



Exploring Athletes' Preferences of Coaching Leadership Behaviours in Strength and Conditioning Coaching: A Mixed Methods Study at a British University

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Abstract: The study investigated athletes' preferred coaching leadership behaviours in strength and conditioning coaching at a British University, integrating quantitative and qualitative data to evaluate the confirmation or divergence of results. Athletes' preferences were explored to offer novel perspectives in this area. A convergent mixed methods design with parallel databases was implemented, using quantitative data through an electronic questionnaire using the athletes' preference version of the Revised Leadership Scale for Strength and Conditioning and qualitative data through semi-structured interviews based on the constructs of that scale. A total of 49 male and female British university athletes completed the questionnaire, and 13 participated in follow-up interviews. The qualitative purposeful sample was a subset of the convenience quantitative sample. The mixed-methods findings are the meta-inferences drawn by comparing the matched quantitative and qualitative findings across six behavioural dimensions: autocratic, democratic, positive feedback, situational consideration, social support, and training and instruction behaviours. The survey results illustrate the preferences of behaviours, and the qualitative findings confirmed and further expanded the survey results. Athletes appreciate a mix of autocratic and democratic behaviours, valuing authority when necessary but predominantly collaboration, especially in goal-setting. Positive feedback and instructions are highly valued when genuine, contextually appropriate, and provided during significant efforts, such as when lifting heavy weights or learning new techniques. Athletes appreciate coaches who maintain professional boundaries whilst showing empathy, strong social interaction skills, and the capacity to consider situational factors to set achievable goals. An integrated mixed-methods analysis highlights how behaviours cannot be evaluated independently of context and that strength and conditioning coaches should exhibit adaptability and a genuine interest in developing personal connections. These findings offer a basis for further research to expand the investigation of coaching leadership behaviours in strength and conditioning coaching.

Keywords: Behaviour, Coaching, Leadership, Mixed Methods Research, Strength and Conditioning

1. Introduction

What type of coaching leadership behaviours do athletes prefer from strength and conditioning (S&C) coaches? Extensive research in sports coaching has focused on coaches' behaviours and leadership styles (Gilbert & Trudel, 2004; Griffo et al., 2019). However, despite gaining increased attention (Gearity & Szedlak, 2022), the interrogation of these topics in S&C coaching remains limited.

One of the key models for studying leadership behaviours in sports is the multidimensional model of leadership (MDML; Chelladurai, 1978, 1993, 2007; Chelladurai & Kim, 2023), which has been used for over 40 years (Arthur & Bastardo, 2020). Based on previous leadership theories (Fiedler, 1967; House, 1971; Yukl, 1971), the MDML offers a conceptual framework where three central behavioural mechanisms (actual, preferred, required) mediate the link between contextual characteristics (situational,

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leader and member), and outcomes (performance and satisfaction). Its proposition is that satisfaction and performance are achieved when there is alignment between what athletes prefer, required behaviours and what coaches do (Arthur & Bastardo, 2020). Based on this theoretical model, scales were developed to help quantify coaching leadership behaviours, including the leadership scale for sport (LSS; Chelladurai & Saleh, 1980), the revised leadership scale for sport (RLSS; Zhang *et al.*, 1997), and the revised leadership scale for S&C (RLSSC; Gearity, 2003).

Using diverse methodological research approaches, a range of coaching-related aspects has received growing attention in S&C coaching research (Brooks *et al.*, 2000; Carson *et al.*, 2022; Chesters, 2013; Dorgo, 2009; Eisner *et al.*, 2014; Foulds *et al.*, 2019; Gallo & DeMarco, 2008; Gilbert & Baldi, 2014; Gillham *et al.*, 2016, 2017, 2019; Greenslade & Williams, 2019; Jones & Newland, 2022; LaPlaca & Schempp, 2020; Lee *et al.*, 2013; Magnusen, 2010; Massey *et al.*, 2002; Quartiroli *et al.*, 2022; Shuman & Appleby, 2016; Szedlak *et al.*, 2015, 2018, 2022; Tiberi & Moody, 2020; Tiberi *et al.*, 2023, 2024). However, investigations specific to leadership behaviours in S&C coaching remain limited.

In a quantitative study, Lee *et al.* (2013) found that positive coaching behaviours, such as supportiveness, positively impacted the compatibility between S&C coaches and athletes in an NCAA Division I context. Using the athletes' preference version of the RLSSC, Tiberi *et al.* (2024) reported the preferences of NCAA Division I and II student-athletes' coaching leadership behaviours in S&C coaching. This exploratory quantitative study suggested how athletes valued positive feedback, situational consideration, social support, and training and instruction behaviours, indicating a lower preference for autocratic and democratic behaviours. Qualitative research has highlighted elite athletes' perceptions of effective behaviours in S&C coaches (Szedlak *et al.*, 2015; Foulds *et al.*, 2019). Szedlak *et al.* (2015) indicated that high-performance athletes valued the coaches' ability to establish connections based on trust and understanding whilst also communicating and instructing clearly. Likewise, Foulds *et al.* (2019) reported that athletes valued coaches who displayed a positive demeanour and a leadership style centred on the athlete. Echoing these findings, Gearity and Szedlak (2022) suggested that adopting athlete-centred leadership approaches in S&C coaching should be encouraged, as these approaches not only enhance

athletic performance but also promote athletes' psychological and social growth, which is crucial for the individual's holistic development.

Despite the variety of methodological approaches and the value of quantitative and qualitative research, both approaches present intrinsic limitations. Such limitations include, but are not limited to, the presentation of dry, impersonal data in quantitative research and the study of a small number of people, as well as limitations in drawing generalisations in qualitative research. Authors from both research strands identified the value of adopting additional quantitative and qualitative methods to study coaching leadership behaviours in S&C coaching (Szedlak *et al.*, 2015; Tiberi *et al.*, 2024). In their review of sports coaching research, Gilbert and Trudel (2004) suggested that combining and triangulating multiple methods in a study could help provide a more comprehensive understanding of the coaching process. Similarly, in a more recent review, Griffo *et al.* (2019) advocated that using mixed-methods research (MMR) would assist in developing the field. In MMR, the researcher collects, analyses, and integrates quantitative and qualitative data in a single study to draw inferences based on the combined strengths of both data sets (Creswell & Plano Clark, 2018), making MMR an innovative approach in the S&C coaching domain.

To our knowledge, no MMR has been attempted in S&C coaching. A recent review by Carson *et al.* (2022) reported that studies on this topic were either qualitative or quantitative. The lack of MMR in S&C coaching eliminates the benefit of using both, precluding the potential for novel and original findings that could help develop this area, where contemporary demands on S&C coaches require them to be not only interdisciplinary scientists but also effective coaches (Stewart *et al.*, 2022).

Therefore, this study aimed to 1) investigate athletes' preferred coaching leadership behaviours in S&C coaching using the preference version of the RLSSC, 2) examine these preferences further through semi-structured interviews, and 3) evaluate confirmation or divergence by integrating quantitative and qualitative findings on athletes' preferred behaviours.

2. Materials & Methods

2.1 Philosophical Stance

This research was not based on a priori choices regarding the superiority of research methods or worldviews. For this reason, pragmatism served as the philosophical stance in the current MMR project. This philosophical worldview supports the integration of quantitative and qualitative methods within a single study to inform the topic under investigation (Creswell & Plano Clark, 2018). Pragmatism considers knowledge as fluid and provisional rather than absolute. The process develops through an iterative inquiry process, engaging in actions and assessing the resulting outcomes (Morgan, 2014).

2.2 Mixed-Methods Research Design

A convergent mixed-methods design with parallel databases was employed in the present study. This design involved the collection and analysis of independent quantitative and qualitative data, followed by integration to compare and combine the two databases, allowing for the drawing of inferences (Creswell & Plano Clark, 2018). The convergent design was selected for several reasons: 1) integration of quantitative and qualitative results to obtain a more complete understanding of the problem being interrogated, 2) facilitation of direct comparison between quantitative and qualitative findings, and 3) data collection efficiency (Creswell & Plano Clark, 2018). The parallel-databases variant occurs when data is collected, analysed independently, and brought together during integration and interpretation. This variant was selected because we used two data types to examine the same phenomenon.

The study began with formulating quantitative, qualitative, and mixed-methods research questions that informed the convergent design. Quantitative and qualitative data collection and analysis were conducted independently at approximately the same time. Mixed-methods analysis involved integrating primary data analyses and representations through a joint display to compare findings and suggest meta-inferences (Creswell & Plano Clark, 2018). Figure 1 illustrates the mixed methods convergent design, the study's chronology, and a summary of the procedures employed. The study was approved by the Cardiff School of Sport & Health Sciences Research Ethics Committee.

2.3 Quantitative Research Design

2.3.1 Ethical considerations

In line with contemporary ethical guidelines (Thomas *et al.*, 2023), openness and honesty were maintained by providing participants with an information sheet that outlined the voluntary nature of the study and stated their right to withdraw at any time during the survey completion stage.

2.3.2 Participants

A total of 49 British university athletes ($n = 49$; 25 males, 24 female) participated in the study. Participants were involved in various sports: basketball ($n = 8$); cricket ($n = 13$); football ($n = 3$); hockey ($n = 7$); netball ($n = 5$); Olympic weightlifting ($n = 1$); rugby ($n = 12$). Three inclusion criteria were applied: 1) participants had to be British university athletes aged 18-25, 2) they must have trained under the supervision of an S&C coach for at least one academic year before the study, and 3) they needed to have trained, on average, minimum twice per week during that academic year. Applying these criteria reduced the initial sample from $n = 68$ to $n = 49$ participants, as 19 participants either did not fully meet the criteria or provided incomplete responses. This population was selected based on two main factors: 1) relevant experience with the study's focus and 2) accessibility.

2.3.3 Method

The study utilised an online questionnaire administered *via* SurveyMonkey (Momentive, 2023), which included demographic and S&C questions to verify participants' eligibility. The research incorporated the athletes' preference version of the RLSSC (Gearity, 2003). This scale was adopted to contribute to the accumulation of knowledge and to facilitate comparability in MMR. Additionally, the RLSSC was selected over other leadership scales due to its design, specific to S&C contexts, and its use in existing S&C-based research (Gearity, 2003; Tiberi *et al.*, 2024), making it particularly suitable for evaluating behaviours in this domain. The selected version of the RLSSC comprises 60 items randomly distributed across six dimensions of coaching leadership behaviour: autocratic (8 items), democratic (12 items), positive feedback (12 items), situational considerations (10 items), social support (8 items), and training and instruction (10 items). Each item is rated on a 5-point Likert scale reflecting athletes' preferences for how frequently their ideal S&C coach should exhibit that specific behaviour.

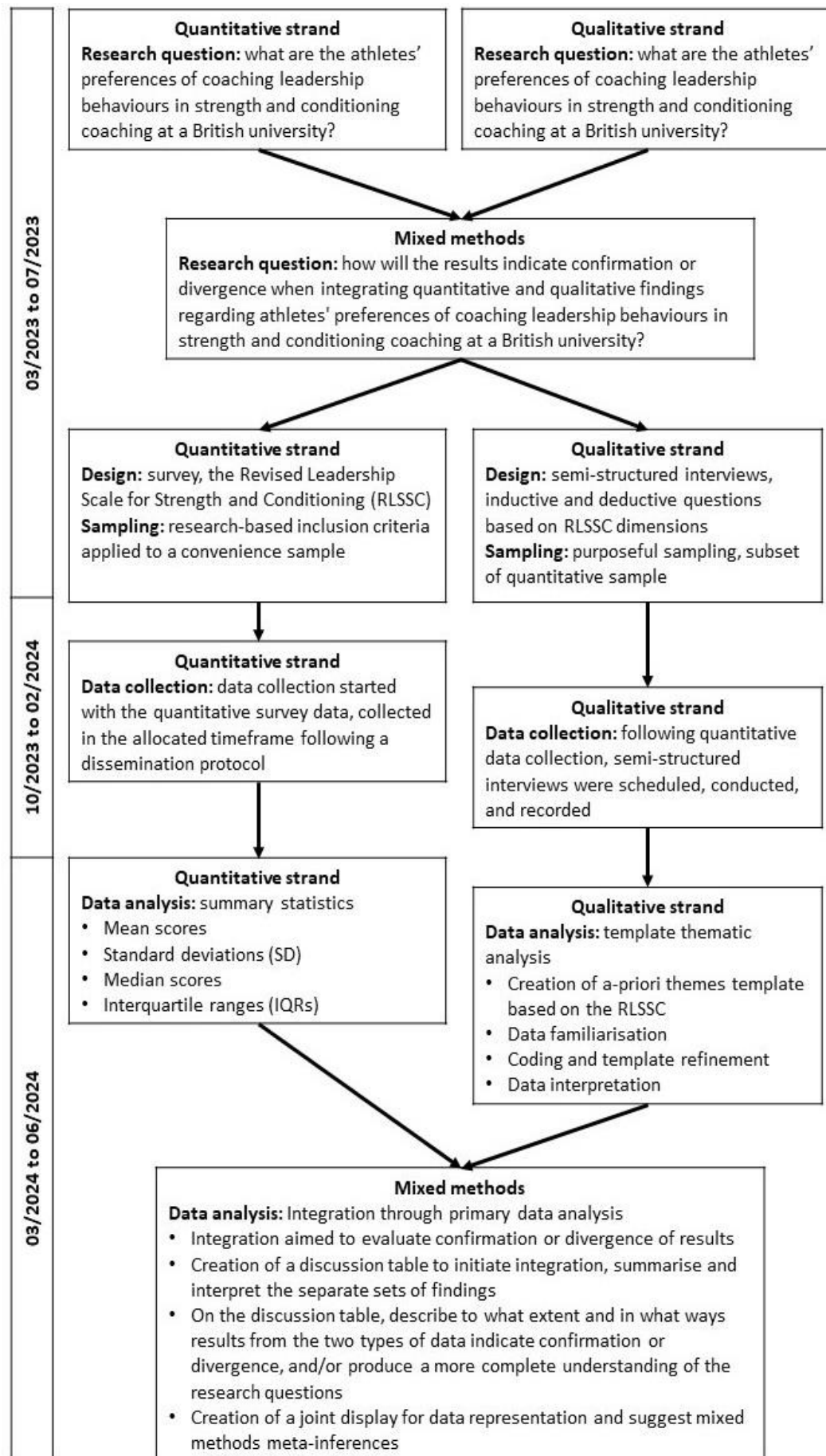


Figure 1 Mixed methods convergent design, the chronology of the study and summary of procedures.

The scale is anchored as follows: 1 = "never" (0% of the time), 2 = "seldom" (25% of the time), 3 = "occasionally" (50% of the time), 4 = "often" (75% of the time), and 5 = "always" (100% of the time). All items begin with the phrase "I prefer my S&C coach to...". The questionnaire also requested that participants interested in and willing to participate in the follow-up interviews confirm their participation by providing their email addresses.

2.3.4 Procedure

Participants were recruited *via* email. Once ethical approval was granted, a meeting was held with a representative from the sports department at a British university to request assistance in disseminating the questionnaire to participants and to act as a gatekeeper, protecting participants from potential power relationships and safeguarding their privacy. Approval was obtained with a signed consent letter. The researcher asked the gatekeeper to distribute an email to potential participants, which included an information sheet and a link to the SurveyMonkey questionnaire. To support recruitment, reminder emails were sent to the gatekeeper weekly over four weeks. The survey was closed after five weeks.

2.4 Qualitative research design

2.4.1 Ethical considerations

Adhering to contemporary ethical principles (British Psychological Society, 2023), valid consent was obtained after participants received an information sheet outlining the voluntary nature of the study. Confidentiality was ensured with encryption on cloud storage (OneDrive) and storage on a password-protected computer. Anonymity was provided by giving pseudonyms, and interviews were audio-recorded to prevent visual identification.

2.4.2 Participants

A total of 13 British university athletes (5 male, 8 female) participated in the study. Participants were involved in various sports: basketball ($n = 4$); cricket ($n=1$); hockey ($n = 3$); netball ($n = 1$); Olympic weightlifting ($n = 1$); rugby ($n = 3$). The qualitative, purposeful sample was a subset of participants who completed the questionnaire, with the same inclusion criteria applied. A total of $n = 28$ participants provided their email addresses to be contacted for the follow-up interview. The sample was reduced to $n = 13$ because 15 participants did not respond to the interview

schedule within the allocated timeframe for qualitative data collection. Whilst participation depended on interview availability, the sample reflected a range of perspectives from male and female athletes participating in diverse sports, including basketball, cricket, hockey, netball, Olympic weightlifting, and rugby.

2.4.3 Method

An interview guide was developed, providing notes to be used at the start of the interview to remind the interviewee of the research aims and clarify permission for audio recording. The guide also included questions that matched the specific coaching behaviour dimensions of the RLSSC used during the semi-structured interview. The initial and last questions were inductive: "What are the leadership behaviours of an effective S&C coach?" and "Is there anything else you would like to add?". These questions were included to capture dimensions outside the RLSSC during data analysis. Based on previous research (Paitson, 2016), the remaining questions were deductive and structured, phrased in a way that matched the coaching behaviour dimensions of the RLSSC for capturing the degree of athletes' preference toward that concept. For example, for the dimension of positive feedback behaviour, the question was: "How important is it that the S&C coach enthusiastically and visibly applaud his or her athletes in front of their peers to recognise a job well done? To what degree should he or she do that?". Follow-up questions were asked during the interview when deemed appropriate.

2.4.4 Procedure

Participants were recruited *via* email. After completing the electronic questionnaire, participants voluntarily provided their email addresses to be contacted for the follow-up interview. From January to February 2024, emails were exchanged with participants to collect signed informed consent forms and schedule interviews. Interviews were conducted on Microsoft Teams (2024), audio-recorded and transcripts were auto-generated. At the end of each interview, a pseudonym was assigned, data was transferred to a folder for each participant, and the audit trail was updated on Excel spreadsheets. Reminder emails were sent weekly over four weeks. Data collection was closed after five weeks.

2.5 Quantitative data analysis

Summary statistics were used to present the overall preferences of athletes regarding S&C coaching leadership behaviours. The data were described using median scores, interquartile ranges (IQRs), mean scores, and standard deviations (SD). For each participant, preference scores for each coaching dimension were calculated by summing the scores of all items within that dimension and dividing by the total number of items (Chelladurai & Saleh, 1980; Zhang *et al.*, 1997; Gearity, 2003). However, because of the ordinal nature of the RLSSC, median scores were prioritised as the primary measure of central tendency.

2.6 Qualitative data analysis

The transcripts were analysed using template thematic analysis outlined by King and Brooks (2017). Based on previous research (McCluskey *et al.*, 2011), template analysis was chosen as it allows a priori themes to be adopted, assisting in the development of an initial version of the coding template. The interview guide was based on the RLSSC. Therefore, we used the same instrument to develop a template for a priori themes. The initial template comprised six themes representing the six coaching dimensions of the RLSSC: 1) autocratic, 2) democratic, 3) positive feedback, 4) situational consideration, 5) social support, and 6) training and instruction; and 89 codes, representing individual items of the RLSSC and definitions of each behaviour dimension found in literature (Gearity, 2003): autocratic (13), democratic (16), positive feedback (17), situational consideration (14), social support (14), and training and instruction (15). Following the development of the initial template, the analysis proceeded through the steps outlined in Figure 2.

2.7 Mixed-methods data analysis

Integration was conducted through primary data analysis to evaluate the confirmation or divergence of results. Confirmation occurred if the findings from both datasets reinforced the results from the other. Divergence occurred when results were inconsistent. Figure 3 shows the four steps followed (Creswell & Plano Clark, 2018).

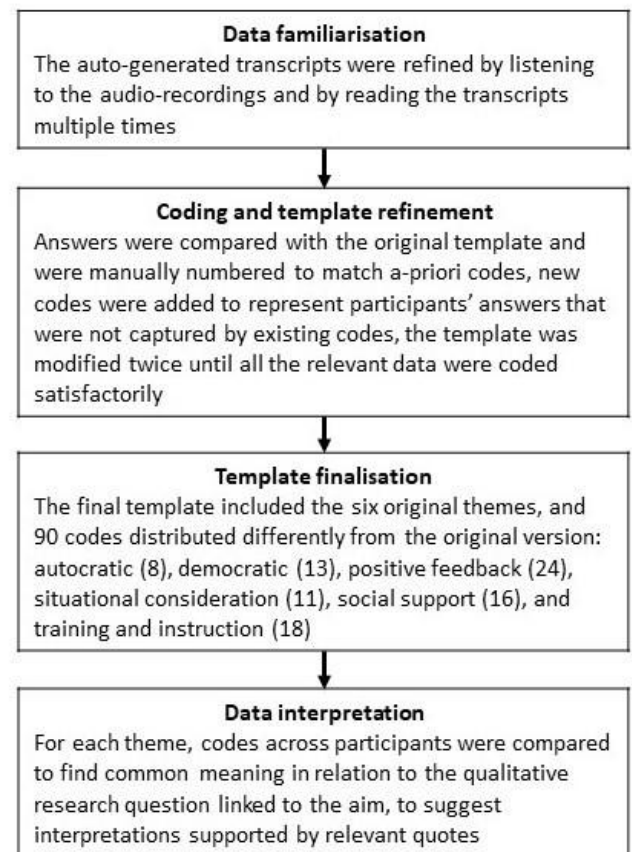


Figure 2 Qualitative data analysis following the creation of a priori themes template.

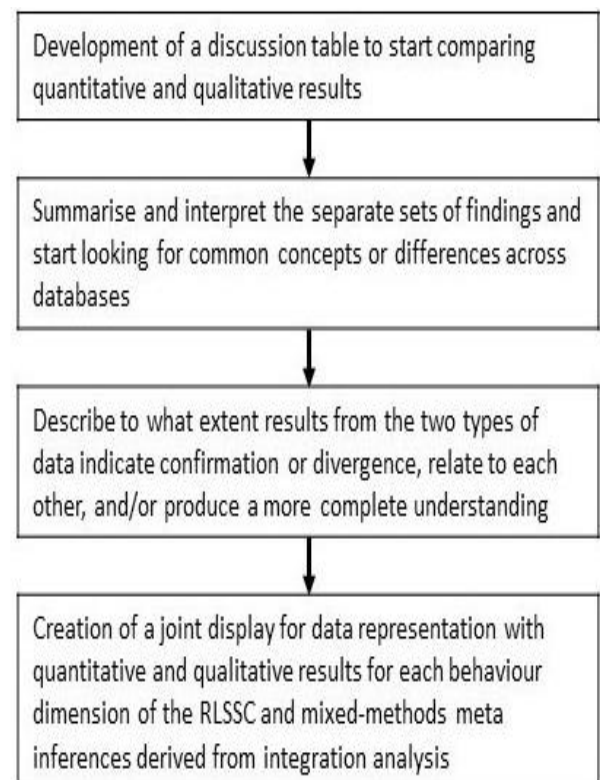


Figure 3 The procedure followed for primary data integration and analysis.

2.8 Reliability and Validity

2.8.1 Quantitative

Cronbach's alpha coefficients (α_C) were calculated to estimate the reliability of each coaching behaviour dimension. In interpreting these values, the guidelines suggested by Taber (2018) were followed, considering coefficients between 0.60 and 0.90 acceptable for reliability.

2.8.2 Qualitative

Each step of the qualitative analysis process was recorded with an audit trail (King & Brooks, 2017), including the various versions of the a priori themes template and steps from data familiarisation to interpretation. A series of structured questions was implemented to represent each of the six RLSSC constructs and confirm the construct validity for the present study (Paitson, 2016).

2.8.3 Mixed methods

As reported by Creswell and Plano Clark (2018), various strategies were considered to minimise threats to validity. Parallel questions reflecting parallel concepts were addressed in the integration analysis. A systematic approach was followed to integrate data, culminating in a joint display. Despite differences in quantitative and qualitative sample sizes, the qualitative sample was a subset of the quantitative one, involving the same participants, deemed acceptable as the intent was to confirm or diverge from two sets of findings on the same topic and synthesise results into a complementary picture. Finally, an intrinsic strength of MMR is that data collected from two different sources, such as questionnaires and interviews, helps triangulate databases.

3. Results

3.1 Quantitative results

3.1.1 Reliability scores for the RLSSC

Table 1 presents the Cronbach's alpha (α_C) coefficients from the current study's data alongside those reported in previous research. The subscale scores align with values from earlier studies and, based on Taber's (2018) work, reflect acceptable levels of reliability, except for autocratic behaviour, which is marginally lower than 0.60 ($\alpha_C = 0.57$).

3.1.2 Preferences of the total pooled sample

An indication that participants' most preferred behaviours were positive feedback, training and instruction, median = 4.0 (IQR = 1.0), and situation consideration, median = 4.0, IQR (0.5); followed by social support, median = 3.5 (IQR = 1.0); democratic, median = 3.0 (IQR = 1.0); and autocratic, median = 2.5 (IQR = 1.0) was the least preferred behaviour is provided in Table 2. The variability of participants' responses appeared identical for the six coaching dimensions (SD = ± 0.5).

3.2 Qualitative results

3.2.1 Autocratic behaviour

Responses suggested that athletes generally prefer autocratic behaviours in specific situations, such as when faced with poor attitude, time constraints, and accountability at the start of the relationship. Athletes value the professional relationship with their S&C coach, but they also recognise the importance of being comfortable around the coach and having a good personal connection.

"I think it's important that the coach is firm enough if people are being sort of lazy" [John]

"I think at the beginning...to keep me accountable" [Janet]

"I think there's a level to that, but you still do need that personal aspect..." [Lance]

"I'd want that friendship connection...but I also know when they say to crack on [to continue doing something with energy and enthusiasm] ...I know we need to crack on" [Nina]

3.2.2 Democratic behaviour

Responses suggested that athletes appreciate being involved in decision-making but with varying degrees of participation. Athletes would like an S&C coach to be collaborative and open in hearing input and feedback from them, especially on goal setting and, to a lesser extent, exercise selection. Ultimately, the coach should have the final say but is open to hearing the athletes' input and feedback and implementing their suggestions.

Table 1 Cronbach's alpha (α) reliability test statistics for the six coaching behaviour dimensions of the leadership scale in the current and previously published studies.

Coaching Behaviour Dimension	No. of items	RLSSC Gearity (2003)	RLSSC Tiberi et al., (2024)	RLSSC Present study
<i>Cronbach's Alpha Coefficients (α)</i>				
Autocratic behaviour	8	0.64	0.74	0.57
Democratic behaviour	12	0.83	0.86	0.83
Positive feedback behaviour	12	0.84	0.88	0.84
Situational consideration behaviour	10	0.76	0.62	0.78
Social support behaviour	8	0.75	0.71	0.69
Training and instruction behaviour	10	0.90	0.78	0.80

Table 2. Summary statistics for the coaching preferences of the total pool of athletes.

Coaching Behaviour Dimension	<i>n</i>	<i>Mean</i>	<i>SD</i>	<i>Median</i>	<i>IQR</i>
Autocratic behaviour	49	2.6	0.5	2.5	1.0
Democratic behaviour	49	3.3	0.5	3.0	1.0
Positive feedback behaviour	49	3.8	0.5	4.0	1.0
Situational consideration behaviour	49	3.8	0.5	4.0	0.5
Social support behaviour	49	3.4	0.5	3.5	1.0
Training and instruction behaviour	49	4.1	0.5	4.0	1.0

n = number of responses; SD = standard deviation, IQR = interquartile range

"Being collaborative on exercise selection is more related to accessory rather than core" [Lance]

"I think it's important that athletes have a say and S&C coach is accepting feedback" [Judith]

"Coaches do have the final say, but I'd say really important...athletes want to feel involved with their goal making" [Derek]

"I think it's really important to discuss with the athlete what they want to achieve" [Rita]

"I think it's important...if you have an athlete that's lifting heavy weight" [Judith]

"I think it's very important...it depends on the severity of the lift...every session" [Lance]

"If I'm pushing myself and going heavier and it's hard...I think it's good" [Nina]

"I think it's important...just hit a PR...it needs to be scaled to what really happened...has to be fully deserved" [Derek]

3.2.3 Positive feedback behaviour

Responses suggested that athletes value positive feedback. The importance assigned to this dimension is context-related, calibrated to the type of exercise being performed, and it must be genuinely deserved. It does not have to be in front of peers, but athletes appreciate the authenticity of genuine, positive feedback when they perform a heavy or hard exercise.

3.2.4 Situational consideration behaviour

Responses suggested that situational consideration behaviours are vital for athletes. Factors include time, training load, levels of fatigue, phase of the season, environmental conditions, movement competency, training experience, and the specific sport. Athletes indicated that if situational factors are not considered, problems will ensue, such as

demotivation, disempowerment linked to unachievable goals, and, ultimately, poor leadership.

"Pretty imperative...if not considered to a good extent, realistically you are going to run into issues" [Derek]
"Always consider them...if you choose to completely disregard something, that doesn't necessarily show good leadership" [Dale]
"If you don't consider situational factors...it's hard to reach the goal...it is kind of disempowering" [Janet]
"Important to set achievable goals" [Nina]

3.2.5 Social support behaviour

Responses suggested that athletes do not particularly prefer a coach who explicitly supports personal issues. However, that may depend on the depth and longevity of the relationship. They should, however, be able to recognise what they can say without breaking the boundaries of a professional relationship and potentially direct athletes to other professionals. Nevertheless, athletes value social interaction skills and a genuine interest in establishing connections, showing understanding, and engaging in active listening.

"If it's an issue maybe too personal they shouldn't get involved" [Dale]
"There's a level of what you can say without breaking a boundary" [Lance]
"It's nice to know...you have an S&C coach happy and open to talk about anything that's going on" [Rita]
"S&C coaches know how to talk to people...they are empathetic...they want to get to know you...your goals" [Judith]
"You can refer them to someone, but I think it's important to listen to them" (Lance)
"I think it's quite important...but if it was a bigger factor, the S&C coach should pass them on to someone else" [Jean]

3.2.6 Training and instruction behaviour

Responses suggested that athletes value training and instruction behaviours. Possessing sound knowledge is crucial for athletes, as is the preference for a coach capable of safely overseeing a session, providing corrections when necessary, and spotting areas for improvement when needed. Training and instructional behaviours are particularly suitable in specific contexts, such as learning a new technique, performing a heavy lift, or when athletes exhibit a potentially dangerous technique. Instructions must be

informed, concise and appropriately timed, as excessive instruction can be discouraging.

"Really important when learning a new technique" [Nina]
"So important...every time I am going for a heavy lift or a PR" [Andrew]
"Pretty important...at the right time and probably in the right quantity" [Derek]
"Important...but I wouldn't want an S&C coach over my shoulder always telling me I'm doing something wrong" [Amelia]

3.3 Mixed methods joint display

A joint display of quantitative, qualitative and mixed methods meta-inferences is outlined in Table 3. Mixed methods meta-inferences suggest that quantitative and qualitative results confirm and relate to each other for the six coaching behaviour dimensions of the RLSSC.

4. Discussion

The present study aimed to 1) investigate athletes' preferred coaching leadership behaviours in S&C coaching using the preference version of the RLSSC, 2) examine these preferences further through semi-structured interviews, and 3) evaluate confirmation or divergence when integrating quantitative and qualitative findings on athletes' preferred behaviours. The survey results illustrate that participants' most preferred behaviours were positive feedback, training and instruction (median = 4.0; IQR = 1.0), and situation consideration (median = 4.0; IQR (0.5), followed by social support (median = 3.5; IQR = 1.0), democratic (median = 3.0; IQR = 1.0), with autocratic (median = 2.5; IQR = 1.0) the least preferred behaviour. Qualitative findings suggest how athletes value a balance of autocratic and democratic behaviours, with a greater emphasis on the latter. They appreciate authority in certain situations, valuing personal connection and involvement in decision-making, especially goal setting. Genuine positive feedback is valued when provided for significant achievements. A great emphasis is placed on situational consideration behaviours to set achievable goals. The results confirm that social support is appreciated within professional boundaries, with great value placed on empathy and accessibility. Furthermore, knowledgeable and well-timed instructions are valued, especially for new techniques or heavy lifts.

The qualitative data provide context to the quantitative median score of 2.5 for autocratic behaviour, indicating that the moderately low preference is not a complete rejection but rather a selective one. Together, these findings suggest that athletes prefer a coach who can be adaptable, maintain a professional relationship, and, when necessary, be autocratic but predominantly work to establish a collaborative and personal rapport, as well as a strong personal connection overall.

Regarding democratic behaviours, the qualitative results confirm and expand the quantitative median score of 3.0 by highlighting areas where democratic behaviours are valued mainly by athletes, such as goal setting and, to a minor degree, exercise selection. Integration suggests that athletes appreciate a coaching style that values their input and feedback, promotes collaboration, particularly in goal setting, and, to a lesser extent, in exercise selection whilst respecting the coach's ultimate decision.

The qualitative results provide additional depth to the quantitative median score of 4.0 for positive feedback behaviour by indicating the situations in which positive feedback seems most appreciated. Athletes value genuine feedback linked to real effort and achievement, particularly for heavy exercises. Together, these findings suggest that athletes prefer and value positive feedback most when it is deserved.

The integration analysis for situational consideration behaviours suggests that athletes prefer coaches who frequently adapt their strategies to fit the specific situational context, especially ensuring the achievability of training goals. The qualitative data confirm the quantitative median score of 4.0, indicating an even greater consideration for this coaching dimension, suggesting that athletes not only prefer but require situational consideration behaviours to be a regular aspect of coaching.

Table 3 Joint display of quantitative, qualitative and mixed methods meta-inferences of autocratic, democratic and positive feedback behaviours.

Coaching behaviour dimension	Quantitative findings				Qualitative findings	Mixed methods meta-inferences
	Mean	SD	Median	IQR		
Autocratic behaviour	2.6	0.5	2.5	1.0	Situation-dependent <i>"I think it's important that the coach is firm enough if people are being sort of lazy" [John]</i> <i>"I think at the beginning...to keep me accountable" [Janet]</i> Personal connection <i>"I think there's a level to that, but you still do need that personal aspect..." [Lance]</i> <i>"I'd want that friendship connection...but I also know when they say to crack on...I know we need to crack on" [Nina]</i>	Confirmation Understanding that athletes appreciate an adaptable coaching style, valuing both authority in specific contexts and a strong personal connection overall

Democratic behaviour	3.3	0.5	3.0	1.0	Goal setting <i>"Coaches do have the final say, but I'd say really important...athletes want to feel involved with their goal making" [Derek]</i> <i>"I think it's really important to discuss with the athlete what they want to achieve" [Rita]</i> Exercise selection <i>"Being collaborative on exercise selection is more related to accessory rather than core" [Lance]</i> <i>"I think it's important that athletes have a say and S&C coach is accepting feedback" [Judith]</i>	Confirmation Athletes appreciate a coaching style that values their input and feedback and promotes collaboration, particularly in goal setting and, to a lesser extent, exercise selection, whilst still respecting the coach's ultimate decision
Positive feedback behaviour	3.8	0.5	4.0	1.0	Genuine and deserved feedback <i>"I think it's important...if you have an athlete that's lifting heavy weight" [Judith]</i> <i>"I think it's very important...it depends on the severity of the lift...every session" [Lance]</i> <i>"If I'm pushing myself and going heavier and it's hard...I think it's good" [Nina]</i> <i>"I think it's important...just hit a PR...it needs to be scaled to what really happened...has to be fully deserved" [Derek]</i>	Confirmation Understanding the value of providing positive feedback regularly, ensuring it is genuine, deserved, and linked to the athletes' efforts and achievements
Situational consideration behaviour	3.8	0.5	4.0	0.5	Situational factors <i>"Pretty imperative...if not considered to a good extent, realistically you are going to run into issues" [Derek]</i> <i>"Always consider them...if you choose to completely</i>	Confirmation Understanding the importance of frequently adapting coaching strategies based on a wide range of situational factors, ensuring that training

					<i>disregard something, that doesn't necessarily show good leadership" [Dale]</i>	is realistic and supportive of athletes' goals
					<i>"If you don't consider situational factors...it's hard to reach the goal...it is kind of disempowering" [Janet]</i>	
					<i>"Important to set achievable goals" [Nina]</i>	
Social support behaviour	3.4	0.5	3.5	1.0	Personal issues	Confirmation
					<i>"If it's an issue maybe too personal they shouldn't get involved" [Dale]</i>	Understanding the importance of building rapport, showing genuine interest in the athletes, and being accessible whilst recognising the limits of the S&C coaching role and directing athletes to appropriate professionals for personal issues
					<i>"There's a level of what you can say without breaking a boundary" [Lance]</i>	
					Accessibility and empathy	
					<i>"It's nice to know...you have an S&C coach happy and open to talk about anything that's going on" [Rita]</i>	
					<i>"S&C coaches know how to talk to people...they are empathetic...they want to get to know you...your goals" [Judith]</i>	
					Direct athletes to other professionals	
					<i>"You can refer them to someone, but I think it's important to listen to them" [Lance]</i>	
					<i>"I think it's quite important...but if it was a bigger factor, the S&C coach should pass them on to someone else" [Jean]</i>	
Training and instruction behaviour	4.1	0.5	4.0	1.0	Context	Confirmation
					<i>"Really important when learning a new technique" [Nina]</i>	Coaches should aim to provide knowledgeable, clear, and appropriately timed instructions,
					<i>"So important...every time I am going for a heavy lift or a</i>	

<i>PR" [Andrew]</i>	particularly when learning new techniques or performing heavy lifts
Delivery	
<i>"Pretty important...at the right time and probably in the right quantity" [Derek]</i>	
<i>"Important...but I wouldn't want an S&C coach over my shoulder always telling me I'm doing something wrong" [Amelia]</i>	

SD = standard deviation, IQR = interquartile range

Regarding social support behaviours, the integration of findings suggests that athletes appreciate a coach who is aware of professional boundaries and can recognise when to direct them to other professionals whilst also understanding the importance of showing genuine interest in the athletes to build rapport. Qualitative findings contextualise the median score of 3.5 by indicating that, whilst athletes do not expect their coach to be their confidant, they highly value good social interaction skills and a genuine interest in connecting with them in a friendly and empathetic manner.

Integration analysis for training and instruction behaviours suggests that athletes highly value knowledgeable instructions, especially when they are contextually appropriate, such as learning new techniques or performing heavy lifts, and delivered with the right timing. The qualitative findings lend meaning to the median score of 4.0 for this coaching dimension, indicating that whilst these behaviours are valued, their effectiveness depends on the situation and delivery.

The study expands on existing quantitative research in S&C coaching. Previous studies have highlighted the importance of positive coaching behaviours, including supportiveness, positive feedback, situational consideration, training, and instruction (Lee et al., 2013; Greenslade & Williams, 2019; Tiberi & Moody, 2020; Tiberi et al., 2024). The present study adds depth by suggesting that these behaviours are context-dependent and provides scenarios where they are most appreciated. Additionally, our findings align with Gearity and Szedlak (2022, p. 405), who note that ‘there is no panacea in coach development’ and that a coach should always be ‘in the making’.

Also, it adds to quantitative research by highlighting the importance athletes place on being involved in goal setting. Data integration confirms existing qualitative research in S&C coaching that emphasises the behaviours that foster the coach-athlete relationship. Szedlak et al. (2015)’s key finding was that elite athletes prefer behaviours that serve to develop and strengthen this relationship.

Similarly, Foulds et al. (2019) reported that elite athletes valued coaches adopting an athlete-centred leadership style, characterised by individualised goal setting, to establish a positive relationship. Our findings align with the research and contemporary perspective on an athlete-centred leadership style (Gearity & Szedlak, 2022). However, an interesting finding is that autocratic behaviours are not entirely excluded but are selectively preferred, underscoring the importance of coaching adaptability and the need for further exploration.

To our knowledge, this is the first MMR to offer a perspective on athletes’ preferences for coaching leadership behaviours in S&C coaching, thus providing novel and original data. However, certain limitations must be acknowledged. Sample sizes for both methodologies could have been larger, and the quantitative research design could have used a random sample constrained by practical feasibility. Whilst the qualitative sample offered valuable insights and was designed to support triangulation, its small size ($n = 13$) may not fully capture the diversity of athletes’ perspectives. The length of time required for this MMR project to gain approval, obtain access to participants, and complete data collection, data analysis, and integration was considerable. These processes placed increased demands on the researchers, who decided to prioritise the feasibility of

samples over larger but unrealistic ones. The study relied on participants' complete understanding of the questions and honesty in sharing authentic responses. The value of the study also relied on the accuracy of the researcher's coding of the data and the production of an a priori thematic template. Considering the identified limitations, future research is encouraged to explore alternative sampling strategies to collect more responses from diverse geographical contexts.

Additionally, exploring other direct communication methods with participants could allow a more precise explanation of questions and engagement in the research. Future research could also explore athletes' preferences across various sporting contexts (e.g., professional and youth sports). Replication studies and longitudinal designs could provide valuable insights into how preferences of behaviours evolve over time. Finally, authors should be encouraged to further develop their understanding of MMR approaches, as the combination and triangulation of multiple methods in a study can facilitate a deeper understanding of the coaching process (Gilbert & Trudel, 2004).

5. Conclusion

This MMR project suggests athletes' preferences for coaching leadership behaviours in S&C coaching at a British university. The survey results illustrate the behaviours that athletes prioritise in their interactions with S&C coaches, whilst the qualitative findings suggest contextual considerations for adopting those behaviours. The mixed-methods analysis highlights the importance of coaches being adaptable and fostering genuine, personal connections with their athletes. These findings have potential implications for coaching, suggesting that S&C coaches should consider both athletes' preferences and the contexts in which coaching behaviours occur to develop genuine personal connections and enhance the coach-athlete relationship. Future research could explore the nuances of preferences of behaviour and investigate other forms of behaviour and their impact on athletes' satisfaction and performance in S&C coaching. Ultimately, this research aligns with the contemporary demands placed on S&C coaches to function as interdisciplinary scientists and as good coaches. This study aligns with this perspective, aiming to inspire coaches to approach their practice with curiosity and a desire for lifelong learning.

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Informed Consent

Informed consent was obtained from all participants prior to the commencement of the study.

Ethics Approval Statement

The study was approved by the Cardiff School of Sport & Health Sciences Research Ethics Committee.

Author Contributions

Severiano Tiberi Conceptualization, methodology, Investigation, Writing Original Draft. Jeremy Moody, Joseph I. Esformes, George Jennings and Steve Cooper- Study design, Writing, Review and Editing. All the authors read and approved the final version of the manuscript.

Conflict of Interest

The authors declare that there was no conflict of interest.

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Yes

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