $R^2 = 40\%$)*, hypnosis *($F(5, 117.12) = 13.488$, $R^2 = 63\%$)*, energy management *($F(5, 119.11) = 9.97$, $R^2 = 54\%$)*, and team building *($F(5, 134.30) = 10.42$, $R^2 = 45\%$)*.

Familiarity was a significant ($p < .001$) predictor for all nine SP strategies. With the exception of hypnosis, familiarity accounted for the most variance of the SP skill/strategy frequency of use, ranging from 14% to 30%. Knowledge (R^2 = 30%) accounted for more hypnosis variance than familiarity (R^2 = 20%). SCCs' knowledge significantly ($p < .01$) predicted their use of all the SP strategies (R^2 = 8 - 30%), except communication ($b = .11$, ΔR^2 = 7%, $p = .02$). SCCs' confidence to demonstrate was the next most commonly significant ($p \leq .01$) predictor of SCCs use of the SP strategies (R^2 = 6 - 15%), except for goal setting ($p = .02$) and energy management ($p = .02$). Although not significant at the .01 level, the SCCs' perception of the effectiveness of the SP skill/strategy accounted for a meaningful amount of variance for six of the SP skills/strategies: self-talk (ΔR^2 = 4%), attention control (ΔR^2 = 4%), time management (ΔR^2 = 4%), goal setting (ΔR^2 = 5%), communication (ΔR^2 = 3%), and team building (ΔR^2 = 2%). The SCCs' self-perceived qualification to implement the SP strategy also did not significantly predict SP strategy use; however, SCCs' self-perceived qualification did account for meaningful variance of self-talk (ΔR^2 = 2%) and imagery (ΔR^2 = 6%).

DISCUSSION

The aim of the current study was to provide a better understanding of SCCs' perceptions and use of specific SP skills/strategies. SCCs in this study reported at least a moderate use of particular SP strategies in their daily activities with their athletes. In the current sample, the SP skills/strategies predominantly used were goal setting, self-talk, and activation; meanwhile imagery and self-confidence were among the least used SP skills/strategies. Furthermore, the SCCs differed in their opinion regarding the need for additional education for how to implement different SP skills/strategies. This was exemplified by their responses to the importance for training on how to utilize self-talk.

Finally, the most important predictors of NCAA SCCs' SP skill/strategy use was their familiarity with and knowledge of the specific SP skill/strategy, followed by their confidence to demonstrate the skill/strategy.

The most frequently used SP skills/strategies are similar to those found in previous qualitative research (29). Athletes (20) and SCCs (29) have expressed that SCCs role includes "psychology-oriented responsibilities" (29, pg 2853). Although reporting using SP skills/strategies, the SCCs in the current study also reported receiving only moderate SP training. This aligned with their perception of SCCs general qualification to demonstrate and utilize SP skills/strategies as moderate.

Additionally, the findings of this study illustrate how SCCs levels of familiarity, confidence, training, and, in most cases, perceived effectiveness, of specific SP skills/strategies, play an important role in impacting SCCs' use of these skills/strategies. These results echo those of Massey and Maneval (15), highlighting the importance of SP knowledge, both applied and theoretical, to the educational curriculum of SCCs. For this reason, it seems important to include SP-specific knowledge within the knowledge areas identified as foundational to the training and professional practice of SCCs.

Our results align with results from interviews with SCCs, in which they described using SP skills/strategies most often to assist in athlete performance by enhancing confidence, as well as regulating arousal and improving skill acquisition (29). Previously, SCCs also reported they primarily integrate teaching SP strategies into athletes' training (29). Therefore, SP education for SCCs should include S&C specific examples and integrated applications to optimize SCCs' likelihood of implementing SP strategies/skills into their training sessions. Pope and colleagues (26) indicated how coaches already look for SP-related information online and would be willing and interested in receiving online

training that is more structured and applied to S&C. Online SP educational interventions have already shown success with sport coaches (24) and physiotherapist (7), in supporting their integration of SP strategies in their daily professional activity. Thus, addressing SCCs' desire for more specific education regarding SP skills/strategies with online education modules may be an equally successful approach for SCCs (16, 18).

Limitations.

There are some limitations of this study, which are important to identify and use to inform future research. First, this data was all self-report. Therefore, there may be reporting bias, as well as a potential influence on reporting from a lack of knowledge regarding SP skills/strategies for SCCs to accurately report on their use. It is recommended that future research examine these points from a qualitative approach, as well as studies that implement observational methods to learn how and why SCCs utilize different SP skills/strategies. Further, athletes' perceptions of SCCs SP skills/utilization during training would provide insight into how much the athletes are perceiving and retaining from the SCCs in this area. In addition, this study focused on a specific subset of SCCs: the collegiate SCC. SCCs may use different SP skills/strategies based upon athletes' competitive level, experience, age, and development. Therefore, research with other subpopulations is appropriate. Finally, there may be other important variables that affect SCCs use of SP skills/strategies with their athletes, including the number of athletes per training session and interaction between the SCC and athletes' gender.

PRACTICAL APPLICATION

Expert coaches have reported that the area they develop most as they progress professionally is their knowledge of different SP strategies (3, 6, 12). To assist SCCs build their knowledge and confidence implementing SP strategies/skills, in April 2019 the first

ever Psychology of Strength and Conditioning Special Issue was published in the Strength and Conditioning Journal. This issue highlighted how to integrate sport psychology strategies/skills into training sessions (11, 21, 31) and techniques to assist SCCs with their athletes' emotional regulation (25). In addition to these S&C specific resources, the Association for Applied Sport Psychology (https://appliedsportpsych.org/), European Congress of Sport & Exercise Psychology (http://www.fepsac.com/), and American Psychological Association (apa.org) provides a wide range of resources on important sport-specific and general topics for strength and conditioning coaches. These resources can assist current S&Cs build their ability to assist athletes in their exercise execution by regulating arousal, improving concentration, confidence, as well as improve self-correction through self-talk and imagery.

An encouraging development from the recent SCC job task analysis is the elevation of Psychology of Sport and Exercise to a distinct content area; this means future SCCs must receive formal instruction in sport and exercise psychology. This closes the gap between practitioners' recognized responsibilities and what is being emphasized as important by the leading organization in the S&C field. In 2030 NSCA will require individuals to have a degree from a NSCA accredited program in order to take the CSCS exam (23). Based upon the new job task analysis, the new curriculum requires at least as much of an emphasis on SP as Sports Nutrition and Kinesiology/Biomechanics. This highlights for current and future practitioners the recognition by the NSCA of how important it is to understand and integrate SP skills/strategies (e.g., motivation, attention and focus, and energy management) into S&C training sessions to achieve the maximum benefits from the scientifically grounded program designed by the SCC.

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Table 1. Means and Standard Errors for SCC's reporting about use of SP Strategies

Sport Psychology Skills/Strategies		Self-Talk	Attention Control	Time Management	Goal Setting	Communication	Imagery	Hypnosis	Energy Management	Team Building
Familiarity	*M*	5.04	4.63	5.51	5.77	5.66	4.98	2.85	4.45	5.53
	95%CI	4.84, 5.24	4.41, 4.85	5.33, 5.69	5.59, 5.95	5.48, 5.84	4.76, 5.20	2.60, 3.10	4.20, 4.70	5.33, 5.73
	Cohen's *d*	0.63	0.34	1.04	1.46	1.22	0.55	-0.57	0.22	1.07
Frequency	*M*	4.04	4.33	4.95	5.24	5.63	4.15	1.93	4.04	5.10
	95%CI	3.84, 4.24	4.11, 4.55	4.71, 5.19	5.02, 5.46	5.45, 5.81	3.91, 4.30	1.71, 2.15	3.80, 4.28	4.86, 5.34
	Cohen's *d*	0.02	0.18	0.47	0.79	1.2	0.07	-1.51	0.02	0.56
Knowledge	*M*	3.74	3.98	4.76	5.07	5.11	4.13	2.02	3.89	4.73
	95%CI	3.54, 3.94	3.76, 4.20	4.52, 5.00	4.85, 5.29	4.91, 5.31	3.89, 4.37	1.80 2.24	3.64, 4.14	4.48, 4.98
	Cohen's *d*	-0.14	-0.01	0.38	0.64	0.68	0.06	-1.38	-0.05	0.35
Confidence	*M*	4.25	4.21	5.16	5.4	5.45	4.34	1.98	4.02	5.07
	95%CI	4.03, 4.47	3.99, 4.43	4.94, 5.38	5.20, 5.60	5.29, 5.61	4.12, 4.56	1.78, 2.18	3.78, 4.26	4.85, 5.29
	Cohen's *d*	0.14	0.12	0.73	1	1.05	0.18	-1.5	0.01	0.57
Effectiveness	*M*	4.97	4.94	5.32	5.61	5.66	4.96	2.86	4.68	5.34
	95%CI	4.77, 5.17	4.70, 5.18	5.10, 5.54	5.43, 5.79	5.28, 5.84	4.74, 5.18	2.59, 3.13	4.43, 4.93	5.09, 5.59
	Cohen's *d*	0.53	0.46	0.80	1.08	1.26	0.47	-0.52	0.32	0.69
Own Qualification	*M*	3.8	4	4.8	5.34	5.29	4.23	2.04	4.05	4.93
	95%CI	3.60, 4.00	3.78, 4.22	4.60, 5.00	5.16, 5.52	5.11, 5.47	4.01, 4.45	1.82, 2.26	3.83, 4.27	4.71, 5.15
	Cohen's *d*	-0.12	0.00	0.45	0.96	0.99	0.14	-1.41	0.03	0.51
Other SCCs Qualification	*M*	3.62	3.82	4.49	5.03	4.93	4.01	2.1	3.76	4.79
	95%CI	3.42, 3.82	3.60, 4.04	4.29, 4.69	4.83, 5.23	4.73, 5.13	3.77, 4.25	1.86, 2.34	3.51, 4.01	4.55, 5.03
	Cohen's *d*	-0.24	-0.10	0.30	0.66	0.54	0.01	-1.02	-0.12	0.41

Note. Cohen's d is calculated comparing the mean to the moderate response option (4.00). 95%CI [Lower Bound, Upper Bound].

Table 2. Correlations with 95%CI of Characteristics within each SP Strategy

		Fam.	Freq.	Know.	Conf.	Effect.	Self qual.	SCCs qual.	
Self-Talk	Familiarity		.31** [.20, .42]	.35** [.24, .46]	.29** [.18, .41]	.38** [.26, .49]	.37** [.27, .48]	.35** [.24, .45]	Time Management
	Frequency	.26** [.13, .37]		.46** [.35, .57]	.37** [.26, .48]	.01 [-.10, .12]	.49** [.39, .59]	.39** [.29, .50]	
	Knowledge	.31** [.19, .42]	.22** [.10, .35]		.39** [.28, .50]	.14** [.02, .25]	.39** [.28, .50]	.31** [.19, .42]	
	Confidence	.29** [.17, .41]	.39** [.27, .50]	.33** [.22, .45]		.29** [.18, .41]	.46** [.35, .57]	.30** [.18, .41]	
	Effectiveness	.24** [.13, .36]	.32** [.20, .44]	.24** [.13, .36]	.34** [.23, .46]		.23** [.12, .35]	.20** [.09, .31]	
	Self qual.	.28** [.16, .40]	.42** [.31, .52]	.42** [.30, .53]	.47** [.37, .57]	.41** [.31, .50]		.62** [.52, .70]	
	SCCs qual.	.32** [.21, .42]	.24** [.12, .35]	.24** [.12, .36]	.25** [.13, .37]	.09 [-.04, .22]	.39** [.26, .50]		
Attention Control	Familiarity		.35** [.23, .46]	.31** [.19, .42]	.39** [.29, .50]	.39** [.27, .50]	.30** [.19, .41]	.26** [.15, .37]	Communication
	Frequency	.48** [.37, .58]		.39** [.28, .50]	.44** [.33, .54]	.36** [.24, .47]	.40** [.29, .50]	.21** [.10, .32]	
	Knowledge	.24** [.12, .37]	.31** [.19, .43]		.43** [.32, .53]	.21** [.10, .32]	.42** [.32, .51]	.15** [.04, .26]	
	Confidence	.46** [.35, .57]	.33** [.20, .44]	.30** [.18, .42]		.25** [.14, .36]	.70** [.63, .77]	.32** [.21, .42]	
	Effectiveness	.19** [.07, .31]	.19** [.07, .31]	.20** [.07, .33]	.30** [.18, .41]		.21** [.10, .32]	.20** [.09, .31]	
	Self qual.	.26** [.14, .38]	.40** [.28, .51]	.51** [.41, .61]	.50** [.38, .61]	.28** [.16, .39]		.39** [.28, .49]	
	SCCs qual.	.32** [.21, .43]	.24** [.11, .36]	.26** [.14, .38]	.37** [.26, .49]	.18** [.06, .30]	.36** [.24, .48]		
Goal Setting	Familiarity		.16** [.04, .28]	.29** [.18, .40]	.27** [.15, .39]	.34** [.23, .45]	.30** [.18, .41]	.30** [.18, .41]	Team Building
	Frequency	.30** [.19, .42]		.32** [.20, .44]	.38** [.26, .50]	.29** [.17, .41]	.32** [.20, .44]	.33** [.20, .44]	
	Knowledge	.41** [.30, .51]	.23** [.12, .36]		.21** [.09, .33]	.14** [.02, .26]	.31** [.19, .42]	.31** [.19, .43]	
	Confidence	.46** [.35, .56]	.36** [.25, .47]	.36** [.25, .48]		.26** [.14, .38]	.69** [.60, .78]	.15** [.03, .27]	
	Effectiveness	.45** [.34, .56]	.36** [.24, .48]	.34** [.23, .45]	.42** [.31, .53]		.34** [.23, .45]	.34** [.22, .46]	
	Self qual.	.41** [.29, .52]	.40** [.29, .51]	.51** [.40, .60]	.48** [.36, .59]	.27** [.14, .39]		.21** [.09, .34]	
	SCCs qual.	.33** [.22, .44]	.46** [.36, .56]	.23** [.11, .35]	.38** [.26, .49]	.30** [.18, .42]	.28** [.16, .40]		
Imagery	Familiarity		.26** [.15, .38]	.35** [.23, .47]	.33** [.22, .44]	.33** [.22, .44]	.31** [.20, .42]	.23** [.10, .35]	Hypnosis
	Frequency	.29** [.17, .41]		.61** [.48, .72]	.54** [.41, .65]	.29** [.18, .40]	.58** [46, .69]	.54** [.42, .65]	
	Knowledge	.31** [.20, .42]	.19** [.07 .31]		.58** [.47, .68]	.40** [.29, .51]	.60** [.48, .70]	.33** [.20, .45]	
	Confidence	.21** [.09, .33]	.24** [.12, .36]	.31** [.19, .43]		.36** [.25, .45]	.65** [.55, .74]	.33** [.21, .44]	
	Effectiveness	.18** [.06, .30]	.01 [-.11, .14]	.23** [.12, .35]	.49** [.39, .58]		.50** [.41, .58]	.28** [.16, .39]	
	Self qual.	.40** [.29, .49]	.46** [.36, .56]	.34** [.23, .45]	.44** [.33, .55]	.28** [.17, .38]		.56** [.46, .65]	
	SCCs qual.	.08 [-.04, .20]	.21** [.09, .33]	.23** [.10, .35]	.26** [.15, .38]	.14** [.01, .25]	.23** [.12, .35]		
Energy Management	Familiarity								
	Frequency	.39** [.28, .51]							
	Knowledge	.34** [.22, .45]	.34** [.22, .46]						
	Confidence	.45** [.34, .55]	.44** [.32, .55]	.42** [.31, .53]					
	Effectiveness	.27** [.15, .39]	.32** [.21, .43]	.04 [-.08, .16]	.23** [.12, .34]				
	Self qual.	.39** [.27, .49]	.29** [.17, .41]	.48** [.37, .58]	.45** [.34, .56]	.18** [.07, .30]			
	SCCs qual.	.20** [.08, .31]	.40** [.29, .51]	.11* [-.02, .23]	.22** [.11, .34]	.24** [.13, .36]	.31** [.19, .42]		

Note. *p ≤ .01 **p ≤ .001 95% Confidence Interval (CI) is provided within the brackets [Lower Bound, Upper Bound].

Table 3. Percentage representation of how SCCs ranked each SP skill in response to the question "**Rank order** the following skills from the least amount of training time needed (1) to be competent, to the most amount of training time needed (9) to be competent in using and demonstrating these skills with athletes." (N = 415)

	Self Talk	Attention Control	Time Mngt	Goal Setting	Comm	Imagery	Hypnosis	Energy Mngt	Team Building
Least amount	24.9	7.3	17.4	27.8	12.5	15.8	26.8	10.7	16.5
2	13.4	10.2	12.3	12	8.5	7.4	1.6	10.4	12
3	9.7	10.5	13.2	12.3	11.8	7.2	2.1	5.2	6.9
4	9.3	12.3	13.2	7.4	10	5.7	1.1	8.9	9.7
5	11	11.2	10.3	7.4	11.6	9.9	3.6	9.6	10.1
6	10	12.6	7.7	7.3	8.1	11.4	1.2	10.8	9.3
7	5.1	11.3	8.2	6.9	11.3	15.7	0.4	15	7.5
8	5.9	9.7	6	5.2	8.6	19.5	2.7	19.2	13.8
Most amount	10.7	14.9	11.7	13.7	17.7	10.4	59.6	7.9	14.2

Table 4. Percentage representation of how SCCs ranked each SP skill in response to the question “If you had the opportunity to receive more training, which of these skills would you like the training to be focused on?” (N = 415)

	Self Talk	Attention Control	Time Mngt	Goal Setting	Comm	Imagery	Hypnosis	Energy Mngt	Team Building
Least important	23	12.3	22.8	21.4	21.4	20.5	53.9	20.5	22.6
2	9.7	13.9	8.5	9.3	5.2	6.6	2.3	9.9	8.7
3	10.6	6.7	9.2	7.7	7.3	6.3	2.6	5.8	5.4
4	8.7	6.5	7.1	8.9	9.3	7.1	2.3	7	4.7
5	6.9	7.7	8.1	8.7	8.5	5.7	2.6	7.2	7.3
6	5.5	7.8	8.6	7.1	7.3	8.7	0.5	7.8	6.4
7	7.3	8.8	6.8	5.8	8.6	10.5	1.7	5.4	6.4
8	4.5	7.9	6.6	7.7	6.8	8.5	1.4	11.3	7.7
Most important	23.9	28.4	22.4	23.5	25.8	26.1	32.7	25.2	30.8

Table 5. Significant predictors of the outcomes for each regression analysis

	Familiarity	Knowledge	Confidence	Effectiveness	Self Qual.
Self-Talk	**b = .06**	**b = .19**	**b = .17**	**b = .21**	**b = .19**
$F_{(5, 209.55)}$ = 15.609	[-.15, .26]	[.02, .37]	[-.05, .40]	[.03, .40]	[.00, .40]
R^2 = 37%	ΔR^2 = 14%	ΔR^2 = 11%	ΔR^2 = 6%	ΔR^2 = 4%	ΔR^2 = 2%
Attention Control	**b = .17**	**b = .20**	**b = .30**	b = .11	b = .12
$F_{(5, 146.03)}$ = 13.732	[-.07, .40]	[-.00, 41]	[.01, .59]	[-.09, .30]	[-.13, .37]
R^2 = 47%	ΔR^2 = 24%	ΔR^2 = 11%	ΔR^2 = 6%	ΔR^2 = 4%	ΔR^2 = 1%
Time Management	**b = .15**	**b = .17**	**b = .33**	**b = .03**	b = .17
$F_{(5, 153.26)}$ = 11.86	[-.11, .40]	[-.06, .40]	[.04, .61]	[-.19, .24]	[-.10, .44]
R^2 = 41%	ΔR^2 = 24%	ΔR^2 = 11%	ΔR^2 = 6%	ΔR^2 = 4%	ΔR^2 = 2%
Goal Setting	**b = .16**	**b = .18**	**b = .13**	**b = .23**	b = .20
$F_{(5, 147.46)}$ = 14.41	[.44, .85]	[.38, .82]	[.44, .87]	[.44, .82]	[.46, .81]
R^2 = 48%	ΔR^2 = 27%,	ΔR^2 = 8%	ΔR^2 = 6%	ΔR^2 = 5%	ΔR^2 = 2%
Communication	**b = .20**	**b = .11**	**b = .31**	**b = .16**	b = .05
$F_{(5, 129.93)}$ = 11.01	[-.04, .43]	[-.08, .30]	[.05, .57]	[-.01, .34]	[-.20, .31]
R^2 = 49%	ΔR^2 = 28%	ΔR^2 = 7%	ΔR^2 = 11%	ΔR^2 = 3%	ΔR^2 = 1%
Imagery	**b = .10**	**b = .13**	**b = .22**	b = -.01	**b = .34**
$F_{(5, 147.50)}$ = 10.168	[-.16, .35]	[-.13, .39]	[-.05, .50]	[-.22, .20]	[.04, .64]
R^2 = 40%	ΔR^2 = 15%	ΔR^2 = 10%	ΔR^2 = 9%	ΔR^2 = 1%	ΔR^2 = 6%
Hypnosis	**b = .04**	**b = .25**	**b = .41**	b = .41	b = .41
$F_{(5, 117.12)}$ = 13.488	[-.10, .19]	[-.06, .55]	[.01, .81]	[-.11, .15]	[-.21, .47]
R^2 = 63%	ΔR^2 = 20%	ΔR^2 = 30%	ΔR^2 = 11%	ΔR^2 = 1%	ΔR^2 = 1%
Energy Management	**b = .20**	**b = .21**	**b = .23**	b = .05	b = .20
$F_{(5, 119.11)}$ = 9.97	[-.02, .43]	[.01, .42]	[-.11, .57]	[-.14, .24]	[-.10, .50]
R^2 = 54%	ΔR^2 = 30%	ΔR^2 = 12%	ΔR^2 = 8%	ΔR^2 = 1%	ΔR^2 = 2%
Team Building	**b = .08**	**b = .14**	**b = .43**	b = .11	b = .06
$F_{(5, 134.30)}$ = 10.42	[-.17, .32]	[-.08, .36]	[.11, .75]	[-.11, .32]	[-.25, .36]
R^2 = 45%	ΔR^2 = 17%	ΔR^2 = 10%	ΔR^2 = 15%	ΔR^2 = 2%	ΔR^2 = 1%

Note. All significant predictors based upon the F-test and/or ΔR^2 are bolded. Table includes the unstandardized regression coefficient and 95%CI [Lower Bound, Upper Bound].