Mental Skills Strategies that have been Successfully used to Enhance Performance in Sport: A Systematic Review

Gondo Thembelihle

Zimbabwe Open University, Box 1210, Masvingo.

DOI: https://dx.doi.org/10.47772/IJRISS.2023.7011153

Received: 10 November 2023; Accepted: 18 November 2023; Published: 22 December 2023

ABSTRACT

The objectives of the study were to identify existing literature on mental skills strategies that have been successfully used to enhance performance in sport, to synthesize research results and create a summary of evidence on what has been done to enhance performance in sport, and to determine interventions that have been used to enhance performance in sport. The study examined relevant accessible studies from 2006 to 2016. Potential databases for the review were Ebscohost, PsychInfo, CINAHL and Google scholar although some articles were denied access and hence excluded. Eligibility criteria for included studies in the review were competitive student-athletes. A total of nine studies met the inclusion criteria. Cognitive behavioural theory formed the basis of interventions. The outcome of the study was that interventions, when consistently and appropriately done, result in performance enhancement. There was the need for coaches to educate athletes on the most appropriate ways of enhancing athletes' sporting performance and that these efforts are sport specific. It also emerged that the length of mental skills training is not fully utilised and applied by most athletes in practice and competition games. The results obtained in this review showed that the most utilised mental skills in enhancing sporting performance in netball and other disciplines were imagery, positive self-talk, goal setting and relaxation. Results from the review concluded that mental skills training could enhance players' performance when used in a sports setting. This does not matter whether these skills are unimodal or multimodal in an intervention. It is recommended that future research focus more on the impact of these mental skills in team sports and best practices of imparting these skills using interventions. Again, other techniques that enhance performance can also be considered in team sports to enhance cohesion and team building.

Key words: Mental skills, mental skills strategies, cohesion, team building, goal setting, self-talk

INTRODUCTION

Mental skills training (MST) has been primarily developed as a necessity rather than an option for athletes who now need to learn more about their individual and team mental skills (MS) (Birrer & Morgan, 2010; Gardener & Moore, 2012; Gould et al., 2014; Rothlin et al., 2016). This then allows for life skills to be learn and leads to a considerable increase in the amount of control and coordination of their agility in-game movement after employing different psychological strategies and techniques of performance enhancement. Developing these MS require different sporting psychological methods of realising task performance during training and competition (Gould et al., 2014; Rothlin et al., 2016). These can be divided into two different basic systems somatic and cognitive strategies. Cognitive is the thought process of preventing anxiety and is the mental element of the anxiety management whereas, somatic is the physical element of anxiety management and an element that allows athletes to show their anxiety through actions within their sport (Anton et al. 2020; Parnabas et al., 2014). Somatic is behavioural while cognitive are affective responses associated with stress. Although these two are completely different, the main purpose of having the two

systems is to realise the attainment of self-mastery, which is the desire to control or direct the individual athlete. In team sports, MS is utilised as one of the best ways of enhancing team performances.

CONCEPTUAL FRAMEWORK

A psycho-educational model of sports psychology practices informed the systematic review process that was used in this study and is known as the Life Development Intervention (LDI) Model (Danish et al., 1993; 1995). The emphasis of this model is on self-directed change in individual athletes. Thus, individual athletes undergoing MST are expected to be goal-directed and to set the short-term goals that will help them to achieve their long-term goals of performance enhancement. It guides and empowers athletes to understand better what needs to be done to enhance their sporting performances, rather than solely rely on the coaches' programmes. Consequently, coaches may also adopt this model to optimise the learning of MS of their athletes as it focuses on performance enhancement (Danish et al., 1992; Park et al., 2013). Athletes should find it possible to freely transfer or apply their newly learnt MS to their current sporting contextual performances. This process is likely to positively change athletes' sporting performances since it is based on the psycho-educational approach. Afterwards, players are expected to efficiently use their skills to lift team performance through such techniques as goal setting (GS) and self-talk (ST).

RESEARCH QUESTIONS

Therefore, this systematic review sought to show support or evidence by systematically assessing available literature regarding interventions that have been successfully done to enhance performance in sport. The primary aim of this section was to review previous studies on mental skills that have been used on sports performance enhancement of athletes for collegiate athletes. The following questions guided the review: What MS strategies have been successfully used to enhance performance in sport? What are the MST interventions that could be used to achieve maximum athletic performances?

INCLUSION CRITERIA

Limitations were set to include only peer-reviewed, full-text studies carried out in English and published between 2006 and 2016 when the researcher completed the systematic review. Additional sources such as dissertations, books as well as conference proceedings papers were also scrutinised and included. The selected studies used samples of adults and especially of competitive collegiate players. Randomised studies that reported on MST were also selected and included in the review. Empirical studies reviewed looked at studies that have focused on the use of MST or psychological skills training. More importantly, the study included studies that utilised both qualitative and quantitative methods, enhancing the validity of the review. In terms of participants for empirical studies, the quantitative component of this review considered studies that had participants who were adults or collegiate athletes from team sports, both male and female. The qualitative component of the review considered studies where the participants were just collegiate athletes. This was to enhance the specificity of the review itself and make sure that the review had dates falling within the review period.

EXCLUDED STUDIES

Any studies that looked at MS on children or adults with disabilities, were excluded from the review. Besides, studies that focussed on risk sports or studies done before the year 2006 were excluded from the review. Studies with inappropriate and incomplete methods were excluded, including those with irrelevant age groups. Again, those studies that were not original research and those with ineligible study size were excluded. Those studies that contained text that were not relevant as well as systematic scoping and other reviews were excluded from this review.

SEARCH STRATEGY

The search strategy was aimed at finding published studies, and in doing so, a three-step strategy was utilised in this review. An initial search was undertaken, guided by analysing text words in the title abstract and the index terms used to describe the article. Additionally, a second search that identified keywords was undertaken across the database. The database search included Ebscohost, PsycINFO and CINAHL, Google Scholar, although some of the articles were denied access and excluded from the study. A reference list of all the identified studies used to identify additional studies was also drawn up.

METHODOLOGICAL QUALITY APPRAISAL OF INCLUDED STUDIES

Studies meeting the inclusion selection criteria were assessed within the systematic review period. A methodological quality appraisal tool adapted from Roman and Frantz (2013) was used to evaluate the sampling techniques, internal and external validity, reliability, selection bias, attrition bias, selection, allocation in the randomisation process and blinding. Concerns of validity measures to ensure consistency and reduced bias in the selection and assessment process Charles and Nixon., 2019). Studies that rated "satisfactory" to "good" category were included in the review. The researcher was engaged in the process of assessing each study using a quality assessment tool. The assessment tool evaluated the following elements using a codified system for each domain with a yes/no question and ratings; study design, population and sample size, measuring tools for data collection and outcome measurement. A total of 2196 potential records were identified from Ebscohost, PsychInfo, CINAHL and Google Scholar. Additional sources were also identified through other sources, and these were 120 making the total studies screened by title and abstract 2316. Duplicated papers that were excluded from the study were 240. Articles excluded were 148 and these were excluded from the study due to the following reasons: text not relevant, inappropriate/incomplete methods, systematic scoping and other reviews, irrelevant age groups, not original research and ineligible study size. Summary of screening articles is in Figure 1.

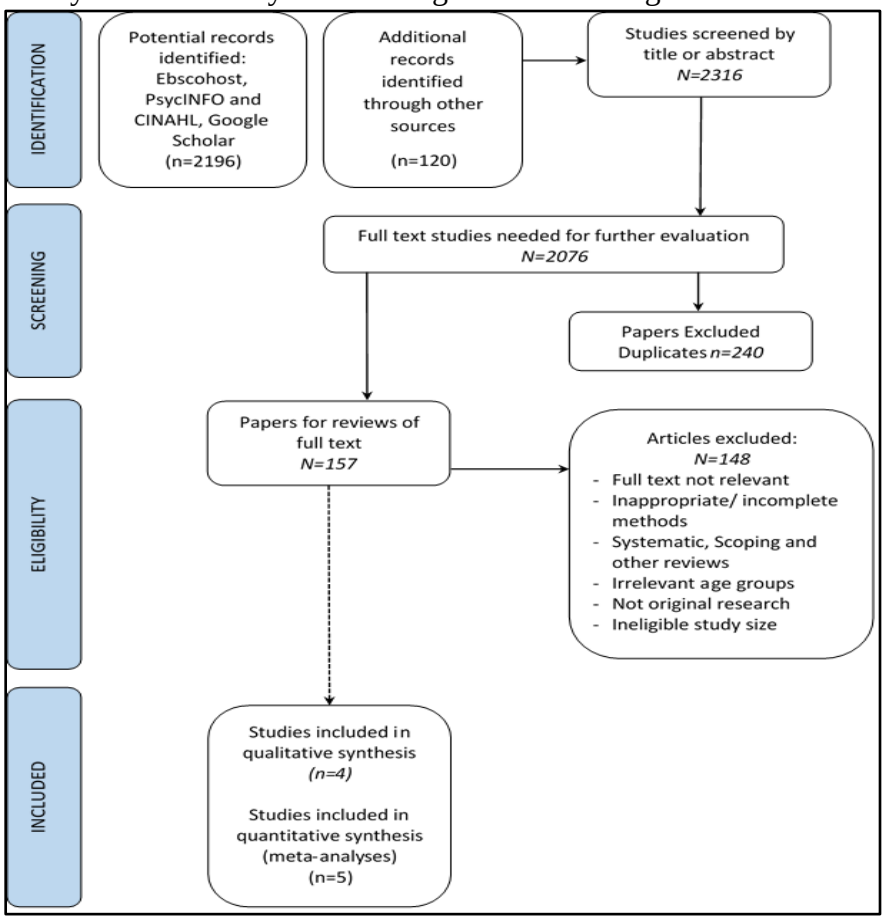

Figure 1 Screening of Articles

ISSN No. 2454-6186 | DOI: 10.47772/IJRISS |Volume VII Issue XI November 2023

Data Extraction

Data Extraction tool

A data extraction sheet was designed to identify relevant individual authors, population and sample size as well as outcomes scored and graded in terms of quality Table 1. The researcher assessed the strength of the current research evidence by using methods established in the Evidence-Based Practice Centers' methods' guide for effectiveness review and comparative effectiveness review. The search was conducted by the researcher who also reviewed the selected 9 articles. The screening process on selected and available databases using key words which were netball, MS, MST, collegiate netball players. Assessments in the methods of extraction were based on consideration of domains that included: field of study, sampling process and design clarity, explicit methods, drop out, ethical consideration and rigorous analysis of data. The researcher determined the strength of the evidence of each study separately and scored it according to a range of poor (0-33%), satisfactory (34-66%) and good (66-99%).

Based on the PICO criteria for this study, with a population of students a total of 9 relevant articles were finally selected from Ebscohost, PsychInfo, CINAHL and Google Scholar as already mentioned before. The comparisons made it possible for the researcher to establish MST patterns by making global comparisons and outcomes.

Table 1: ***Scoring sheet for the critical appraisal***

Reference	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	***TS**	**%**
1. Dewiggins, 2012	1	1	1	0	1	0	0	0	0	1	1	1	1	8	61.5
2. Hassan et al., 2014	0	1	1	1	1	1	1	0	0	0	1	1	1	9	69.2
3. Horn et al., 2011	1	1	1	0	1	1	1	0	0	1	1	1	1	10	76.9
4. Krishanan, 2008	0	1	1	1	1	1	1	0	0	0	1	1	1	9	69.2
5. Sadeghi et al. 2010	1	1	1	1	1	0	1	1	0	1	1	1	1	11	84.6
6. Sharp et al., 2013	0	1	1	1	1	0	1	1	1	1	1	1	1	11	84.6
7. Golby & Wood 2016	1	1	1	1	1	1	1	0	0	1	1	1	1	11	84.6
8. Woodcock et al., 2011	0	1	1	1	1	1	1	1	0	0	1	1	1	10	76.9
9. Wadey & Hanton 2008	0	1	1	1	1	1	1	0	1	1	1	1	1	11	84.6
Scoring method (*TS) Total score divided by the number of items															

An extraction tool using the logical model by JBI-QARI was adapted and used. The study then adopted the narrative processes to summarise data findings from the Systematic Review (Petticrew & Roberts, 2006). Once a study was identified for inclusion, data were extracted and entered a normalised database which looked at two levels. Firstly, the study level variables included the authors, year of publication and site of the extraction. Secondly, the middle-level variables included the age group, case finding and the diagnostic criteria. Utilising standardised forms, the researcher meticulously extracted data regarding the study designs and descriptions of the study populations, baseline and outcome data. This review also captured data on the timing of assessments to inform quality. Principal outcomes of interest included the impact of psychological training on performance levels and the mental skills utilised by collegiate athletes to improve their sports performance. The scoring sheet used for a critical appraisal is indicated in Table 1.

RESULTS

From the total articles 9 articles that were initially retrieved and based on PICO criteria for this study

ultimately 9 studies met the criteria for inclusion in this study Table 2. details of the results are therefore contained in the discussion that follows.

Table 2 Data extraction information articles for this review

Author and Date	Study Design	Population and sample size	Instrument	Country	Intervention	Outcome
DeWiggins (2012)	Experiment	Collegiate female track and field	AMSSE	Australia	Intervention	Positive thinking Improved team performance Accelerated team performance
Hassan et al., 2014	Semi-experimental with pre- & post-test	Semi elite n=22	OMSAT-3	Tehran	16 weeks intervention imagery, relaxation, GS, ST & focus training	Intervention had positive effects on foundation, psychomatic & cognitive skills
Horn et al. (2011)	Experiment with pre- & post-test	Female college players n=19 Self-efficacy	UNIFORM	Central California	10-week MST Intervention based on the transtheoretical model Combination of GS, Relaxation, imagery & ST 25min classroom lessons weekly	Necessary skills learned Increased application of relaxation & GS (practice) Relaxation imagery & ST in competition Significantly increased their application of relaxation and goal setting during practice and their application of relaxation, imagery and self-talk in competition The majority applied & utilised skills during practice and competition, No improvement in the athletes' self-efficacy throughout the programme
Krisham, 2008	Experiment	n=35 elite n=35novice	MIQ-R	India	12 weeks intervention	Imagery is effective in reducing anxiety Imagery significantly improved self-confidence

Sadeghi et al., 2010	Descriptive	8 male University football players	Interviews	Kuala Lumpur	Face to face interviews	Imagery, GS, ST & relaxation are most needed & associated with football performance
Sharp et al., 2013	Descriptive	male n=21	Focus group	UK	MST program profiling GS, ST, arousal control & imagery	Athletes understanding of MS lacking expectations of MS low increased knowledge of MS, aided team cohesion, transferrable to other sport & life
Wadey & Hanton, 2008	Descriptive	Elite athletes n=15	Semi structured interview 4 TOPS subscales	UK	No intervention usage of GS, ST, Imagery & relaxation	Participants maintained the intensity of anxiety before the competition High level of confidence deployed GS, ST, Imagery, facilitated anxiety-related symptoms
Woodcock et al., 2011	Single case study	Female university	Interview Reflective case notes	UK	Intervention	Efficacy of IZOF framework Enhanced skills in emotion regulation
Golby & Wood 2016	Survey 2 group x 3 time two way	Female rowers n=16	SMT-Q PPI-A	UK	6 months intervention ST, concentration, focus, self-confidence, imagery	MT significantly improved. In addition, self-efficacy, self-esteem & positive affect improved

DISCUSSION

The findings above from the systematic review show that the mental skills that are mainly used to enhance sporting performances of team sports are imagery, GS, ST and relaxation (Horn et al., 2011; Sadeghi et al., 2010; Wadey & Hanton, 2008). Greenspan and Feltz advocated for multimodal approach of mental skills training. Other commonly utilised MS include, among others, energy management, attentional focus, self-awareness, self-confidence, team confidence, cohesion, communication and leadership. However, the use of imagery by team sports was more prevalent in the players as it was utilised in competition settings (Krishnan, 2008; Wadey & Hanton, 2008). In addition to this, the imagery also enhanced confidence, a trait that also enhanced the sporting performance of athletes. Most literature showed that many training interventions had the effect of significantly increasing athletes' application of relaxation and ST during competitive game situations (DeWiggins, 2012; Hassan & Saadi, 2014; Hassan et al., 2014; Horn et al., 2011). However, there is no indication from this literature of the best practices in terms of MST in a team sport appropriate for any team sport, let alone netball, used in tertiary institutions performance enhancement.

Results from the review are discussed in terms of the need for coaches to educate athletes on the most appropriate ways of enhancing athletes' sporting performance and that these efforts are sport specific. At the same time, the objective of this review was to locate the best practices in terms of MST. However, the

filtered literature focused more on the impact of psychological training on sporting performance and the application on specific athletes. Effective use of the psychological skills is always targeting the cherished goals through certain intervening variables, which also depend on the type of sport. The reviewed articles revealed that understanding of MS was lacking, and the expectation of MS was also said to be low (Sharp et al., 2013). It was further revealed that intensity of anxiety was maintained before the competition, and imagery facilitated anxiety-related symptoms and effectively reduced anxiety (Krishnan, 2008; Wadey & Hanton, 2008). Again, the review revealed that increased knowledge of MS aided team cohesion whilst the individual zones of optimal functioning (IZOF) framework's efficacy enhanced emotion regulation skills (Woodcock et al., 2011; Krishnan, 2008).

Increased knowledge of MS also results in their efficient application, and results from the review revealed that positive interventions had significant effects on foundation, psychosomatic and cognitive skills (Hassan et al., 2014; Hassan & Saadi, 2014). When MS is learnt, it can be easily transferred and used in other aspects of human life.

The literature systematically reviewed here shows the impact of mental skills training programmes on the performance enhancement of athletes (DeWiggins, 2012; Horn et al., 2011; Woodcock et al., 2011). The use of imagery and positive thinking impacts team sports performance (Krishnan, 2008). Again, Krishan (2008) also observed that imagery significantly improved self-confidence, which improved the overall performance of competitive players. Other studies similarly cited exposed athletes to varying psychological skills like positive thinking and ST, GS, concentration and routines, arousal regulation and imagery. From these results, what emerges is that athletes' sporting performance is more significant for those who engage in much intense ST than those who do not. As a result, MS tend to eliminate performance problems in athletes. Overall, all these studies showed that MS is a vital aspect of team sporting performance as it impacts the self-concept of athletes and the athlete's sporting performance. Additionally, the imagery was the most utilised skill imparted to athletes during MST, enhancing sporting performance.

The results obtained in this review showed that the most utilised MS in enhancing sporting performance in netball and other disciplines were imagery, positive ST, GS and relaxation (Horn et al., 2011; Sadeghi et al., 2010; Wadey & Hanton 2008). In addition, Horn et al. (2011) further concluded that there was an increased application of relaxation and GS for practice whilst the significant increase in the application of relaxation, imagery, and ST was prevalent in competition. Most players applied and utilised MS during practice and competition (Horn et al., 2011). Thus, from the data assessed in the review, the most popular concepts that have been used for individual and team sports at tertiary institutions are limited to imagery, ST, relaxation and GS. Contrary to Golby and Wood (2016), who concluded that self-efficacy, self-esteem, and positive affect improved during MST, Horn et al. (2011) concluded that there was no improvement in the athletes' self-efficacy. This means that there is undoubtedly a research gap in the potential of designing new MST programmes.

CONCLUSION

Results from the review concluded that MST could enhance players' performance when used in a sports setting. This does not matter whether these skills are unimodal or multimodal in an intervention. Ensuring that the necessary skills are learned to increase their application during practice and competition is necessary. Team performance can be accelerated by positive thinking, and this will ensure that MS is fully utilised and applied by most athletes during practice and competition. These skills included transcended meditation, cue words, autogenic training, among other methods. There are certainly some gaps in the psychological skills being used to enhance sporting performances. It also emerged that the length of MST is not fully utilised and applied by most athletes in practice and competition games. It is recommended that future research focus more on the impact of these MS in team sports and best practices of imparting these

skills using interventions. Again, other techniques that enhance performance can also be considered in team sports to enhance cohesion and team building.

REFERENCES

1. Anton, N., Bean, E.A., Myers, E. & Stefanidis, D. (2020). Optimizing learner engagement during mental skills training: A pilot study of small group vs. individualized training. Am J Surg. 219(2):335-339.
2. Birrer, D. & Morgan, G. (2010). Psychological skills training as a way to enhance athlete's performance in high-intensity sports, Scandinavian Journal of Medicine & Science in sports, 20(Suppl. 2), 78-87.
3. Charles, R.L, Nixon, J. (2019). Measuring mental workload using physiological measures: A systematic review. Appl Ergon. 74:221-232
4. Danish, S.J. Petipas, A.J. & Hale, B.D. (1993). Life Development Interventions for athletes: Life skills through sports. Counselling Psychologist, 21, 352-385.
5. Danish, S.J. Petipas, A.J. & Hale, B.D. (1992). A Development Educational Intervention model of sports psychology. The Sport Psychologist, 6, 403-415.
6. Danish, S.J., Petitpas, A., & Hale, B.D. (1995). Psychological interventions: A life development model. Sport psychology interventions. 19-38.
7. DeWiggins, S., Hite, B. & Alston, V. (2012). Personal Performance Plan: Application of Mental Skills Training to Real-World Military Tasks, Journal of Sport Psychology, 22(4), 458-473.
8. DeWiggins, T. (2012). NCAA Division 1 student athletes' receptivity to mental skills training by sports psychologists. The Sports Psychologist, 23, 470-485.
9. Gardener, F.L. & Moore, Z.E. (2012). Mindfulness and acceptance models in sport psychology: A decade of basic applied scientific advancements. Canadian Psychology, 53, 39-318.
10. Golby, J., & Wood, P. (2016). The effects of psychological skills training on mental toughness and psychological well-being of student-athletes. Psychology, 7(06), 901-913.
11. Gould, D., Dieffenbach, K., & Moffett, A. (2002). Psychological characteristics and their development in Olympic champions. Journal of Applied Sport Psychology, 14, 172-204.
12. Greenspan, MJ, Feltz, DL. (1989). Psychological interventions with athletes in competitive situations: a review. Sport Psychol. 3(3):219-236.
13. Hashim, H.A., & Yusof, H. (2011). The effects of progressive muscle relaxation and autogenic relaxation on young soccer players' mood states. Asian Journal of Sports Medicine, 2(2), 99-105.
14. Hassan, M. & Saadi, S. (2014). Psychological skills of elite and non-elite volleyball players. Annals of Applied Sport Science, 2, 31-36.
15. Hassan, G., Elham, D., & Hassan, M. (2014). The effects of psychological skills training (PST) program on selected mental performance of adolescent female footballers. Journal of Research in Humanities and Social Science. 2(7), 73-76.
16. Horn, T.S., Bloom, S., Berglund, K.M. & Packard S. (2011). Relationship between collegiate athletes' psychological characteristics and their preferences for different types of coaching behavior. Sport Psychol. 2011;25(2):190-211.
17. Krishnan, J. (2008). Does imagery work? Effects on performance and mental skills. Journal of Imagery Research in Sport and Physical Activity, 3(1), 1-21.
18. Park, S., Lavallee, D., & Tod, D. (2013). Athletes' career transition out of sport: A systematic review. International Review of Sport and Exercise Psychology, 6(1), 22-53.
19. Parnabas, V.A., Mahamood, Y., Parnabas, J., & Abdullah, N.M. (2014). The Relationship between Relaxation Techniques and Sport Performance. Universal Journal of Psychology, 2(3), 108 – 112.
20. Petticrew, M. & Roberts, R. (2006). Systematic Reviews in social sciences: A practical guide. Blackwell Publishing.
21. Roman, V.N. & Frantz, J.M. (2013). The Prevalence of intimate partner violence in the family: a systematic Review of the implications for adolescents in Africa. Oxford University Press.

http://fampra.oxfordjournals.org/ [accessed on 31/01/2014].

22. Röthlin, P., Horvath, S., Birrer, D., & Holtforth, M.G. (2016). Mindfulness promotes the ability to deliver performance in highly demanding situations. Mindfulness, 7, 727-733.
23. Sadeghi, H., Omar-Fauzee, M.S., Jamalis, M., Ab-Latif, R. & Cheric, M.C. (2010). The mental skills training of university soccer players. International Education Studies, 3(2), 81-88.
24. Sharp, L-A., Woodcock, C., Holland, M.J.G., Cumming, J., & Duda, J.L. (2013). A Quantitative evaluation of the effectiveness of a Mental Skills training Program for youth Athletes. The Sport Psychologist, 27, 219-232.
25. Wadey R, & Hanton S. (2008). Basic psychological skills usage and competitive anxiety responses: perceived underlying mechanisms. Research Quarterly for Exercise and Sport. 79(3):363-73.
26. Woodcock, C., Holland, M., Duda, J. & Cumming, J. (2011). Psychological Qualities of Elite Adolescent Rugby Players: Parents, Coaches, and Sport Administration Staff Perceptions and Supporting Roles. Sport Psychologist. 25. 411-443.