BARRIERS TO THE PRESCRIPTION OF PSYCHOLOGICAL STRATEGIES BY STRENGTH AND CONDITIONING SPECIALISTS
ABSTRACT
The purpose of this paper was to explore the barriers to strength and conditioning coaches integrating psychological strategies within the strength and conditioning practice. The sample of accredited strength and conditioning coaches comprised 10 subjects working within the UK, 3 within the USA and 5 within Australia offering a cross section of experience from a range sporting disciplines and educational backgrounds. Subjects were interviewed using semi-structured interviews and thematic clustering was employed utilizing interpretative phonological analysis to identify common themes. It was evident that not incorporating psychological strategies into strength and conditioning practice could be attributed to either internal, personally governed beliefs, or external, environmentally governed situations. Internal sources consisted of insufficient knowledge either regarding the value of psychological strategies or methods of implementing such techniques in addition the implementation of psychological techniques was outside the remit of the coach and difficulty existed in demonstrating the effectiveness of interventions. External causes consisted of a lack of time, insufficient control and authority of training session content and athletes’ negative perceptions. Recommendations are made on the basis of eliminating the observed barriers to the inclusion of psychological strategies. This included the use of education programs for both strength and conditioning coaches and organizational gatekeepers and the suggestion for increased collaboration with qualified psychologists.

KEY WORDS
Continual professional development; Sport Psychology; Barriers.
INTRODUCTION

Over two decades ago Holloway [1, 2], and more recently, Mellalieu and Shearer [3] suggested that based on the mental skills training approach it would be beneficial to use particular strategies within strength and conditioning. These consisted of goal setting, mental imagery, self-talk and techniques to regulate the activation of athlete. In identifying critical psychological strategies, recent research [4] indicates that certified strength and conditioning coaches consider motivation and confidence amongst the most important psychological factors governing their clients performance. Furthermore, as published by the National Strength and Conditioning Association, the strength and conditioning professional guidelines state that the ability to “use sport psychology techniques to enhance the training and/or performance of the athlete” [5] is a scientific foundation required by certified strength and conditioning specialists. Furthermore it has been suggested that the strength and conditioning specialist, having regular contact with the athlete, albeit independent of the sports coach, is in an ideal position to contribute to the psychological aspects of training [6-8].

Work has sought to identify, from the accounts of strength and conditioning coaches, the specific psychosocial strategies used [9]. It is evident that a significant emphasis is on the development or maintenance of athlete self-confidence as well as a notable focus on skill acquisition and arousal management. Additionally, recent work has advanced this notion and suggests that the role requires knowledge of psychosocial concepts and their respective application [10] with strength and conditioning coaches stating that traditional psychological skills and supporting ‘a rounded development of the individual’ [(p. 7)10] are important elements of practice. This is in congruence with previous role explorations which suggest that as a helping profession, strength and conditioning coaches should use more “softer-
skills” appreciating the requirement for interpersonal skills in fostering an effective client-
coach relationship [11]. Such softer-skills have previously been defined as gaining trust, and

Considering the aforementioned research which suggested strength and conditioning
coaches incorporate psychological principles [4, 9, 10] and indeed the demonstrated benefits
of psychological interventions on performance variables pertinent to the strength and
conditioning discipline [3, 12-17] it is important to further ascertain what may prevent
strength and conditioning coaches from using such principles. The extent to which particular
psychological skills are employed has previously been suggested to be grounded in the
coaches’ level of experience, with lesser experienced coaches employing psychological
strategies less frequently thank their more experienced counterparts [4]. Such reasons were
that the coaches developed their skills within their role rather than through any formal
instruction. This mirrors existing work within physiotherapy and sports coaching [18, 19]
and is evident within strength and conditioning in which experiential learning has been
demonstrated as a method by which coaches refined coaching styles and behaviors [11].

Despite the suggestion that experience accounts for variation in skill use, an interesting
observation was the imbalance between the frequency of skill usage and the perceived
importance of psychological skills. For example, self-confidence was deemed to be vital
attribute for athletes to possess within strength and conditioning, however, strategies to
enhance self-confidence were only moderately ranked in terms of frequency of use [4, 20].
Such a disparity between the frequencies of strategies usage despite the apparent importance
of incorporating such techniques is intriguing and warrants further research.
Previous work has merely offered insight into the quantifiable frequency of psychological skill utilization within training and posed suggestions that the presence of role boundaries and a lack of knowledge were potential limiting factors. Such barriers are, as yet, merely hypothesized based on established literature from differing professional domains and require further detailed exploration. Little attention has been afforded to the rationale surrounding the extent to which psychological concepts are applied by strength and conditioning specialists and only recently has emphasis been afforded to the perceived role of sport psychology within strength and conditioning [10]. It is anticipated that the exploration of reasons for strength and conditioning coaches not incorporating psychological concepts will promote strategies to foster the development of such approaches within strength and conditioning. The aim of the current research was to adopt a qualitative approach to explore the potential barriers to the integration of psychological skills within strength and conditioning with the intention to propose recommendations of methods to promote the use of psychology within the strength and conditioning environment.
METHOD

Experimental approach to the problem

In order to answer the aims of the current research question an approach was adopted where subjects’ narratives were examined in detail prior to the amalgamation of key concepts resonant across the sample to formulate resounding themes. The approach utilized semi-structured interviews to provided narratives from the perspective of the strength and conditioning coach. The narratives were transcribed verbatim and analyzed for key resonant themes using interpretive phenomenological analysis [IPA: 21]. Such a method is applicable when examining topics centered on lived experiences where standardized research instruments may prevent the collection of relevant data [11].

IPA was an appropriate method used to examine the roles which may be implicit within the narratives and omitted using alternative methodological approaches such as content analysis. IPA [21] permits the exploration of the experiences of the strength and conditioning coach which may only emerge at an implicit level and is preferential to other approaches owing to the presumption the perceptions and consequently behaviors are shaped via lived experiences [11]. Such an approach will allow the in depth exploration regarding the perceptions which govern the intentions to employ psychological strategies within the applied setting.

The use of IPA is well suited to the current research questions owing to the notion that lived experiences of the coaches’ account for the underpinning reasoning for the professional practices adopted pertaining to sport psychology. Such an approach has previously been effective in offering valuable insight into the roles and responsibilities of strength and
conditioning coaches [9, 10] whilst, as stated by Tod et al. [11], the use of qualitative methods employing semi-structured interviews have proven successful in answering psychology orientated research questions within strength and conditioning.

**Ethical approval**

Before commencing the study, the Institutional Review Board provided ethical approval for the experimental procedures. Prior to participation all subjects received an invitation email containing participant information including clear explanation of the potential benefits and risks associated with the research, how the data would be handled, the dissemination of findings, and voluntary nature of the study. An email contact was provided for the lead investigator should any potential applicants request additional information.

**Subjects**

Eighteen subjects were recruited for interview, using convenience sampling drawn from a previously obtained sample [4]. Additional snowball sampling [22] was used as a method to enlist potential subjects [23, 24]. Subjects comprised 17 males and one female. 10 subjects were working within the UK, 3 within the USA and 5 within Australia. Each was accredited by either the National Strength and Conditioning Association (NSCA), the United Kingdom Strength and Conditioning Association (UKSCA), the Australian Strength and Conditioning Association (ASCA), or a combination of dual accreditation. The subjects provided a cross-section of experience working as strength and conditioning coach, ranging from two years to over 20 years within various sport disciplines including team and individual sports. All subjects had experience working at a minimum of National level.

**Procedures**

All subjects were approached by email and provided informed consent. Interviews were conducted at a mutually-agreed time and location with specific consideration of time zone
differences and typically lasted between 40-80 minutes. Interviews were conducted face-to-face either in person or via video calls to prevent the location of the subjects becoming barrier to data collection. Data were recorded using a digital voice recorder (Olympus, VN-5500PC), and transcribed verbatim. Interviews were conducted over a four month period from October to January.

The semi-structured interview schedule was composed and scrutinized by specialists from the disciplines of psychology and strength and conditioning for content validity. The questions explored the individuals’ narrative of their experience being a strength and conditioning coach with particular focus on the interactions between coach and athlete. Following the guiding principles of IPA, to promote a fluid narrative from the perspective of the subjects [21], questions were used to prompt discussion the questions were open ended in nature to enable the strength and conditioning coaches to expand on points as deemed appropriate. Examples of the questions included were: “How effective do you consider sport psychology to be within strength and conditioning?”; “Are there any times when it psychology has seemed ineffective?”; “Do you believe your athletes are receptive of psychological support?”; “In your opinion, to what extent are psychological skills used in strength and Conditioning practice? – (follow on probes) why do you think it has been neglected in the past?”; “What are the obstacles to Strength and Conditioning practitioners using psychology in their applied practice?” The questioning was open-ended to allow elaboration around personal professional development and to promote the narrative of the subjects.
Statistical Analyses

The analysis employed IPA following the recommendations of Smith [25] and was conducted with NVivo 9 assistive software (QSR International Pty Ltd., Victoria, Australia) to identify common themes.

The lead author transcribed all interviews verbatim. Adhering to IPA guidelines the transcripts were read to become familiarized with the data and specific context of the data. Each transcript was analyzed to highlight specific instances within the subjects’ accounts. During first stage analysis, Nvivo 9 assistive software (QSR International Pty Ltd., Victoria, Australia) was used to extract pertinent notes from the narratives. Notes were then compiled to form thematic emergences after which the themes were reviewed for confirmation within the contexts outlined during the narrative. Thematic emergences were governed by what was arising from the subjects’ narratives. This procedure was repeated for the remaining transcripts with an evolving ‘master template’ used to focus the analysis [6].

Formal coding of data was conducted in which text extracts were identified within each narrative. To affirm the themes, codes were compared within themes to consider the extent they relate in a meaningful way [11]. A theme was only considered when sufficient similarity existed between codes with appropriate supporting quotes identified. In instances where quotes failed to sufficiently evidence themes the theme was removed from analysis [6]. In addition to reviewing the similarity of the codes in the formulation of themes, relatedness in the themes resulted in higher order themes being developed. As a result, numerous lower order themes sat within the higher order themes of Internal Factors and External Factors.
Validity and Reliability

To increase the likelihood of credible findings, triangulation was used. Triangulation concerns the verification of results by the use of different researchers, different methods, or different sources. In endeavouring to provide triangulation of sources, participant groups were recruited from ranging international settings for instance the UK, the USA and Australia. Thus data source triangulation was performed by which information obtained from subjects from differing cultural and professional backgrounds evidences the extent to which similar thematic emergences occurred across different backgrounds [11]. Audience triangulation was used in which an experienced qualitative investigator reviewed selected quotes to ensure all relevant themes were exposed and to prevent experiment bias [11].

Member checking involves presenting raw data to the subjects to validate the accurate collection of data. Member checking, regarded as the most important method in the demonstration of credible findings [26], can be progressed in elevating levels of detail ranging from confirmation of raw text to presenting the subjects with the interpretation of findings. The present study used member checking to validate the raw text and the presentation of particular thematic emergences. Subjects confirmed the accuracy or the data collection and were in agreement with the major thematic emergences.

Dependability is the ability of the findings to be repeated and consistent, confirmability is the degree to which the research findings are unbiased and attributable to the research subjects. The research audit is regarded as the prime method of demonstrating both confirmability and dependability [26]. The research has adhered to consistent methodological constraints as agreed to and governed by the Institutional Research Ethics
panel, this ensured that the method can be attributed to the research outcome and thus the procedure can be repeated.

RESULTS

In exploring the reasons accounting for the underutilization of psychological strategies within strength and conditioning, it was evident that the reasons could be attributed to either internal, personally governed beliefs, or external, environmentally governed situations (Figure 1).

INTERNAL CAUSES

Insufficient knowledge

A prevalent theme was that the strength and conditioning coaches had insufficient knowledge to implement psychological strategies. Sixty six percent of the interviewed coaches indicated a perceived lack of knowledge limiting the use of psychological strategies. It was interesting that there were prime reasons as to why insufficient knowledge could prevent the utilization of psychological skills and strategies. Such reasons comprise a lack of knowledge regarding the benefits of using psychology and a lack of understanding of how psychology can be implemented.

A prevalent concept was that psychology skills were perceived as valuable within strength and conditioning; however the coaches failed to have the requisite skill to integrate appropriate psychological strategies.
“Well education again. And because like I say I wouldn’t know how to implement a lot of the techniques, or even where to start with it, so I think if I did know what methods there were and how I could implement that into my training or into that session” - Mike, three years experience as a strength and conditioning coach, accredited by the NSCA.

It is clear that the individual is aware of the importance of specific techniques and significant psychological attributes such as mental toughness, however the individual suggests that there is uncertainty “even where to start with it” and thus the foundational knowledge is lacking to allow the coach to initiate strategies within the strength and conditioning setting.

An alternative mechanism through which knowledge governs the intentions to use psychological strategies is regarding the perceived relevance of psychological strategies.

“It could be that’s looking at it from my perspective. Other people might just be ignorant to the fact that psychology is an important part, especially strong minded people who don’t kind of need that psychological training to be positive or to be in a good mind state. They can maybe tend to dismiss it and think why can everybody not just do it, if you know what I mean. It might just be a bit of ignorance and just dismissing the fact that it is important.” - Mike, three years experience, NSCA.

Such an example typifies the notion that there is insufficient confidence in the effectiveness of psychology within the strength and conditioning community. Specifically, there are individuals who may perceive psychology to be only effective for athletes who possess low levels of psychological attributes or adopt maladaptive strategies [8, 27, 28]. Consequently, it is apparent that, rather than the perception of an ineffectiveness, there may be an underlying reluctance to label an athlete as weak through the use of regulatory techniques.

Note relevant within training

Relating to a lack of understanding there was the emphasis by particular individuals that psychology was only useful within the competition setting and as a results strength and
conditioning coaches would not integrate such strategies in the strength and conditioning setting.

“I’d say I wouldn’t think it would transfer onto the pitch that much. Like I say, I think it’s more the skill they need to be confident on the pitch whereas if you can get all the physical attributes right within the training then that’ll become a natural progression onto the pitch so they won’t have to think about too much.” - Mike, three years experience, NSCA.

An emphasis exists that self-regulatory techniques are effective within the competition however do not serve an equitable purpose in the training environment. This perception is problematic owing, not least to the benefits of using psychological interventions in training, but also for benefits of developing skills in practice prior to transfer into competition [29].

Perceived role requirements

In addition to lacking knowledge and misperceptions concerning the application of psychological strategies, a resounding theme was that the role requirements did not dictate the need for strength and conditioning coaches to use psychological interventions.

“Some of the qualifications that are out there for S and C coaches they are very scientifically based and the psychology part of it is not in there at all” - Craig, four years experience, UKSCA.

Such an example typifies that it is not the responsibility of the strength and conditioning coach to administer psychological techniques, a view mirrored in athletic training [30]. It is possible that the perceived scientific underpinning of the strength and conditioning discipline can result in being incompatible with psychological strategies especially relating to the interpersonal skills noted by Tod et al. [11].

In relation to the role requirements there was evidence to suggest that the need for a recognized qualification in psychology was required to utilize psychological strategies.
“I’m not a recognised psychologist; I’m not a chartered psychologist so I certainly wouldn’t want to advertise myself as being one. I think a lot of the things I have learnt, the theoretical stuff, to kind of justify some of my work. Then there are things that I have learnt that I would have liked to use at some stage. [...] But as yet I can’t practice as a psychologist.”- Carl, seven years, UKSCA.

Despite underpinning psychology knowledge there is a reluctance to employ psychological strategies. Thus, in this instance, a perceived ethical line exists which can govern who is qualified to administer such skills and who is unable to offer psychological input. Zizzi et al. [31] previously stated that there are limited guidelines as to what psychological interventions can be applied within coaching. Such ambiguity appears to be also evident within the strength and conditioning discipline. It appears that there is a considerable amount of caution stemming from the uncertainty of what practices are able to be offered by strength and conditioning coaches and what requires specialist input from psychology titled professionals.

The uncertainty of the inclusion of psychological strategies by strength and conditioning coaches is emphasized:

“No and that is my main view from a strength and conditioning accreditation process if there was an element of knowledge of psychology within that would it then kind of allow strength and conditioning coaches to think they are [psychologists]?” - Carl, seven years, UKSCA.

The perception of the blurred boundary between the disciplines of strength and conditioning and psychology are resulting in strength and conditioning coaches demonstrating a reluctance to incorporate psychological elements. This is due to the perceived danger of adopting skills which Strength and conditioning coaches judge to sit outside the remit of the vocation and crossing an ethical boundary without having sufficient recognized endorsement to do so.
Furthermore, there is evidence to suggest that the promotion and integration of psychological skills is not the responsibility of the strength and conditioning coach, rather is the focus of other coaching staff.

“Personally I think that you can and that could play an important role personally however I kind of look the way practice is that I don’t really think it’s my role to talk too much about the way an athlete competes because I think that is the role of the sport coach. I wouldn’t kind of, I wouldn’t really feel comfortable getting into too much of an in-depth conversation with the psychology of the way that that athlete competes.” - David, 20 years experience, NSCA and UKSCA.

“Practically in my experience no one has ever asked me to get involved in that and I have taken that as implicit that they feel they have got that covered.” - David, 20 years experience, NSCA and UKSCA.

There is the belief that it is the responsibility of the technical/head coach and as such the strength and conditioning specialist refrains from contributing to the psychological strategies. This may suggest that the position of the strength and conditioning coach is considered to be specialized and exclusively tasked with physical development, with little incorporation of psychological strategies. Furthermore the quote also suggests that there is a misunderstanding that psychological interventions are less applicable to practice than competition and thus are the responsibility of those who work with the athletes in competition.

Difficulty in quantifying benefits

A factor which appears to influence the intentions of the strength and conditioning coach to use psychological strategies was the ability to observe the tangible benefits of employing psychological strategies.

“I think for me I tend to sway more to things I think like, incorrectly, that you can measure. Things that I assume think are obvious like factual, as we can tell are factual like physiology, biomechanics, where you have got a clear sort of, well right or wrong answer depending on what we know is actually true.
Psychology was something that I never really appreciated” – Jonathan, 3 years experience, NSCA and UKSCA.

It is apparent that the ease of quantifying the benefits of psychological interventions was a determining factor in shaping intentions to use psychology, as has been observed in Association Football [32]. Furthermore there is also the belief that psychological interventions are unable to be measured using quantitative measures consequently difficulty exists in adopting a qualitative approach to appraise the value of psychology. Thus, psychology is be perceived as ineffective and not worthy of the strength and conditioning coaches’ investment due to insufficient methods to demonstrate value.

External Causes

Lack of time

An often cited reason for not using psychological strategies was that there was insufficient time available. Time demands have previously been identified as a prime influence in using psychological interventions within sports coaching [33]. Ranging viewpoints emerged concerning the limiting time factors.

“Just time. If I had more time I would. I work with a few athletes; if I only had one athlete it would be massive on my agenda. Because I work with lots it is more difficult to prioritise the work load to do that research.”- Nigel, eight years experience, UKSCA.

This would suggest that time is a limiting factor and with increased available time there would be more opportunity to incorporate psychological elements. Interestingly with reference made to research, it would appear that rather than the time associated with applying psychological techniques; it could be the limited time afforded to educational practices regarding incorporating psychological interventions within practice.
Authority over coaching practice

An evident factor inhibiting the inclusion of psychological practices was the control that is enforced by stakeholders and authoritative senior coaching staff.

“It’s not until really the coach accepts what you’re doing as a positive that that filters down to the players and they be a bit more compliant and a bit more enthusiastic about the session [...] I know based on one meeting last week that they’ve got ideas themselves of how they want things to be done that I don’t necessarily agree with.” Jonathan, three years experience, NSCA and UKSCA.

It is apparent that the head coach has the respect of the players regarding the integration of training strategies and as such may prove a challenge for the inexperienced strength and conditioning specialist to instigate their own ideas. The need for endorsement from the senior coaching staff is apparent and as such provides an additional barrier should the coaching staff or stakeholders be unreceptive towards psychology.

“Just some of the senior coaches, I don’t know why I am sort of the new kid on the block in that sort of organisation. I was just told that simply we are not going to be going down that avenue with this group of players. They just solely saw my role as a physical conditioning coach and it wasn’t going to be crossing any other lines. Black and white; I was doing the conditioning and that was it.” - Marcus, Five years experience, ASCA

Conflict exists over the perceived role requirements of the strength and conditioning specialist and the perceived requirements by senior staff. It is apparent that the strength and conditioning coaches are prevented from applying key psychological techniques due to the instructions of senior staff. As has been observed in English football [32], the concept of trust and demonstrating the value of psychology to stakeholders is emerging as an important factor which can govern the use of psychology within strength and conditioning practice.

Athlete perceptions

In addition to the reluctance of senior decision makers, the perceptions of the client athlete posed a barrier to the incorporation of psychological strategies though which the athlete
must personally validate the application of psychological principles within their chosen
discipline [34].

“It’s perception; it’s how it is perceived. Perceived as a classroom activity. And
athletes don’t like a classroom and certainly the psychological support that I
have seen has been simply that.”- Marvin, 10 years experience, UKSCA.

Perceiving psychology as a theoretical exercise would appear to be negative with regard to
integrating the use of psychology within strength and conditioning. Thus, it would appear
important for any psychological interventions to be practically orientated and, assuming
requisite knowledge exists, would position the strength and conditioning coach well to
implement psychological interventions

It is possible that athletes’ may view psychology and psychological interventions as a threat,
and that there is a stigma associated with psychology which manifests in a reluctance to
engage in cognitive strategies.

“I just think that a lot of people perceive it as a sign of weakness. That they
think there is something wrong inside their heads to be honest. It draws out
insecurities in people; you know it’s making yourself vulnerable. People don’t
like to be perceived as vulnerable.” - Marcus, five years experience, ASCA.

“[…] yeah like a shrink and that’s how it is perceived in sport. Definitely one
sport, football, springs to mind. It’s the only sport where players are chastised
for training and other players call them ‘busy’ s’ so “oh busy you are, what are
you doing that for, your busy” and footballers like the idea, or it’s the culture,
that they can go onto the pitch, train alright but play on a Saturday and be dead
good.” - Nigel, eight years experience, UKSCA.

The athletes’ negative perception towards sport psychology appears to be shaped by the
misconception that sport psychology is for athletes with problems [35, 36]. Equally, within
particular sports there may be cultural influences shaping misperceptions that athletes’
believe they are successful and do not require additional psychological techniques.
Consequently psychological interventions are perceived to be the reserve of the mentally weak and synonymous with other mental health disciplines [35, 36].

**DISCUSSION**

The present study examined the factors which restrict the use of psychological techniques from the perspective of a sample of strength and conditioning coaches. Factors which were thought to account for the reasons why psychology is neglected consisted of both internal and externally governed barriers. Internal factors including the coaches knowledge and understanding of the application and benefits of using psychological interventions, and perceived role responsibilities whilst external factors such as athlete receptivity and lacking permission from senior staff members prevented the strength and conditioning coach from employing psychological strategies.

Evidence suggested that there was a lack of knowledge of psychological strategies which limited the applications. This comprised two strands; firstly an appreciation of the value of psychology within strength and conditioning, but a naivety to the practical applications of psychology and, secondly, a perceived ineffectiveness of psychology within strength and conditioning. The lack of practical knowledge is reflective of earlier work [19] identifying that 73% of sports coaches believed they had insufficient knowledge regarding the application of sport psychology strategies. The perceived ineffectiveness of sport psychology interventions delivered as part of strength and conditioning practice was a
pertinent theme and indeed this viewpoint is prevalent within sport. In particular there is the
misperception that psychology would only prove useful should the athlete have a ‘problem’
[8, 27, 28] and there is little appreciable difference between sport psychology and other
psychological disciplines [32].

It was evident that there were challenges associated with evaluating the effectiveness of
psychological interventions. As a consequence, psychological interventions within strength
and conditioning were perceived as ineffective by either the strength and conditioning coach
themselves or by the senior stakeholders who govern the professional practices of the
strength and conditioning coach. Comparable findings have been evidenced within
Association Football, in which the value of sport psychology was difficult to ascertain by
senior personnel owing to challenges in measuring tangible benefits [32].

The varying perceptions observed in the current research, which are indicative of either a
lack of knowledge of practical applications or an under-appreciation of the value of sport
psychology, is mirrored within the confounding results of wider sport psychology literature.
For instance research has evidenced the perceived lack of effectiveness of sport psychology
interventions [8, 27, 28, 32] yet, when exploring the component factors which shape an
individual’s attitude towards sport psychology, there is evidence that confidence in sport
psychology is high within the specific demographics of high school American football [37]
and American collegiate swimming [38]. This would suggest that within the specific
contexts, coaches exhibit positive perceptions towards the effectiveness of sport psychology.
Nevertheless the present research does indicate that there are two distinct knowledge-related
barriers areas which must addressed; primarily attitudes towards the effectiveness of sport
psychology and also subsequently the practical applications of sport psychology.
The confidence of the strength and conditioning coach towards the integration of psychological strategies is vital, not least because the coach’s confidence in psychological interventions is the greatest predictor of intentions to employ such techniques [38]. It would be presumed that confidence is fostered by positive previous experiences, and as such it would prove beneficial for strength and conditioning coaches to have opportunities to observe and apply supplementary psychological techniques within the remit of the discipline, with emphasis given to measurable benefits [38].

Sports coaches with less experience have presented a reduced willingness towards psychology than their more experienced peers [37] whilst the more experienced coaches, afforded greater opportunities to experience the benefits of sport psychology, hold a positive attitude towards it. This replicates previous investigations of the evolving role profile [11] and comparing the frequency of psychological skill integration between different experience levels of the strength and conditioning coaches [4]. Furthermore there is the perspective that without exposure to psychology, inexperienced coaches are in a state of unconscious incompetence through which they are unaware that they lack the specific required skills [37]. Ultimately, conclusions of the present work and existing literature direct towards the requirement for coaching staff to have more opportunities to observe and apply integrating psychological strategies in practice with an emphasis on experiential learning.

Although not universal, there was the suggestion that psychology was not relevant within the training environment and only applicable within the competition domain. Such a notion is problematic not least because of the proposed importance of psychology within strength and conditioning [3] but also because of the scientific rationale for the incorporation of
psychology within the training setting. For instance, applying psychological strategies within both competition and practice, rather than exclusively in competition, has resulted in observable benefits to competition and perceived athletic ability [29, 39].

An alternative proposal concerning the barriers to the application of sport psychology by strength and conditioning coaches is the perception that it is not within the role responsibility of the strength and conditioning professional and is the reserve of the psychology titled professional. Such a viewpoint presented by a selection of the interviewees could be considered problematic not least because as posed by the National Strength and Conditioning Association, a facet of the strength and conditioning role is to integrate psychological techniques within training [5]. Additionally, Gould et al. [40] emphasizes the importance for coaches to be aware of interactions of physical and psychological determinant of performance a perspective reflected in increasing emphasis on strength and conditioning coaches proposing self-regulatory strategies within practice [3,4,9,10].

Frequent athlete contact places the strength and conditioning coach in an effective position to provide psychological strategies should the requisite understanding of psychological interventions be present as is observed in ranging disciplines [41-44]. Further support exists with the observation that sports coaches are the main provider of psychological skills to athletes [19] with athletes favoring psychological input from coaching staff rather than psychology titled professionals [28]. Moreover barriers associated with employing sports psychology titled professionals [28, 36, 45, 46] often results in the neglect of psychological skills as part of the athlete’s development should alternative providers not be available. It should be noted that this paper does not serve to advocate that strength and conditioning coaches replace titled sport psychologists - with legal and ethical connotations if they do -
rather should endeavor to adopt principles aligned with psychological skills training as advocated by Mellalieu and Shearer [3].

The strength and conditioning coach may perceive that they do not have sufficient knowledge to implement psychological strategies, however whilst the fact exists that perceived knowledge and understanding is a barrier to sport psychology interventions, it is also apparent that there is an ethical boundary which presents confusion of the responsibilities of the strength and conditioning professional. Such a perception is supported within athletic training when the athletic trainers deem that psychological input is outside their professional remit [30]. Within the sport community questions have been posed relating to the blurred ethical boundary and what actions are accessible for sports coaches and what training or qualifications are necessary to enable professionals’ to offer psychological support [31, 47]. This is further exacerbated as limited guidelines address the application of mental skills within coaching [31]. Clearly without sufficient knowledge and understanding, negative outcomes may arise and impact on the likelihood of applying psychological strategies. Indeed, previous exposure and experiences are a prime influence of athletes’ perceptions of psychology [48, 49]. It is therefore important that strength and conditioning coaches are critical of their own competence in administering cognitive strategies as part of training.

The use of psychology should be promoted by clarifying the location of the ethical boundaries with clear guidance provided by accrediting bodies. It is encouraging that reviews [3] aimed at the strength and condition coach suggest self-regulatory strategies such as goal setting and self-talk are within the remit of the coach however previous research has served to cast doubt on the clarity of the role and the incorporation of psychological
strategies with coaches adopting strategies akin to counselling practices [9]. It is therefore apparent that greater clarity is needed within the profession regarding what practices exist within, and outside, the remit of the strength and conditioning coach.

Thus far, predominantly internal factors have been discussed relevant to barriers to implementing cognitive techniques within training. However there was evidence that within the strength and conditioning domain, time availability is a predominant factor regulating the application of psychological skills. There was the concept that there was insufficient time to allow for the use of psychological skills despite the perceived importance of psychology. Similar findings are observed within physiotherapy [6] and sports coaching [33] and time restrictions are documented within strength and conditioning concerning the addition of extra responsibilities to the already complex role [50]. It would appear that the demanding role of the strength and conditioning professional results in the prioritization of particular responsibilities over psychological interventions. Furthermore the concept of time restrictions was presented as a reason for not employing a sports psychologist as this would detract from time afforded to other training requirements as has been observed in previous research [32, 51]. However such a perception that time as a barrier may be a manifestation of a perception that psychology is not as effective and worthy of the time investment. Although it may initially appear that time is the limiting factor, it is likely that there is a lack of knowledge regarding integrating regulatory strategies within training sessions in a time-effective manner. Such a proposition for the development of strength and conditioning practice aligns with the suggestions of Wilding [52], in which athletics coaches appreciate the value of applying such skills however lack the understanding of the mechanics of integrating such skills within training sessions.
The authority over coaching practice presents an external barrier to the use of sport psychology strategies by strength and conditioning coaches. There were instances where the practice of the strength and conditioning coach was governed by senior coaches or directors, and consequently the perceptions of senior colleagues appears to regulate the extent to which strength and conditioning coaches integrate and apply psychological principles. Previous research has examined the perception of stakeholders and attitudes towards psychology consulting [27, 31, 32, 37, 38, 47]. Notwithstanding that research is focused on the barriers towards the employment of sport psychology consultants, the barriers concerning the perceptions of gatekeepers offer support to the present study which identifies the origin of such a barriers towards sport psychology.

A lack of perceived efficacy of psychological interventions has been observed as one of the greatest influences of gatekeepers’ intentions to employ sport psychologists [38]. Furthermore stakeholders’ misperceptions have been observed suggesting that psychology is not relevant. Ravizza [27] noted the view existed that psychology is only useful should an athlete appear vulnerable [32, 47] and consequently not universally applicable within coaching. Similarly, there is the indication that psychology is common sense and not worthy of integration within coaching [32, 51]. Evidently work is required to educate stakeholders as to the benefits of psychology with a range of contexts, one of which, as evidenced in the current investigation in strength and conditioning.

Sport psychology has previously been documented to be perceived as less important than other performance-related disciplines [32, 47]. Thus, when prioritizing the duties of any coaching staff it is likely that the integration of sport psychology would be neglected in favor of other sub-disciplines and consequently guiding the emphasis to the strength and
conditioning coach away from integrating psychology techniques. Equally, the performance indicator-driven approach which may be adopted by high-ranking gatekeepers presents another problem with preventing strength coaches to use mental skills owing to the difficulty in measuring observable benefits resulting from such interventions, as has previously been observed in Association Football [32]. Consequently it is likely that increased value will be placed on strategies with easily measurable and directly attributable outcomes.

The final prevalent barrier to the incorporation of psychology based strategies considers the perception of athletes. The athlete’s attitude is critical in influencing intentions to use, and to adhere to, psychological strategies [49] and enabling the inclusion of psychology within strength and conditioning. It is evident that within sport coaching there is a stigma attached to the use of psychology. The present study would suggest that, whilst not universal, negative attitudes still exist that consider sport psychology to be applicable only for athletes with problems. The misconception prevails that sport psychology is synonymous with other mental health professions, for example psychotherapy and clinical psychology [35, 36]. The athletes perception of the discipline is important as stigma tolerance of athletes is widely regarded as a limiting factor when considering the application of psychological skills [35, 37, 38, 53, 54]. Moreover fear of ridicule from peers has also been observed to negatively influence athletes’ intentions towards sport psychology [36]. Consequently it is likely that, in particular instances, negative attitudes of athletes are likely to inhibit the effectiveness of any interventions within strength and conditioning deemed to be psychological in nature and result in a reluctance of the strength and conditioning coach in implementing such techniques.
The results of the present study offer an important insight into the experiences of strength and conditioning coaches regarding factors preventing the incorporation of psychological strategies as part of applied practice. Nevertheless it is recognized that, despite large agreement in the accounts of the subjects indicative of generalizable findings, it is not the objective of qualitative methods to provide truly generalizable findings. Furthermore, although the sample originated from a population of accredited professionals, there is an underrepresentation of female coaches. Nevertheless there was no notably different responses between genders. An additional consideration in the timing of the interviews whereby factors such as time demands, fatigue or competitive stressors could impact the findings. However the subjects accounts were inclusive of examples from throughout the season and indeed the subjects from ranging sports would be working to different competitive cycles and no reference was made to the impact of seasonal timing. This study adds to a growing body of work examining facets of practice from the perspective of the strength and conditioning coach [9, 10, 11] and serves to highlight salient issues which govern applied strength and conditioning practice.

PRACTICAL APPLICATIONS

Concerning the increasing demand for psychological skills training [55] and the unrealistic view that qualified psychology-titled professions provide psychological skills in their entirety [56], with appropriate role clarification, other support staff could be involved with teaching of psychological skills [31]. This is evident within athletic training [7, 42, 43, 57, 58], physiotherapy [6, 18, 59-62], and sport coaching [63]. This would be especially important concerning the financial and logistical barriers to employing a psychologist [32, 51] resulting in athletes being unable to receive the professional services of a sport psychology consultant. It is clear that, with appropriate role descriptors and boundaries
positioned, strength and conditioning professionals can provide a valuable service to the
athletes they support.

In order to facilitate the strength and conditioning professional in employing psychological
strategies it would be well advised to promote educational workshops regarding the use of
psychological strategies specifically tailored to the strength and conditioning domain. These
should specifically focus on instructing the athlete in self-regulatory strategies such as goal
setting, mental imagery, self-talk, of which there is empirical evidence of acute
improvements made to strength and conditioning related exercises [3].

Strength and conditioning coaches cited a lack of confidence in applying psychological
strategies as part of strength and conditioning practices. As a result, greater professional
links are needed between sport psychologists and strength and conditioning coaches.
Twofold benefits will arise that coached gain an understanding of the application of
psychological strategies within practice and psychologists gain and understanding of the
complexities of the role of the strength and conditioning coach. Furthermore, it has been
noted that strength and conditioning coaches develop skills experientially [4, 11] with fellow
coaches providing a valuable educational resource [11]. Thus strength and conditioning
coaches would be advised to seek mentoring opportunities within the profession to share
good practice.

Greater clarity is required concerning the role responsibilities of the strength and
conditioning coach with regard to the use of psychological techniques. Whilst this paper
does not serve to advocate strength and conditioning coaches taking the place of the sport
psychologists particular techniques are within the remit of strength and conditioning coaches
and as such additional clarity could be provided within the professional standards to provide clarity, and reassurance, regarding what interventions are applicable to the practice of the strength coach. Furthermore, efforts to promote the use of psychology in strength and conditioning should address external barriers where by educational programs are aimed at club and organization gate keepers regarding the benefits of psychology and added value the physiologically minded and educated strength and conditioning coach can bring.

REFERENCES


Barriers to using psychology in strength and conditioning


Figure 1 Thematic emergences depicting the most prevalent resonant themes indicated via size categorised into internal and external factors.