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PERFORMANCE STRATEGIES OF JAPANESE RUGBY PLAYERS

By

Shogo Tanaka

A THESIS

**Submitted to
Michigan State University
in partial fulfillment of the requirements
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ABSTRACT

PERFORMANCE STRATEGIES OF JAPANESE RUGBY PLAYERS

By

Shogo Tanaka

Over the last two decades, there has been increased attention paid to psychological skills usage among high level athletes. However, little is known about these skills in Japanese rugby players. Considering the significant role of practice in competition outcomes, a need exists to assess the usage of psychological skills in both performance domains. The purpose of this study was to assess the usage of psychological skills utilized by Japanese rugby players in both practice and competition. This study also aimed to test the ability of the Test of Performance Strategies (TOPS) to differentiate competitive level, competitive experience, positions, and psychological strength. The TOPS was administered to 352 players, including 95 Top League and 257 college players. Discriminant function analyses demonstrated significant differences between Top League and college players in both the competition and practice performance strategies. Furthermore, significant competitive experience differences were identified in both performance contexts. Contrary to the predictions, no significant differences were obtained from positional and psychological strength comparisons. The 16 subscales of the TOPS, with four exceptions, create an internally stable instrument with moderate predictive ability relative to performance level and competitive experience in this sample of Japanese rugby players.

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TABLE OF CONTENTS

LIST OF TABLES.....	vi
CHAPTER 1	
INTRODUCTION.....	1
Hypotheses.....	4
CHAPTER 2	
LITARATURE REVIEW.....	5
Psychological Skills and Athletic Performance.....	5
Psychological skills Research in Rugby.....	12
Psychological Skills and Performance Level.....	15
Psychological Skills and Position.....	17
Psychological Skills and Competitive experiences.....	19
Self Report Questionnaires of Psychological Skills Use.....	20
PSIS.....	20
ASCI-28.....	21
TOPS.....	22
Purposes of the Present Study.....	24
CHAPER 3	
METHOD.....	25
Participants.....	25
Measuring Instrument.....	25
Demographic and Background Information.....	27
Coaches' Evaluation.....	27
Procedures.....	28
Statistical Analysis.....	29
CHAPTER 4	
RESULTS.....	31
Descriptive Statistics on the TOPS.....	31
Correlation Among Strategies.....	32
Comparison of Player Groupings.....	34
Top Leaguer Versus College Player Comparison.....	34
Competition analysis.....	34
Practice analysis.....	35
Competitive Experience Comparison.....	35
Competition analysis.....	36
Practice analysis.....	37
Positional Comparison: Forwards Versus Backs.....	37
Competition analysis.....	37
Practice analysis.....	37

Positional Comparison: More Versus Less Important Positions Comparison..	38
Competition analysis.....	38
Practice analysis.....	38
Psychological Strength Comparison.....	38
Competition analysis.....	38
Practice analysis.....	38
Correlation among strategies for psychologically strong players.....	38
Correlation among strategies for psychologically weak players.....	40
 CHAPTER 5	
DISCUSSION.....	42
 APPENDICES.....	51
Appendix A. Test of Performance Strategies.....	52
Appendix B. Demographic Questionnaire.....	68
Appendix C. Coaches' Evaluation.....	70
Appendix D. Consent Form.....	71
 REFERENCE.....	73

LIST OF TABLES

Table 1	
Summary of Literature.....	7
Table 2	
Means, Standard Deviations, and alpha coefficients for the Test of Performance Strategies subscales.....	31
Table 3	
TOPS subscale correlations.....	33
Table 4	
Top League versus college players comparison of performance strategies.....	34
Table 5	
More versus less experienced players comparison of performance strategies.....	36
Table 6	
TOPS subscale correlations for psychologically strong players.....	39
Table 7	
TOPS subscale correlations for psychologically weak players.....	41

Chapter 1

Introduction

After the 1995 Rugby World Cup, the International Rugby Board replaced the rules regarding amateurism and consequently rugby has become a professional sport (Treasure, Carpenter, & Power, 2000). Following the professionalism of the sport, observers have witnessed a significant increase in the speed and pace of the game and, as a result, the time available for thinking and decision-making has decreased. Consequently, the psychological challenges inherent in this interactive, continuous sport have become even greater. Grant Fox, one of the most potent scorers of New Zealand's famed "All Blacks", stated "The skill and the will – 30% of skill and 70% of will ..." is what makes a player successful (Hodge & McKenzie, 1999). Although top rugby players always have well developed physical and technical skills, many of them believe that what set them apart from those who have not reached the same level of achievement are their psychological skills (Hodge & McKenzie, 1999). Similarly, coaches often refer to mental toughness when attempting to describe the elusive quality that distinguishes the great players from the good ones at any level of rugby (Hodge & McKenzie, 1999). John Kirwan, the head coach of Japan national rugby team, said, "I think it's really important that we establish a way of playing but also a spiritual way in which we act and play"(J SPORTS, 2009). As rugby has been regarded by coaches as a ultimate thinking game because it requires complex tactical decision making, it is clear that mentality is a crucial part of rugby performance. Therefore, understanding the psychological demands of rugby and psychological skills used by rugby players is of significant interest of researchers, coaches, and athletes.

Many studies have shown that successful rugby players, as well as other top athletes from different sports, have better and/or more frequent use of psychological skills compared to their less successful counterparts. Researchers have examined the relationship between different psychological skills and rugby performance by comparing players of different performance levels, players from different playing positions, and players with different competitive experiences (Maynard & Howe, 1989; Tsutagawa, 1989; Okamoto, Takatsu, & Terada, 1998; Wada, Murakami, Yamamoto, Hashimoto, & Tokunaga, 2001; Hodge & McKenzie, 2002; Golby & Sheard, 2004; Kruger, 2005). It has been found that players from higher performance levels have better commitment, self-talk, imagery, attentional control, negative energy control, emotional control, motivation, concentration, confidence, game strategies, fighting spirit, relaxation, decision making, self-control, and cooperation. In regard to playing positions, significant differences are found between halfbacks and others, backs and forwards, and more important positions (hooker, number 8, scrum half, fly half, fullback) and others (prop, lock, flanker, inside centre, outside centre, winger). Lastly, players with more competitive experience have been found to have better psychological skills. Considering these results, it is clear that certain psychological skills are related to success in rugby. However, no previous research examined whether mentally stronger players utilize more psychological skills, in spite of coaches' beliefs that those players significantly influence team performance. Therefore, further research is still needed for several reasons.

First, only a few studies have examined the psychological skills used by rugby players. Especially in Japan, no research has investigated mental skills used by Japanese rugby players after the Japan Rugby Football Union established the Top League in 2003.

Therefore, the assessment of psychological skills that are utilized by Japanese rugby players is of both theoretical and applied interest to sport psychologists. Also, it is not unreasonable to think that influence of professionalism has caused an increase in psychological demands on Japanese rugby players and as a result of this, differences in psychological skills use between Top League players and college athletes are likely to have become more significant. Because no previous literature compared the psychological skills use of college athletes and Top League players, examining the differences will contribute significantly to our knowledge base regarding the differential application of psychological strategies between top players and college players.

Second, none of the previously reviewed rugby literature utilized the Test of Performance Strategies (TOPS; Thomas, Murphy, & Hardy, 1999), which has been widely implemented in the sport science research. This instrument is a promising measure for assessing the use of a number of important psychological skills in athletes, both in competition and practice environments. Although the TOPS has been successfully and extensively utilized in sport psychology research in general, the psychological skills use of rugby players has not been studied using TOPS.

Finally, the assessment of psychological strategies used by rugby players in both practice and competition is needed. Considering the significant role of practice in sport outcomes, it is surprising to note that current research has focused on psychological skills use only during competition. Because athletes spend enormous time and effort in practice, investigation into the roles of both practice and competition psychological skills strategies in performance outcome is warranted.

Although past researchers have demonstrated the positive effects of psychological skills usage on sport performance, none of them have identified the usage or potential benefit of psychological skills use in Japanese rugby players. Therefore, the purpose of this study is to assess the use of psychological skills in Japanese rugby players both in competition and practice environments. The present study also aims to investigate the ability of TOPS to differentiate performance level, competitive experience, and playing positions in the sample of Japanese rugby players. Finally, the ability of TOPS to correspond with the coaches' evaluation of players' psychological strength is examined.

Hypotheses

The following hypotheses are proposed.

H₁. Top League players will utilize more psychological skills than college players.

H₂: More experienced players will utilize more psychological skills than less experienced players.

H₃: Backs players will utilize more psychological skills than forward players.

H₄: Players on more important positions will utilize more psychological skills than their counterparts.

H₅: Psychologically strong players will utilize more psychological skills than psychologically weak players.

Chapter 2

Literature Review

This study is designed to assess the use of psychological skills in Japanese rugby players both in competition and practice environments. The research on psychological skills and athletic performance will be reviewed. Special emphasis will be placed on examining psychological skills use in rugby players, and players who play different positions, and individuals of different competitive levels. Finally, questionnaires used to assess psychological skill use will be reviewed.

Psychological Skills and Athletic Performance

Over the last two decades, researchers and practitioners have gained fundamental knowledge and understanding about the psychological skills that have the potential to enhance athletes' performance (Mamassis & Doganis, 2004). Additional evidence of development in this area is the number of practitioner oriented materials (books, videotapes, workbooks, etc.) for coaches and athletes that have been developed. Today, there are more than 190 books regarding mental skills use to enhance athletic performance (Williams, 2001). Moreover, many researchers have tested the effectiveness of sport psychology and psychological skills use by evaluating the implementation of mental training programs (Mamassis & Doganis, 2004; Miller & Donahue, 2003; Weinberg & Comar, 1994) and assessing the efficacy of sport psychology consultants (Gould, Murphy, Tammen, & May, 1991). A number of studies have demonstrated a direct relationship between improved performance and the use of psychological skills.

In order to gain sound knowledge of mental skills use in sports and the methods used to measure psychological skills, the focus of research has progressed to an

examination of how and what types of psychological skills are being used by whom. Investigators in the field have examined the effectiveness of individual psychological skills on performance (Landin & Hebert, 1999; Li-Wei, Oi-Wei, Orlick & Zitzelsberger, 1992) and the effectiveness of a mental training program on performance (Mamassis & Doganis, 2004; Patrick & Hrycaiko, 1998). It has been shown that use of psychological skills is effective for both elite and non-elite athletes.

In the mid-1970s, research comparing successful athletes to less-successful athletes began with Mahoney and Averbach's (1977) study of the psychological characteristics of 1976 U.S. Olympic qualifiers and non-qualifiers in men's gymnastics. They found that the qualifiers more effectively managed their anxiety, handled adversity better, had higher self-confidence, and utilized internal imagery more frequently. Following the Mahoney and Averbach's examination of this issue, many researchers have conducted investigations and found that more successful athletes had higher self-confidence, more effectively control and utilization of anxiety, greater frequency of positive thoughts, better concentration, and had better control and more vivid internal imagery (Meyers, Cooke, Cullen, & Liles, 1979; Highlen & Bennett, 1979; Gould, Weiss, & Weinberg, 1981; Highlen & Bennett, 1983; Mahoney, Gabriel, & Perkins, 1987; Smith, Schutz, Smoll, & Ptacek, 1995). For summary of these literatures see Table 1.

Table 1 *Summary of Literature*

Author (year)	Purpose	Subject	Measurement	Main findings
Mahoney, M. J., & Avenier, M. (1977)	To examine psychological factors which relate to athletic competence	13 elite male gymnasts	A standardized questionnaire (which assess personality, self-concept, strategies in training and competition) Interview	Dream frequency, self-verbalizations, and mental imagery seemed to differentiate the best gymnasts from those who failed to make the Olympic team. Two groups showed different anxiety pattern and different methods of coping with competitive stress.
Highten, P. S., & Bennett, B. B. (1979)	To examine psychological factors that differentiate successful and unsuccessful elite athletes.	39 elite wrestlers (24 qualifiers and 15 nonqualifiers)	Wrestling Questionnaire (which assess specific categories and cognitive processing)	The two factors most contributing to the differences between groups were self-confidence and maximum potential, with qualifiers indicating that they were more self-confident and closer to achieving their maximum potential than nonqualifiers. Qualifiers exhibited less anxiety than the nonqualifiers and better able to focus their attention.
Meyers, A. W., Cooke, C. J., Cullen, J., & Liles, L.	To replicate the findings of Mahoney and Avenier (1977) with raquetball players.	9 elite college raquetball players	Modified questionnaire (Mahoney and Avenier, 1977)	Better performers tended to be more self-confident, reported less self-doubt, had more raquetball thoughts in everyday situations, exhibited more self-talk in training and competition, and performed more successfully in raquetball dreams. Less skilled players reported higher anxiety than skilled players during competition.
Gould, D., Weiss, M., & Weinberg, R. (1981)	To examine psychological characteristics of successful and nonsuccessful Big Ten wrestlers.	50 Big Ten collegiate wrestlers	Psychological Preparation In Wrestling Questionnaire which was a modified version of Mahoney and Avenier's (1977) instrument.	Self-confidence, maximum potential, and use of attentional focusing were the most important variables differentiating the successful and nonsuccessful wrestlers. Few differences in anxiety level or in coping responses to anxiety were evident between two groups.

Table 1 (cont'd)

Author (year)	Purpose	Subject	Measurement	Main findings
Highlen, P. S., & Bennett, B. B. (1983)	To identify psychological factors differentiating successful and nonsuccessful divers.	39 elite wrestlers and 44 elite divers	Diving Questionnaire	Self-confidence and concentration distinguished qualifiers from nonqualifiers in both sports. Use of imagery differentiated successful divers from their counterparts. No differences were found on imagery, self-talk, instruction, and praise between divers and wrestlers. Successful divers and less successful wrestlers reported higher precompetition anxiety, while nonqualifiers in both sports scored higher anxiety during competition.
Maloney, M. J., Gabriel, T. J., & Perkins, T. S. (1987)	To assess psychological skills relevant to exceptional athletic performance.	126 elite athletes, 141 preelite athletes, and 446 nonelite athletes	Psychological Skills Inventory for Sports	Elite athletes tended to report better anxiety management, concentration, self-confidence, mental preparation, and motivation than nonelites
White, S. A. (1993)	To examine the relationship between the PSIS, experience, and practice commitment.	131 male and female collegiate skaters	Psychological Skills Inventory for Sports	Six PSIS subscales (anxiety, concentration, confidence, mental preparation, motivation, and team emphasis) demonstrated acceptable internal reliability a Female placed greater emphasis on team than male.

Table 1 (cont'd)

Author (year)	Purpose	Subject	Measurement	Main findings
Smith, R. E., Schatz, R., W., Smolt, F. L., & Piacsek, J. T. (1995)	To develop multidimensional scale that measures seven classes of psychological coping skills.	762 high school athletes	The Athletic Coping Skills Inventory-28	Confirmatory factor analyses demonstrated the factorial validity of the ACSI-28. The overachievers scored higher than underachievers on total score as well as coachability, concentration, and coping with adversity.
Thomas, P. R., Murphy, S. M., & Hardy, L. (1999)	To develop and validate the Test of Performance Strategies.	472 athletes from a wide variety of sports	Test of Performance Strategies	Internal consistencies of the subscales ranged from .66 to .81. Older performers used emotional control strategies more, but imagery and activation strategies less than younger performers during practice. The international, national, junior national and other/high school athletes scored somewhat higher than club/recreational and college/regional athletes on goal-setting. International athletes scored significantly higher than club/recreational athletes and college/regional athletes on imagery, and significantly higher than junior national, other/high school, and college/regional athletes on relaxation. Male international and national standard athletes tended to score higher than the college/regional and club/recreational athletes on most subscales.
Gould, D., Dienerbach, K., and Moffett, A. (2002)	To examine psychological talent and its development in Olympic champions.	10 American Olympic champions	Qualitative interview Test of Performance Strategies	Olympians scored higher on goal setting, relaxation, automaticity, and emotional control for competition, and goal setting and attentional control for practice. Olympians scored lower on negative thinking for competition and imagery for competition.

Table 1 (cont'd)

Author (year)	Purpose	Subject	Measurement	Main findings
Frey, M., Laguna, P. L., & Ravizza, K. (2003)	To examine college athletes' mental skill use in practice and competition, their mental skills training experience, and their perceptions of success.	199 NCAA Division I baseball (113) or softball (86) players	Test of Performance Strategies Self-Perception of Quality of performance Questionnaire	Athletes used more mental skills in competition than in practice. Mental training experience had no influence on their use of mental skills.
Taylor, M. K., Gould, D., and Kolo, C. (2008)	To investigate differences in performance strategies of US Olympians in practice and competition.	172 US Olympic athletes (52 medalists and 124 nonmedalists)	Test of Performance Strategies	Medalists scored higher on emotional control, and automaticity on competition scale and self-talk and emotional control on practice scale than nonmedalists. Female scored higher on positive self-talk on competition scale than male. Younger athletes score higher on automaticity and older athletes scored higher on imagery.

An example study in this line of research, which used a unique and highly elite sample was one conducted by Gould, Dieffenbach, and Moffett (2002). These investigators identified the psychological characteristics of 10 American Olympic champions using both qualitative interviews and psychological questionnaires. They reported that the Olympians scored the highest on goal setting, relaxation, and emotional control for competition on the Test of Performance Strategies (TOPS; Thomas, Murphy, & Hardy, 1999), which examines the psychological skills and strategies used in competition and practice. On the practice scales, the Olympians showed high scores on goal setting and attentional control. The researchers described that goal setting, focus control, and arousal control were important psychological factors for success for these top athletes. Gould and colleagues also compared these results to the 65 international athletes who were involved in the original scale development study of Thomas, Murphy, and Hardy (1999). On the competition scale, the Olympians had significantly higher scores on emotional control, automaticity, and relaxation, and lower on negative thinking, while the international athletes scored higher on imagery. With regards to practice, the Olympians exhibited higher score on goal setting and attentional control and lower score on imagery.

Taylor, Gould, and Rolo (2008) further examined psychological skills use of Olympic athletes comparing participants who differed in their medal status, gender, and age. Participants were 176 U.S. athletes who competed at the Sydney Summer Olympics, including 52 medalists and 124 nonmedalists. The researchers reported that medalists scored higher on emotional control, and automaticity on competition scale and self-talk and emotional control on practice scale, while nonmedalist scored higher on imagery on competition scale. Furthermore, significant gender and age differences were found on the

competition strategies, as female athletes reported more positive self-talk than their male counterparts, younger athletes scored greater automaticity than older athletes, with imagery more often used by the older athletes than their younger counterparts. It was suggested that medalists more frequently employ psychological skills and strategies in both practice and competitive environments than nonmedalists.

Psychological Skills Research in Rugby

After the 1995 Rugby World Cup, the International Rugby Board replaced the rules on amateurism and as a result of these rule changes rugby has become a professional sport (Treasure, Carpenter, & Power, 2000). In Japan, rugby had been a semiprofessional sport but as a result of international trend of professionalism, Japan Rugby Football Union decided to establish the Top League and rugby has become a partially professional sport. Cox and Yoo (1995) noted that success in professional sport is not only dependent on the physical and tactical aspects of the events but psychological skills as well. Rugby, of course, is not an exception and similar psychological skills demands are placed on the rugby players' as are placed on other professional athletes (Garraway, Lee, Hutton, Russell, & Macleod, 2000).

Maynard and Howe (1989) recruited 144 rugby players from the Vancouver Island Rugby Union League and examined the main effect of levels of playing standard, age, and playing position and their relationship with attentional style. The Test of Attentional and Interpersonal Styles (TAIS; Nideffer, 1976) was administered and no significant main effect of interaction was noted for playing standard. However, it was found that halfbacks showed better attentional style than their counterparts. The researchers also reported that the attentional subscale of test (Narrowing) did discriminate

between players of different ages. While interesting the results must be viewed with some caution as the TAIS has been shown to have some psychometric problems and is not a comprehensive measure of psychological skills use (Landers, Furst, & Daniels, 1981).

Golby and Sheard (2004) investigated whether mental toughness, hardiness and their respective subscales distinguish rugby league players operating at different levels of performance. The Psychological Performance Inventory (PPI; Loehr, 1986) and the 18-item Personal Views Survey III-R (Maddi & Khoshaba, 2001) were administered to 155 professional rugby league players from international level, super league, and Division one. The researchers found that international players scored higher on commitment, control, challenge, negative energy control, and attentional control. Again, some caution must be taken when interpreting these results as the PPI is an unvalidated measure of psychological skills.

Tustagawa (1989) examined the psychological aptitude of 75 Japanese adult rugby players. The Taikyo Sport Motivation Inventory (Matsuda, 1981), a Japanese specific measure, was administered and their scores were compared to the original Sport Motivation Inventory study of scale development. The results showed that the participants scored higher on emotional control, mental toughness, fighting spirit, sport value, positive attribution, ego orientation, and lower on anxiety scale. The researcher also reported that significant differences were found on emotional control, game planning, and anxiety between players with higher performance levels and their counterparts. It is concluded that the players with higher performance level have better psychological aptitude and strong motivation. However, the measurement employed in

this study was designed to assess athlete's motivation and it is not for assessing the use of psychological skills.

Okamoto, Takatsu, Takada, and Terada (1996) conducted a similar line of research with a larger sample. They investigated psychological ability of 144 male adult rugby players who competed at the National Athletic Meeting. The results showed that back players were superior to forward players in self-confidence and the ability to make the game plans. The players of more important positions (hooker, number 8, scrum half, fly half, fullback) scored higher on self-confidence, the ability to make game plans, and cooperation than the other players (prop, lock, flanker, inside center, outside center, winger). The difference regarding performance outcome was also found as the semifinalists scored higher on the will to have a game than the players belong to the seventh, eighth, ninth, and tenth teams. This study did demonstrate the differences regarding playing position and performance outcome. However, the findings should carefully be interpreted because the athletes compete at the National Athletic Meeting are selected as regional representatives and they do not always compete at top level in Japan. Therefore, it is questionable whether these findings also apply to Top League rugby players.

Okamoto, Takatsu, and Terada (1998) investigated psychological ability of 87 college rugby players in relation to their performance level, balance of psychological skills, and athletic career. Significant differences between elite and normal level players were found on motivation, concentration, confidence, game strategies, fighting spirit, relaxation, and decision making. Regarding the balance of psychological skills, participants exhibited higher scores on fighting spirit, motivation, self control,

concentration, while they scored lower on confidence and game strategies compared to the ideal balance of psychological skills. It should be noted that no significant differences were found in terms of age at which participants initiated their rugby career, indicating that having a longer athletic career does not improve psychological skills. However, the findings of this study should not be applied to the general population because participants were from a minor subdivision of Japanese college rugby league.

Neil, Mellaieu, and Hanton (2006) examined the intensity and direction of competitive anxiety symptoms and psychological skills usage in rugby union players of different skill levels. Participants were 65 elite and 50 nonelite players and they completed the TOPS, Modified Sport Anxiety Scale, and Competitive Trait Anxiety Inventory-2. It was found that the elite group reported more facilitative interpretations of competitive anxiety symptoms, higher levels of self-confidence, lower relaxation usage, and greater imagery and self-talk use than their nonelite counterparts. The researchers suggested that nonelite performers primarily use relaxation strategies to reduce anxiety intensity, while elite athletes appear to maintain intensity levels and adopt a combination of skills to interpret symptoms as facilitative to performance.

Although research that examines psychological skills use in rugby is limited, it has been demonstrated that performance levels, playing positions, and competitive experience are related to psychological skills. However, additional research is needed, especially studies employing validated measures of psychological skill use.

Psychological Skills and Performance Level

Researchers have demonstrated the positive relationships between psychological skills use and performance level (Golby, & Sheard, 2003; Neil, Mellalieu, & Hanton,

2006; Okamoto, Takatsu, & Terada, 1998; Tsutagawa, 1989; Wada, Murakami, Yamamoto, Hashimoto, & Tokunaga, 2001). Rugby players at higher performance levels have been found to demonstrate better or frequent use of imagery, self-talk, commitment, attentional control, negative energy control, emotional control, motivation, concentration, confidence, game strategies, fighting spirit, relaxation, decision making, self-control, and cooperation than players with normal or lower performance levels.

Golby and Sheard (2003) examined mental toughness and hardiness of 155 professional rugby league players and found that international players scored higher on commitment, control, challenge, negative energy control, and attentional control than super league and Division one players. Tsutagawa (1989) studied the psychological aptitude of 75 Japanese rugby players who played at the highest national league at the time. Participants were divided into three groups based on their performance level and significant group differences were found on emotional control, planning, and anxiety. The author concluded that the players at a higher performance level demonstrated better psychological aptitude and strong motivation. Regarding Japanese college rugby players, Okamoto, Takatsu, and Terada (1998) compared psychological ability of 39 top level and 48 normal level players. Top level college players scored significantly higher on motivation, concentration, confidence, game strategies, fighting spirit, relaxation, and decision making than normal players. In the high school setting, researchers reported that elite players had better motivation, patience, self-control, relaxation, cooperation, mental toughness, and anxiety control (Wada, Murakami, Yamamoto, Hashimoto, & Tokunaga, 2001; Takada, Shibata, Komeji, Suda, & Saijo, 1992). Finally, Neil, Mellalieu, and Hanton (2006) examined and compared the use of psychological skills in 65 professional

and 50 semi-professional players. Professional players scored significantly greater on self-talk and imagery than their counterparts, while semi-professional players indicated more use of imagery. These findings provide evidence that rugby players at higher performance levels possess better psychological skills than their counterparts who play at less elite levels. However, it should be noted that no single study examined psychological skills use across all levels of competitive categories (high school, college, Top League). Although it has been found that elite college players have better psychological skills than nonelites, and adult players with higher performance levels are different in the use of psychological skills compared to their counterparts with lower performance level, the differences in the use of psychological skills between college players and Top League players have not been examined. Therefore, it is not clear whether players at different competitive categories have different or better psychological skills. Additionally, most of the studies conducted in Japan employed relatively small samples and it should be recognized that there is a lack of generalizability because of this issue.

Psychological Skills and Position

One of the main characteristics of rugby is the diversity of playing positions on a team. Therefore, the relationship between players' position on a team and their psychological characteristics should be investigated. This seems to be an important area of research because demands placed upon athletes are thought to differ as a function of playing position. For example, in the sports of basketball, volleyball, and football, the point guard, setter, and quarterback respectively play central and highly visible roles on their teams (Cox, 1987; Cox & MacManama, 1988). However, there is limited research that addresses the relationship between playing position and psychological characteristics

of the athlete. Nation and LeUnes (1983) reported that defensive backs (safeties & cornerbacks) in American football showed the most favorable profile of mood state on the Profile of Mood States (POMS; McNair, Lorr, & Droppleman, 1971) compared to other offensive and defensive positions. Schurr, Ruble, Nisbet, and Wallace (1984) examined the relationship between playing position in American football and personality. They found that successful lineman (first & second string) tended to be realistic, logical, and analytical as a group. Successful lineman reported to be more organized, predictable, and practical than successful backfield players. Also, successful defensive backs were decidedly more introverted than other categories of successful players, whereas successful defensive linemen were decidedly more extroverted. Regarding to psychological skills use, Cox and Yoo (1995) conducted research utilizing TOPS and reported that differences in psychological skills exist between linemen and backfield players, regardless of team (offense/defense). Backfield players were superior on anxiety control, concentration, and confidence. It was suggested that backfield players in American football possess greater psychological skill than do their counterparts on the line. The results of these studies provide support for the hypothesis that a relationship exists between psychological characteristics of the athlete and player position. However, only a few studies exist that investigate the positional differences in rugby from psychological aspects. Moreover, some of this research used questionable measures of psychological skills.

Maynard and Howe (1989) examined playing position and attentional style of 144 rugby players. They reported that halfbacks (scrum half/fly-half) exhibited significantly higher broad external focus of attention and lower reduced attentional focus than other

positional groups, suggesting that the halfbacks are more effective at integrating many environmental stimuli at one time. Halfbacks were reported to be the highest on two of the three effective attentional components and lowest on two of the three ineffective attentional components. Okamoto, Takatsu, Takada, and Terada (1996) investigated and compared psychological ability of 142 Japanese rugby players and their position played. The researchers found that backs players were superior to forwards players in self-confidence and the ability to make the game plan decisions, especially predicting the game situation. It was also found that players of more important positions (hooker, number 8, scrum half, fly half, fullback) are superior to other players (prop, lock, flanker, inside centre, outside centre, winger) in self-confidence, the ability to make the game plans, and cooperation. The authors concluded that the players of more important positions had better psychological skills because of higher demand of responsible roles on these positions. These findings suggest that positional differences exist in rugby in terms of psychological skills. However, the strength and nature of the relationship remains unclear. Factors that could influence this relationship, such as years of experience, player age, and previous success have not been controlled in the existing research.

Psychological Skills and Competitive Experience

One area of research in need of study is examining the relationship between competitive experiences and psychological skills use, because only a few studies have examined this relationship. In the study of attentional style in rugby players, Maynard and Howe (1989) found that attentional subscale discriminated between players of different ages. However, the lack of a control group made it impossible to assess whether

these findings were due to increasing years in the sport (experience), the increase in age, or both. Wada, Murakami, Yamamoto, Hashimoto, and Tokunaga (2001) investigated the psychological skills of Japanese high school rugby players and reported that players with five or more years of athletic career experience had better motivation, confidence, decision making than players with less than a five year career. Additionally, they reported that players who had attended more competitions indicated greater patience, fighting spirit, motivation, confidence, and decision making than players with less competitive experiences. Contrary to these findings, no significant difference was found between psychological skills of Japanese college rugby players and their years in rugby (Okamoto, Takatsu, & Terada, 1998). The researchers concluded that having a longer athletic career does not enhance psychological skills. Considering the limited research and their contradicted results, investigation on the relationship between psychological skills and competitive experience is highly in need.

Self Report Questionnaires of Psychological Skills Use

The self-report questionnaire is the method that has been most often used for assessing psychological skills knowledge and use. O'Connor (2004) found that 66% of sport psychology consultants in the survey reported using questionnaires in their applied work. Consultants use both validated measures and self-created measures in order to assess the skills and techniques an athlete uses.

PSIS

The initial tool for assessing psychological skills that was commonly used in the early research is the Psychological Skills Inventory for Sport (PSIS) developed by Mahoney, Gabriel, and Perkins (1987). The PSIS was developed to determine the

differences in elite, pre-elite, and collegiate level athletes in their use of psychological skills to improve their performance in sport. This measurement assesses six cognitive abilities related to sport performance including anxiety control, concentration, confidence, mental preparation, motivation, and team focus. Although the PSIS successfully ascertain the differences between athletes of varying abilities and was a widely used instrument for sport psychologists (Gould, Tammen, Murphy, & May 1989; White, 1993), its validity and reliability have been unstable. In fact, Mahoney (1989) found that non-elite weightlifters scored higher than elite weightlifters on five of the six subscales. In addition, Chartrand, Jowdy, and Danish (1992) found low internal reliability for five of six subscales as well as unacceptable goodness-of-fit statistics in a confirmatory factor structure. Therefore, there are considerable difficulties in using PSIS because it contradicts the assertion that this measurement discriminates elite and non-elite athletes. Hence, while it helped spur early research it is not used by contemporary researchers.

ASCI-28

Another questionnaire designed to measure sport-specific psychological skills is the Athletic Coping Skills Inventory-28 (ASCI-28; Smith, Schutz, Smoll, & Ptacek, 1995). The ASCI-28 provides a total score of an athlete's psychological skills by evaluating seven subscales including coping with adversity, peaking under pressure, goal setting and mental preparation, concentration, freedom from worry, confidence and achievement motivation, and coachability. It has been shown to have good reliability and validity. In the original study, 762 high school athletes from six different sports were classified into underachievers and overachievers based on physical talent rating and

performance rating by their coaches. The overachievers scored higher on total score as well as some subscale scores (coachability, concentration, coping with adversity). In the second study, Smith and Christensen (1995) found that ACSI scores for 104 minor-league baseball players predicted performance measures (batting average for hitters, earned run average for pitchers). Also, higher scores on the ACSI predicted player survival or continued involvement in professional baseball. However, the ASCI-28 as well as other measurements does not investigate psychological skills and strategies used in practice. Considering the importance of preparation for competition, research focus should be placed on psychological skills use during both practice and competition.

TOPS

Given the fact that many athletes spend an enormous amount of time and effort on preparation for competitions, it is surprising to note that all the previously reviewed inventories are not designed to assess psychological skills use in both practice and competition. Hence, instruments that measure psychological skills use in both situations are necessary because of the significant influence of practice on performance outcome. The Test of Performance Strategies (TOPS; Thomas et al., 1999) was developed as a psychometric instrument to assess mental skills used by athletes in both practice and competition. This 64-item instrument evaluates athletes' use of 16 psychological skills including eight competition subscales and eight practice subscales. The competition subscales include positive self-talk, emotional control, automaticity, goal setting, mental imagery, activation, relaxation, and negative thinking, while the practice subscales include attentional control instead of negative thinking. The TOPS has been successfully utilized in the sport science literature, linking psychological skills in both practice and

competition to perceptions of success (Frey, Lagun, & Ravizza, 2003), self-efficacy (Lowther, Lane, & Lane, 2002) and competitive anxiety responses (Fletcher and Hanton, 2001). Given the enormous time that athletes spend in practice, investigation into the roles of both practice and competition strategies in performance outcomes is highly needed.

In the original study, the TOPS was developed and validated using a diverse sample of 472 Austrian athletes (Thomas, Murphy, & Hardy, 1999). Alpha coefficients for the competition strategies subscale ranged from .74 to .80, and the practice strategies subscales ranged from .66 to .78. Furthermore, correlational analysis indicated moderately strong correlations among many of the strategies, suggesting that athletes who tend to use one or more of the competition or practice strategies use many of the other strategies. In addition, considerable overlap was found in the use of particular psychological strategies across the two performance conditions. Finally, analysis of variance demonstrated that older performers reported less use of mental imagery but more automaticity than younger performers, and males reported less imagery but more automaticity than females. Also, international level athletes used a wider range of psychological strategies than college, regional, and recreational performers. Furthermore, with the effects of age removed from the data, these differences were significant for goal setting, imagery, and activation in males, and for self-talk, emotional control, goal setting, imagery, activation, negative thinking, and relaxation in females. Therefore, the TOPS is an appropriate instrument for assessing the use of several important psychological skills in athletes both in practice and competition contexts.

Overall, this review of literature highlights past researchers that has shown the positive effects of psychological skills use on many aspects of athletes' performance. However, past research has not identified use or potential benefits of psychological skills in Japanese rugby players in both practice and competitive environment. Therefore, the purpose of this study is to assess the use of psychological skill in Japanese rugby players both in competition and practice environment. Also, the present study aims to investigate the ability of TOPS to differentiate performance level, playing positions, and competitive experience in the sample of Japanese rugby players. Additionally, the ability of TOPS to correspond with coaches' evaluation on players' psychological strength is examined.

Chapter 3

Method

Participants

The sample consisted of 352 Japanese rugby players who played at a competitive level. Of this group, 95 (27.0%) were Top League players and 257 (73.0%) were college players. The mean age (and standard deviation, SD) of the players was 22.01 (SD = 3.62) and ranged from 18 to 38 years. The players were all male and they indicated a mean of 8.81 years (SD = 5.71) of competitive experience in rugby. Regarding mental training experience, 85 players (24.1%) reported that they had mental training experiences in the past. Within the 95 Top League players, 7 players (7.4%) were identified as professional, while remaining 88 players (92.6%) were semiprofessional players. Furthermore, of the players reporting their previous experience on the national team, 9 players (2.6%) had previously played for Japan national team.

Measuring Instrument

The measuring instrument used in this study was the Test of Performance Strategies (TOPS), which is a self-report measure designed to assess psychological skills used in both competition and practice (Thomas, Murphy, & Hardy, 1999). The TOPS is composed of eight subscales for competition (activation, automaticity, emotional control, goal setting, imagery, negative thinking, relaxation and self-talk) and seven of those eight scales are included in the practice subscales with negative thinking being found only in the competition context and attentional control being found only in the practice context. Lane et al. (1999) described “the substitution of attentional control by negative thinking in competition is not unreasonable given that negative thinking may well be the

metacognitive manifestation of a lack of attentional control” (p. 707). The TOPS has 64-items which represent the subscales with four-items each and is rated on a 5-point Likert style scale, anchored by 1 (never) to 5 (always) (See Appendix A). Examples of items from the competition subscale include: “I set personal performance goals for a competition” for ‘Goal Setting’, and “I rehearse my performance in my mind at competitions” for ‘Imagery’. An example from the ‘Practice’ subscale is: “I talk positively to myself to get the most out of practice” for ‘Self-Talk’.

In the preliminary study of the development of TOPS, Thomas, Murphy, and Hardy (1999), recruited participants with various skill levels from a wide-range of sports. The exploratory factor analysis from the initial validation “yielded very clear factor structures for both the competition and the practice items” (p. 707). In a follow-up study Lane et al. (2004) stated, “The heterogeneity of the initial validation sample is a strength of the process to validate the measure, in terms of its applicability across a wide age range and spectrum of ability” (p. 804). Good internal consistency has been demonstrated with the individual items. Chronbach alpha levels ranged from .66 to .81 ($\bar{x}=.75$).

In the current study, TOPS was translated into Japanese by a bilingual sport psychologist and back-translated into English by a bilingual Ph. D. student in sport psychology. The back-translated version was compared with the original English version by the researcher and two senior sport psychologists. Finally the researcher, the sport psychologist, and the Ph. D. student worked co-operatively to make corrections to the Japanese items with discrepancies in the back-translation.

Demographic and Background Information

In addition to the TOPS, all participants completed a demographic and background assessment. This assessment included age, playing position, years of competitive experience, professional status, number of games played on the national team, and past mental training experience (See Appendix B).

Coaches' Evaluation

In order to determine the psychologically strongest and weakest players in each team, coaches were asked to complete a coaches' evaluation of the psychological strength of the player (See Appendix C). In this study, a psychologically strong player is defined as a player who has the ability to consistently perform toward the upper range of ones talent and skill, regardless of competitive or practice circumstances and overall level of physical ability (Loehr, 1995). Therefore, a psychologically weak player is considered, in this study, as a player does not have the ability to perform consistently toward the upper range of ones talent and skill. Whereas, the performance of a psychologically weak player is influenced by competitive or practice circumstances. Head coaches on each team were asked to rank 15 psychologically strong and 15 psychologically weak players. Of the seven teams that participated in this study, five head coaches completed the coaches' evaluation while the other two did not volunteer to participate. After coaches identified 15 psychologically strong and weak players, players on each team who did not volunteer to participate in the study were eliminated from the list. Then all the players remaining on the list were selected as psychologically strong and weak players for comparison persons. This resulted in identifying 47 psychologically strong players and 49

weak players. Coaches' evaluation was conducted confidentially and results were not shared with anyone.

Procedures

Permission to use human participants in the present study was obtained from the Institutional Review Board for human subjects at Michigan State University. After the approval from the IRB, the primary investigator initially contacted the head coaches of seven different teams by email. These teams included four Top League teams and three college teams. Each college team belongs to Division I, II, or III; therefore, college players in this study represented well the entire population of Japanese college rugby players. All seven teams provided consent to participate in the study except two teams did not agree to complete the coaches' evaluation. For four of the seven teams, the researcher scheduled an appointment to visit the team and administered the questionnaire and coaches' evaluation. The meetings with the teams took approximately 45-60 minutes. All four teams completed the questionnaires at the meeting room at their practice location. All administration sessions were relatively similar and free of coach influence. The primary investigator distributed the questionnaire to each participant individually, providing them with a writing utensil to complete the survey. Prior to beginning the questionnaire the participants were asked to read the consent form (See Appendix D) that was attached to the front page of the questionnaires, while the researcher verbally explained it. Once the consent form was read, participants then signed and returned the consent form to the investigator who placed it in a separate envelope. It was emphasized that all information collected was fully confidential, and at any point the participant could withdraw from the study without consequences. After the purpose and procedure of the

study were explained, the participants filled out the questionnaire individually. The questionnaire took approximately 15-30 minutes to complete. Once the participants completed the questionnaires they were returned directly to the researcher who immediately placed them in a second sealed envelope.

For other three teams, the primary investigator sent an email to each player on the team and asked them to complete the questionnaire online while having the coach complete the coaches' evaluation via email. Consent was included in the first page of the online survey, therefore the participants were informed about the nature of the study and explained that beginning the survey indicated they voluntarily agreed to participate in the research.

Statistical Analysis

The data were analyzed by quantitative methods. Once the data were collected the information was entered into an SPSS file. The questionnaires were labeled by the number in which they were entered into the SPSS spread sheet. Descriptive statistics, Pearson product-moment correlations, and discriminant function analyses were conducted. First, descriptive statistics was computed to characterize the entire sample of Japanese rugby players on each of the practice and competitive performance TOPS subscales. To further describe the subscales and elucidate the relationship between them, Pearson correlations were conducted between each of the competition and practice subscales, respectively. Finally, a series of discriminant function analyses were used to identify overall differences on the competition and practice subscales, relative to competitive level, years of competitive experience, position, and coaches' evaluation respectively. To explore the differences of competitive experience in psychological skills

and strategies, the participants were separated into two groups, splitting above and below the mean years of experience. Regarding position, two different approaches were employed. First, differences between backs and forward players were investigated. Then, players of more important positions and their counterpart positions were compared. Additionally, Pearson correlations among subscales for psychologically strong and weak players were conducted as follow up analyses.

Chapter 4

Results

Descriptive Statistics on the TOPS

Means and standard deviations on all subscales of the TOPS for the total sample are shown in Table 2. Inspection of this table results reveals that, relative to competition strategies, Japanese rugby players scored highest on goal setting ($M = 3.57$) and lowest on negative thinking ($M = 2.42$). Furthermore, relative to practice strategies, these players scored highest on goal setting ($M = 3.17$) and imagery ($M = 3.16$), and lowest on relaxation ($M = 2.25$).

Table 2

Means, Standard Deviations, and alpha coefficients for the Test of Performance Strategies subscales

	<i>M</i>	<i>SD</i>	<i>α</i>
Competition subscales			
Self-talk	2.88	.92	.79
Emotional control	3.18	.72	.66
Automaticity	2.90	.74	.69
Goal setting	3.57	.83	.80
Imagery	3.37	.94	.50
Activation	3.40	.77	.74
Relaxation	2.90	.75	.67
Negative thinking	2.42	.75	.70
Practice subscales			
Self-talk	2.87	.82	.78
Emotional control	2.88	.39	.78
Automaticity	2.60	.66	.16
Goal setting	3.17	.71	.70
Imagery	3.16	.72	.62
Activation	2.85	.56	.35
Relaxation	2.25	.68	.67
Attentional control	2.91	.56	.43

Table 2 also contains the alpha coefficients, a measure of internal consistency, for each of the subscales. An inspection of these coefficients shows that most of the scales achieved or closely approached the .7 cut off for judging scales as internally consistent. Subscales that failed to reach this level were competition imagery (.50), and practice automaticity (.16), activation (.35) and attentional control (.43). These subscales were eliminated from subsequent analyses.

Correlations Among Strategies

Correlations among each of the competition and practice subscales are shown in Table 3. Among the competition subscales, several patterns of relationships were identified, the most notable of which occurred between emotional control and negative thinking ($r = -.52, p < .01$), activation and relaxation ($r = .52, p < .01$), relaxation and negative thinking ($r = -.49, p < .01$), goal setting and imagery ($r = .48, p < .01$), and goal setting and activation ($r = .48, p < .01$). Among the practice subscales, the most strongest correlations emerged between self-talk and imagery ($r = .43, p < .01$), goal setting and imagery ($r = .41, p < .01$), and imagery and relaxation ($r = .40, p < .01$). Finally, considerable overlap was found in the use of some psychological skills across the competition and practice domains. Specially, the use of self-talk in competition and practice are closely related ($r = .77, p < .01$), and notable link across the competition and practice context was demonstrated in the use of goal setting ($r = .50, p < .01$).

Table 3

TOPS subscale correlations

	1	2	3	4	5	6	7	8	9	10	11	12
Competition subscales												
1. Self-talk	-	-	-	.31	.39	.28	-.16	.77	-	.29	.44	.31
2. Emotional control	-	-	-	-	.20	.43	-.52	-	.17	-	-	-
3. Automaticity	-	-	-	-.16	-	-	-	-	.14	-.17	-.11	-
4. Goal setting	.31	-	-.16	-	.48	.38	-.25	.33	-	.50	.46	.29
5. Activation	.39	.20	-	.48	-	.52	-.38	.40	-	.29	.38	.24
6. Relaxation	.28	.43	-	.38	.52	-	-.49	.25	-	.26	.22	.31
7. Negative thinking	-.16	-.52	-	-.25	-.38	-.49	-	-.16	-	-.22	-.15	-.12
Practice subscales												
8. Self-talk	.77	-	-	.33	.40	.25	-.16	-	.11	.39	.43	.39
9. Emotional control	-	.17	.14	-	-	-	-	.11	-	-	-	-
10. Goal setting	.29	-	-.17	.50	.29	.26	-.22	.39	-	-	.41	.29
11. Imagery	.44	-	-.11	.46	.38	.22	-.15	.43	-	.41	-	.40
12. Relaxation	.31	-	-	.29	.24	.31	-.12	.39	-	.29	.40	-

Note: All correlations above .1 are significant ($p < .05$).

Comparison of Player Groupings

Top Leaguer Versus College Player Comparison

To examine differences in reported psychological skills and strategies, top league players (n = 95) and college players (n = 257) were compared in two different discriminant analyses, one for competition subscales and one for practice subscales with low internally consistent items removed.

Competition analysis. Table 4 contains the means, standard deviations, and the standardized discriminant function coefficients for each of the competition and practice

Table 4

Top league versus college players comparison of performance strategies

Subscale	Top leaguers N=95		College players N=257		F	Sig	SDFC
	M	SD	M	SD			
Competition							
Self-talk	3.01	.89	2.82	.93	2.94	NS	-.03
Emotional control	3.45	.70	3.08	.70	19.47	.00	.32
Automaticity	2.86	.77	2.91	.73	.30	NS	.04
Goal setting	3.91	.71	3.44	.84	23.78	.00	.49
Activation	3.68	.74	3.30	.75	17.35	.00	.08
Relaxation	3.24	.75	2.78	.71	28.08	.00	.28
Negative thinking	2.09	.65	2.56	.75	25.77	.00	-.31
Practice							
Self-talk	3.00	.88	2.83	.80	3.22	NS	-.23
Emotional control	2.91	.35	2.86	.40	.87	NS	.18
Goal setting	3.47	.69	3.06	.68	24.19	.00	.77
Imagery	3.38	.75	3.08	.69	12.53	.00	.35
Relaxation	2.42	.61	2.18	.70	8.25	.00	.27

Note: SDFC, Standardized Discriminant Function Coefficient.

subscales. The results of the discriminant analysis on the seven competition subscales was significant (Wilks' $\lambda = .87$, $\chi^2(7) = 47.23$, $p < .01$), with group centroids being .63 for top league players and -.23 for college players. Inspection of the standard discriminant function coefficients revealed that goal setting, emotional control, relaxation, negative thinking, and activation contributed most to the discriminant function. Top league players demonstrated greater goal setting ($M = 3.91$, $SD = .71$), activation ($M = 3.68$, $SD = .74$), emotional control ($M = 3.45$, $SD = .70$), and relaxation ($M = 3.24$, $SD = .75$) than college players ($M = 3.44$, $SD = .84$; $M = 3.30$, $SD = .75$; $M = 3.08$, $SD = .70$; $M = 2.78$, $SD = .71$, respectively), while college players scored higher on negative thinking ($M = 2.56$, $SD = .75$) than top league players ($M = 2.09$, $SD = .65$).

Practice analysis. The result of the discriminant analysis on the five practice subscales was also significant (Wilks' $\lambda = .92$, $\chi^2(5) = 29.14$, $p < .01$), with group centroids being -.49 for top league players and -.18 for college players. Standardized discriminant function coefficients revealed that goal setting, imagery, and relaxation contributed most to the separation between groups. Top league players reported greater use of goal setting ($M = 3.45$, $SD = .69$), imagery ($M = 3.38$, $SD = .75$), and relaxation ($M = 2.42$, $SD = .61$) than college players ($M = 3.06$, $SD = .68$; $M = 3.08$, $SD = .69$; $M = 2.18$, $SD = .70$, respectively).

Competitive Experience Comparison

To explore the differences in psychological skills regarding competitive experience, the participants were separated into two groups, splitting above and below the mean years ($M = 8.81$) of competitive experience. Group 1 ($n = 189$, 53.8%) consisted of all the Japanese rugby players with 1 to 8 years of competitive experience, and Group 2

(n = 162, 46.2%) consisted of all the players with 9 to 28 years of experience.

Comparisons were made in two different discriminant analyses, one for competition subscales and one for practice subscales.

Competition analysis. Table 5 contains the means, standard deviations, and the standardized discriminant function coefficients for each of the competition and practice subscales. The result of the discriminant analysis of the seven competition subscales was significant (Wilks' $\lambda = .93$, $\chi^2(7) = 25.59$, $p < .01$), with group centroids being -.26 for Group 1 and .30 for Group 2. Inspection of the standardized discriminant function coefficients revealed that goal setting, negative thinking, activation, and relaxation contributed most to the separation between groups. Specifically, more experienced

Table 5

More versus less experienced players comparison of performance strategies

	More N=162		Less N=189				
Subscale	M	SD	M	SD	F	Sig	SDFC
Competition							
Self-talk	2.97	.94	2.80	.90	3.07	NS	-.01
Emotional control	3.26	.72	3.11	.71	3.49	NS	.00
Automaticity	2.87	.71	2.92	.77	.42	NS	.03
Goal setting	3.76	.76	3.40	.85	17.23	.00	.57
Activation	3.56	.70	3.27	.80	13.26	.00	.26
Relaxation	3.03	.75	2.89	.74	9.57	.00	.04
Negative thinking	2.26	.68	2.55	.78	13.66	.00	-.48
Practice							
Self-talk	2.95	.81	2.81	.83	2.50	NS	-.06
Emotional control	2.83	.42	2.91	.35	3.85	NS	-.54
Goal setting	3.30	.68	3.06	.72	10.37	.00	.70
Imagery	3.23	.70	3.09	.73	3.53	NS	.04
Relaxation	2.32	.68	2.18	.68	3.75	NS	.28

players indicated greater goal setting ($M = 3.76$, $SD = .76$), activation ($M = 3.56$, $SD = .70$), and relaxation ($M = 3.03$, $SD = .75$) than less experienced players ($M = 3.40$, $SD = .85$; $M = 3.27$, $SD = .80$; $M = 2.89$, $SD = .74$, respectively), while less experienced players scored higher on negative thinking ($M = 2.55$, $SD = .78$) than more experienced players ($M = 2.26$, $SD = .68$).

Practice analysis. The result of the discriminant analysis of the five practice subscales was significant (Wilks' $\lambda = .96$, $\chi^2(5) = 15.79$, $p < .01$), with group centroids being $-.20$ for Group 1 and $.23$ for Group 2. Inspection of the standardized discriminant function coefficients revealed that goal setting contributed most to the differences between two groups. Particularly, more experienced players reported greater goal setting ($M = 3.30$, $SD = .68$) than less experienced players ($M = 3.06$, $SD = .72$).

Positional Comparison: Forwards Versus Backs

To examine positional differences in psychological strategies, forwards ($n = 182$) and backs ($n = 169$) were compared in two different discriminant analyses, one for competition subscale and one for practice subscales.

Competition analysis. The result of the discriminant analysis on the seven competition subscales was not significant (Wilks' $\lambda = .99$, $\chi^2(7) = 3.45$).

Practice analysis. The result of the discriminant analysis on the five practice subscales was not significant (Wilks' $\lambda = .99$, $\chi^2(5) = 4.64$).

Positional Comparison: More Versus Less Important Positions Comparison

To further explore the positional differences in psychological skills, players on more (n = 122) and less (n = 229) importance positions were compared in two different discriminant analyses, one for competition subscales and one for practice subscales.

Competition analysis. The result of the discriminant analysis on the seven competition subscales was not significant (Wilks' $\lambda = .98$, $\chi^2(7) = 7.15$).

Practice analysis. The result of the discriminant analysis on the five practice subscales was not significant (Wilks' $\lambda = .99$, $\chi^2(5) = 2.52$).

Psychological Strength Comparison

To examine the differences in psychological strategies, psychologically strong players (n = 47) and weak players (n = 49) were compared in two different discriminant analyses, one for competition subscales and one for practice subscales.

Competition analysis. The result of the discriminant analysis on the seven competition subscales was not significant (Wilks' $\lambda = .91$, $\chi^2(7) = 8.64$).

Practice analysis. The result of the discriminant analysis on the five practice subscales was not significant (Wilks' $\lambda = .90$, $\chi^2(5) = 9.58$).

Correlation among strategies for psychologically strong players. Correlations among each of the competition and practice subscales for the psychologically strong players are shown in Table 6. Among the competition subscales, several patterns of relationships were identified, the most notable of which occurred between relaxation and negative thinking ($r = -.66$, $p < .01$), activation and goal setting ($r = .65$, $p < .01$), goal setting and negative thinking ($r = -.59$, $p < .01$), and emotional control and relaxation ($r = .57$, $p < .01$). Among the practice subscales, the most strongest correlations emerged

Table 6

TOPS subscale correlations for psychologically strong players

	1	2	3	4	5	6	7	8	9	10	11	12
Competition subscales												
1. Self-talk	-	-	-.33	.44	.52	.37	-.42	.87	-	.42	.66	.46
2. Emotional control	-	-	-.43	.39	-	.57	-.46	-	-	.44	-	-
3. Automaticity	-.33	-.43	-	-.54	-.47	-.45	.30	-.40	-	-.39	-	-.30
4. Goal setting	.44	.39	-.54	-	.65	.57	-.59	.44	-	.74	.48	.48
5. Activation	.52	-	-.47	.65	-	.55	-.53	.53	-	.39	.60	.51
6. Relaxation	.37	.57	-.45	.57	.55	-	-.66	.51	-	.53	-	.49
7. Negative thinking	-.42	-.46	.30	-.59	-.53	-.66	-	-.45	-	-.61	-.34	-.51
Practice subscales												
8. Self-talk	.87	-	-.40	.44	.53	.51	-.45	-	-	.46	.52	.48
9. Emotional control	-	-	-	-	-	-	-	-	-	-	-	-
10. Goal setting	.42	.44	-.39	.74	.39	.53	-.61	.46	-	-	.35	.48
11. Imagery	.66	-	-	.48	.60	-	-.34	.52	-	.35	-	.39
12. Relaxation	.46	-	-.30	.48	.51	.49	-.51	.48	-	.48	.39	-

Note: All correlations above .30 are significant ($p < .05$).

between self-talk and imagery ($r = .52, p < .01$), goal setting and relaxation ($r = .48, p < .01$), and self talk and relaxation ($r = .48, p < .01$). Finally, considerable overlap was found in the use of some psychological skills across the competition and practice domains. Specially, the use of self-talk in competition and practice are closely related ($r = .87, p < .01$), and notable link across the competition and practice context was demonstrated in the use of goal setting ($r = .74, p < .01$).

practice context was demonstrated in the use of goal setting ($r = .50, p < .01$).

Correlation among strategies for psychologically weak players. Correlations among each of the competition and practice subscales for the psychologically weak players are shown in Table 7. Among the competition subscales, several patterns of relationships were identified, the most notable of which occurred between relaxation and negative thinking ($r = -.50, p < .01$), emotional control and relaxation ($r = .49, p < .01$), emotional control and activation ($r = .47, p < .01$), and activation and relaxation ($r = .45, p < .01$). Among the practice subscales, the most strongest correlations emerged between goal setting and imagery ($r = .53, p < .01$), goal setting and self talk ($r = .53, p < .01$), self talk and emotional control ($r = .50, p < .01$), and self talk and relaxation ($r = .50, p < .01$). Finally, considerable overlap was found in the use of some psychological skills across the competition and practice domains. Specially, the use of self-talk in competition and practice are closely related ($r = .82, p < .01$), and notable link across the competition and practice context was demonstrated in the use of goal setting ($r = .52, p < .01$).

Table 7

TOPS subscale correlations for psychologically weak players

	1	2	3	4	5	6	7	8	9	10	11	12
Competition subscales												
1. Self-talk	-	-	-	-	.47	-	-	.82	.37	.39	.36	.55
2. Emotional control	-	-	-	-	-	.49	-.30	.32	-	.39	-	-
3. Automaticity	-	-	-	-	-	-	.31	-	-	-	-	-
4. Goal setting	-	-	-	-	.33	.36	-	.32	-	.52	.58	.39
5. Activation	.47	-	-	.33	-	.45	-.34	.49	-	.66	.53	-
6. Relaxation	-	.49	-	.36	.45	-	-.50	.29	-	.50	.37	-
7. Negative thinking	-	-.30	.31	-	-.34	-.50	-	-	-	-.39	-	-
Practice subscales												
8. Self-talk	.82	.32	-	.32	.49	.29	-	-	.50	.52	.32	.50
9. Emotional control	.37	-	-	-	-	-	-	.50	-	.36	-	-
10. Goal setting	.39	.39	-	.52	.66	.50	-.39	.52	.36	-	.53	-
11. Imagery	.36	-	-	.58	.53	.37	-	.32	-	.53	-	.43
12. Relaxation	.55	-	-	.39	-	-	-	.50	-	-	.43	-

Note: All correlations above .29 are significant ($p < .05$)

Chapter 5

Discussion

The primary purpose of this study was to assess the usage of psychological skills and strategies utilized by Japanese rugby players both in competition and practice. Also, this study aimed to test the ability of TOPS to differentiate competitive level, competitive experience, positions, and psychological strength.

The initial step of assessing the use of psychological skills was to analyze the descriptive statistics and the alpha coefficients for each of the subscales. This analysis indicated that four of the subscales (competition imagery, practice automaticity, activation, attentional control) failed to reach .7 cut off point. In past research investigating the internal consistency of TOPS subscales, alpha coefficients for competition subscales ranged from .74 to .80, and the practice subscales ranged from .66 to .78 (Thomas et al., 1999). However, in the Taylor et al. (2008) study, alpha coefficients for practice automaticity (.57) and practice activation (.50) were found to be unacceptable. Although some of the subscales in the present study indicated lower alpha coefficients compared to the previous research, overall findings overlapped with past literature. Furthermore, correlational analysis revealed that moderately strong correlations among many of the subscales, suggesting that rugby players who tend to use one or more of the competition or practice strategies also tend to use other psychological skills. For example, competition relaxation positively correlated with activation ($r = .52, p < .001$), emotional control ($r = .43, p < .001$), and goal setting ($r = .38, p < .001$). In addition, considerable overlap was demonstrated in the use of particular psychological skills, such as self-talk ($r = .77, p < .001$) and goal setting ($r = .50, p < .001$), across the two

performance environments. These findings clearly corresponded with Taylor et al. (1999) study reporting correlation among two contexts for self-talk ($r = .72, p < .05$) and goal setting ($r = .60, p < .05$). However, emotional control ($r = .17, p < .05$) and relaxation ($r = .31, p < .05$) indicated relatively weak correlation across two performance domains, suggesting that some of the psychological skills usage may not transfer in practice to competition or vice versa. Given that significant overlap with previous literature was demonstrated in the present study, the TOPS appears to be a promising instrument for assessing the use of several important psychological skills in this sample of Japanese rugby players. The lack of internal consistency on some TOPS items might also be the result of having the scale validated with English speaking participants while in the present study scale was translated into Japanese.

Hypothesis 1 predicted that Top League players will utilize more psychological skills than college players. This hypothesis was verified in that the discriminant function analyses demonstrated significant differences between Top League and college players, and players with more and less competitive experience. With respect to competitive level, goal setting, emotional control, negative thinking, relaxation, and activation contributed most to the discriminant function for competitive subscales, while goal setting, imagery, and relaxation made the most significant contributions to the separation between the two groups for practice subscales. Furthermore, significant differences were found between more and less experienced players. Regarding competition strategies, players with more competitive experience reported greater goal setting, activation, and relaxation, and lower negative thinking than their counterparts, while they indicated higher goal setting for practice. The 16 subscales of the TOPS, with four exceptions, created an internally stable

instrument with moderate predictive ability relative to competitive level and competitive experience in this sample of Japanese rugby players.

As predicted, the discriminant analyses successfully distinguished between Top League players and college players in both competition and practice, suggesting that Top League players more frequently employ psychological skills and strategies than college players. This finding reflects earlier literature identifying fundamental psychological differences between more and less successful performers (Mahoney et al., 1987; Gould et al., 1999; Thomas et al., 1999; Greenleaf et al., 2001; Neil et al., 2006; Taylor et al., 2008). For example, Neil, Millalieu, and Hanton (2006) reported that professional rugby players scored higher on competition imagery and self-talk than players who competed at a semi-professional club standard or below. Also, Thomas and colleagues successfully discriminated between international athletes and college, regional, and recreational performers (Thomas et al., 1999). Furthermore, the discriminatory capability of TOPS was demonstrated in the study by Taylor and colleagues in which significant differences were found in the use of psychological skills between Olympic medalists and nonmedalists (Taylor et al., 2008). The Top League players may have a greater understanding of the importance of these psychological skills with regard to their performance and thus may use them on a more frequent basis during practice and competition. The college players, on the other hand, simply may not know these techniques or may not believe in the potential benefits of using the techniques frequently. Another possibility for the difference is that the Top League players may use these skills more frequently because they are often playing with more sense of purpose. That is, with the competitive nature of Top League rugby, Top League players may take rugby more

seriously and view it more as a way of life, while college players may not have as much interest to improve their performance and they may view rugby as a hobby and just a part of their college experience. However, it is still uncertain whether Top League players in the present study are inherently more psychologically talented, if their more advanced and frequent use of psychological skills developed as a result of more hours and efforts in practice or formal instruction in psychological skills usage or because they are more experienced as age and playing experience were highly correlated ($r = .68, p < .01$). Given the fact that the majority of Top League players were composed of players from 22 to 38 years old while typical college players aged between 18 and 22, there might be age differences between two groups. Because most of the Top League players were older than college players, the results of this comparison might be influenced by increased age effect. Although the current study is not designed to examine age differences, it has been suggested that the more advanced or frequent use of psychological skills among more successful athletes is a complex function of genetic prediction, deliberate training, and formal instruction (Ericsson, Roring, & Nandagopal, 2007). In fact, psychological skills are thought to be modifiable and teachable.

Furthermore, the results also revealed that the TOPS successfully distinguished between more and less experienced players in both competition and practice supporting Hypothesis 2. Regarding competition strategies, players with more competitive experience reported greater goal setting, activation, and relaxation, and lower negative thinking than their counterparts, while they indicated higher goal setting for practice. These findings significantly strengthen this area of research. Past studies examining the use of psychological skills by rugby players reported that more experienced players had

better attentional style, motivation, confidence, decision making, patience, and fighting spirit than their less experienced counterparts (Maynard & Howe, 1989; Wada, Murakami, Yamamoto, Hashimoto & Tokunaga, 2001). However, one of these studies employed a questionable measurement and it was uncertain whether the measurement could precisely assess important psychological skills. Yet the TOPS has been utilized in a number of studies and proved to be a reliable measurement, therefore, the results from the competitive experience comparison contribute significantly to our knowledge. However, future research is still needed. In this study, the comparison was made based on years of rugby experience. Thus, the results do not uncover what types of experiences contributed to the frequent use of psychological skills. The differences might be due to several reasons such as hours spent for games and practices, mental training experiences, and the number and quality of coaches that a player has worked with. Due to the many factors that could influence the use of psychological skills, therefore, future research is needed to determine what types of sport experiences are related to acquisition of the strategies and how they influenced the frequent use of psychological skills. For example, it would be extremely interesting to conduct psychological skills training interventions and determine if pre and post training assessment differences emerged. Similarly, assessing athletes psychological skills and then tracking their performance across a season would allow researchers to see if psychologically stronger athletes cope better with adversity and perform more consistently as compared to their psychologically less gifted counterparts.

Contrary to the predictions made in Hypotheses 3 and 4, no significant differences were demonstrated on positional comparisons. Although previous researchers (Okamoto, Takatsu, Takada, & Terada, 1996) indicated greater self-confidence and better game

decision in backs players than forwards players, and in players on the more important positions than players on the less important positions, this study did not support their findings. One potential reason for a lack of difference here is that perhaps a position is often assigned to a player by coaches based on athlete's physical character. Although different positions may require different psychological skills, each player has to develop unique physical strengths and skills in order to play a specific position. Normally, coaches make decisions on the player's position with a main focus on the physical aspects of the position. Therefore, athletes not being able to pick their positions and coaches relying only on player's physical ability might prevent the players from obtaining different sets of psychological skills. Additional research is necessary to investigate how and when each psychological skill is being used by a player in his position.

Finally, no significant difference was found on the comparison between psychologically strong and weak players, suggesting that use of psychological skills does not affect psychological strength. Thus, Hypothesis 5 was refuted. However, the finding must be interpreted with some cautions. First, no objective measure was employed in this study to select players for comparison and there might be coaches' biases when determining psychologically strong and weak players. Advancement in appropriate psychometric measurement instruments was needed in this area of research (Crust, 2008). Although the definition of a psychologically strong player was given, each coach might have operationally different beliefs on psychological strength and their selections might be inconsistent among coaches. Considering the fact that typical Japanese coaches, regardless of types of sports, tend to consider a psychologically strong player as an

athlete who could tolerate severe training and pain, establishing clear criteria of psychologically strong rugby players is needed to enable cross cultural studies. Also, the comparison was made with a small sample, thus questioning the ability to generalize this finding to the larger population. Although TOPS did not successfully differentiate psychologically strong and weak players, inspection of correlational analyses revealed that the usage of psychological skills among psychologically strong players was more correlated than that of weak players. Therefore, these players might not be consistent in the use of psychological skills in practice and competition. Additional research is needed to further investigate the relationship between psychological strength and use of psychological skills.

Limitations of this study should be recognized. First, a more sophisticated translation process and statistical analyses with a large sample size is needed to establish the factor structure of the TOPS with greater confidence. The present study demonstrated that 4 of the 16 subscales possessed inadequate internal consistency. This might be due to the difficulty in translating the questionnaire or cultural differences in the meaning of psychological constructs. The researchers faced some discrepancies between original and translated items. For example, “During practice, I don’t think about performing much. – I just let it happen,” back translated as “I don’t think about performance during practice. – I let it go.” Similarly, “During practice session I just seem to be in flow.” was “I feel that everything is going well during practice” in back translation. Because the majority of Japanese athletes do not know the definition of flow as it pertains to sport performance, perhaps this item could not be comprehended exactly the same as the original sentence. Although the researchers made significant efforts on translating the original words into

Japanese TOPS, there might be awkward phrasings that are difficult for the athletes who are not familiar with sport psychology terms to understand the intended meaning.

Furthermore, the sample of this study was 352 Japanese male athletes who specialized only in rugby. Future research with a larger sample including both genders, different age groups, and more athletes from a variety of sports and competitive levels is needed to establish validity and reliability of Japanese TOPS. Examining female athletes would be particularly useful.

It should be also recognized that the quality of psychological skills usage was not assessed in this study. The TOPS was designed to measure frequency of psychological skill employment. One potential reason for a lack of difference in positional and psychological strength comparisons is that perhaps frequency of psychological skills usage may not be a viable measure of group separation. Additional research is needed to understand the psychological processes between groups, such as quality of psychological skill. For example, psychologically strong players may set goals at the same reported frequency but they are developing more specific goals for competition and practice, utilizing both outcome and performance goals and developing a stronger connection between their long term and short term goals. Therefore, they are employing more of the characteristics needed for effective goal setting (Weinberg & Butt, 2005).

Despite its limitations, the present study contributes significantly to our knowledge base regarding the differential application of psychological skills between Top League and college rugby players. This study provided preliminary evidence of the usefulness of Japanese TOPS, which will facilitate studies of the relationship of performance strategies in both practice and competition to performance level. Future

research should continue to improve the psychometric properties of the TOPS, especially its stability across items. Hardy, Roberts, Thomas, and Murphy (2010) recently developed the TOPS-2, which is purported to further improve the reliability of the scale. Additional research utilizing TOPS is needed to further support its validity and reliability of the scale as well as to characterize the fundamental attributes of elite performance, and to distinguish between more and less successful athletes.

In conclusion, Top League players in this study indicated more frequent use of psychological skills during competition and practice than college players. However, it is still unclear whether or not the use of psychological skills is a viable method in differentiating positions and psychologically strong and weak players. This should not lead to the conclusion that there is no difference in psychological skills usage between these groups. Rather the findings should be used alongside future research designed to examine the efficacy or quality of the psychological skills employed by rugby players with different playing positions and different psychological strength. Finally, replicating, extending, and challenging past research is necessary in order to produce a more coherent and clear understanding of psychological skills usage by rugby players.

APPENDICES

APPENDIX A
TEST OF PERFORMANCE STRATEGIES

Each of the following items describes a specific situation that you may encounter in your training and competition. Please rate how frequently these specific situations apply to you on the following scale:

1 = Never

2 = Rarely

3 = Sometimes

4 = Often

5 = Always

Please put a circle around answers.

- | | | | | | |
|---|---|---|---|---|---|
| 1. I set realistic but challenging goals for practice. | 1 | 2 | 3 | 4 | 5 |
| 2. I say things to myself to help my practice performance. | 1 | 2 | 3 | 4 | 5 |
| 3. During practice I visualize successful past performance. | 1 | 2 | 3 | 4 | 5 |
| 4. My attention wanders while I am training. | 1 | 2 | 3 | 4 | 5 |
| 5. I practice using relaxation technique at workouts. | 1 | 2 | 3 | 4 | 5 |
| 6. I practice a way to relax. | 1 | 2 | 3 | 4 | 5 |
| 7. During competition I set specific result goals for myself. | 1 | 2 | 3 | 4 | 5 |

8. When the pressure is on at competitions, I know how to relax. 1 2 3 4 5
9. My self-talk during competition is negative. 1 2 3 4 5
10. During practice, I don't think about performing much – I just let it happen. 1 2 3 4 5
11. I perform at competitions without consciously thinking about it. 1 2 3 4 5
12. I rehearse my performance in my mind before practice. 1 2 3 4 5
13. I can raise my energy level at competitions when necessary. 1 2 3 4 5
14. During competition I have thoughts of failure. 1 2 3 4 5
15. I use practice time to work on my relaxation technique. 1 2 3 4 5
16. I manage my self-talk effectively during practice. 1 2 3 4 5
17. I am able to relax if I get too nervous at a competition. 1 2 3 4 5
18. I visualize my competition going exactly the way I want it to go. 1 2 3 4 5
19. I am able to control distracting thoughts when I am

training.	1	2	3	4	5
20. I get frustrated and emotionally upset when practice does					
not go well.	1	2	3	4	5
21. I have specific cue words or phrases that I say to myself to					
help my performance during competition.	1	2	3	4	5
22. I evaluate whether I achieve my competition goals.	1	2	3	4	5
23. During practice, my movements and skills just seem to					
flow naturally from one to another.	1	2	3	4	5
24. When I make a mistake in competition, I have trouble					
getting my concentration back on track.	1	2	3	4	5
25. When I need to, I can relax myself at competition to get					
ready to perform.	1	2	3	4	5
26. I set very specific goals for competition.	1	2	3	4	5
27. I relax myself at practice to get ready.	1	2	3	4	5
28. I psych myself up at competitions to get ready to perform.	1	2	3	4	5
29. At practice, I can allow the whole skills or movement to					
happen naturally without concentrating on each part of the skill.	1	2	3	4	5

- | | | | | | |
|---|---|---|---|---|---|
| 30. During competition I perform on 'automatic pilot'. | 1 | 2 | 3 | 4 | 5 |
| 31. When something upsets me during a competition, my
performance suffers. | 1 | 2 | 3 | 4 | 5 |
| 32. I keep my thoughts positive during competition. | 1 | 2 | 3 | 4 | 5 |
| 33. I say things to myself to help my competitive performance. | 1 | 2 | 3 | 4 | 5 |
| 34. At competitions, I rehearse the feel of my performance in
my imagination. | 1 | 2 | 3 | 4 | 5 |
| 35. I practice a way to energize myself. | 1 | 2 | 3 | 4 | 5 |
| 36. I manage my self-talk effectively during competition. | 1 | 2 | 3 | 4 | 5 |
| 37. I set goals to help me use practice time effectively. | 1 | 2 | 3 | 4 | 5 |
| 38. I have trouble energizing myself if I feel sluggish during
practice. | 1 | 2 | 3 | 4 | 5 |
| 39. When things are going poorly in practice, I stay in control
of myself emotionally. | 1 | 2 | 3 | 4 | 5 |
| 40. I do what needs to be done to get psyched up for
competitions. | 1 | 2 | 3 | 4 | 5 |
| 41. During competitions, I don't think about performing | | | | | |

much – I just let it happen. 1 2 3 4 5

42. At practice. When I visualize my performance, I imagine

what it will feel like. 1 2 3 4 5

43. I find it difficult to relax when I am too tense at

competitions. 1 2 3 4 5

44. I have difficulty increasing my energy level during

workouts. 1 2 3 4 5

45. During practice I focus my attention effectively. 1 2 3 4 5

46. I set personal performance goals for a competition. 1 2 3 4 5

47. I motivate myself to train through positive self-talk. 1 2 3 4 5

48. During practice session I just seem to be in a flow. 1 2 3 4 5

49. I practice energizing myself during training sessions. 1 2 3 4 5

50. I have trouble maintaining my concentration during long

practices. 1 2 3 4 5

51. I talk positively to myself to get the most out of practice. 1 2 3 4 5

52. I can increase my energy to just the right level for

competition. 1 2 3 4 5

- | | | | | | |
|--|---|---|---|---|---|
| 53. I have very specific goals for practice. | 1 | 2 | 3 | 4 | 5 |
| 54. During competition, I play/perform instinctively with little conscious effort. | 1 | 2 | 3 | 4 | 5 |
| 55. I imagine my competitive routine before I do it at a competition. | 1 | 2 | 3 | 4 | 5 |
| 56. I imagine screwing up during a competition. | 1 | 2 | 3 | 4 | 5 |
| 57. I talk positively to myself to get the most out of competition. | 1 | 2 | 3 | 4 | 5 |
| 58. I don't set goals for practice, I just go out and do it. | 1 | 2 | 3 | 4 | 5 |
| 59. I rehearse my performance in my mind at competitions. | 1 | 2 | 3 | 4 | 5 |
| 60. I have trouble controlling my emotions when things are not going well at practice. | 1 | 2 | 3 | 4 | 5 |
| 61. When I perform poorly in practice I lose my focus. | 1 | 2 | 3 | 4 | 5 |
| 62. My emotions keep me from performing my best at competitions. | 1 | 2 | 3 | 4 | 5 |
| 63. My emotions get out of control under pressure of competition. | 1 | 2 | 3 | 4 | 5 |

64. At practice, when I visualize my performance, I imagine

watching myself as if on a video replay.

1 2 3 4 5

下記のそれぞれの項目は、あなたが練習や試合で直面する特定の状況を説明したものです。どのくらいの頻度でこのような状況があなたにあてはまるかを以下の尺度に沿って評価してください：

1 = まったくない

2 = ほとんどない

3 = 時々ある

4 = よくある

5 = いつもそうである

答えひとつに丸をしてください。

1. 私は現実的でかつ挑戦的な目標を練習のために設定

する。

1 2 3 4 5

2. 私は練習中、自分のパフォーマンス維持のために、

自分自身にものを言う。

1 2 3 4 5

3. 私は練習中、過去に成功したパフォーマンスをビジ

ュアライズする。

1 2 3 4 5

4. 私の注意は練習中に逸れる。 1 2 3 4 5
5. 私はワークアウトにてリラクゼーションテクニック
を練習する。 1 2 3 4 5
6. 私はリラックスする方法を練習する。 1 2 3 4 5
7. 私は試合中、特定の結果に対する目標を設定する。 1 2 3 4 5
8. 試合でプレッシャーがかかっている時、私はどのよ
うにリラックスしたらよいか知っている。 1 2 3 4 5
9. 試合中の私のセルフトークはネガティブである。 1 2 3 4 5
10. 練習中、私はパフォーマンスすることについてあ
まり考えない—私は成行きに任せる。 1 2 3 4 5
11. 私は試合において意識的に考えることなくパフォ
ーマンスする。 1 2 3 4 5
12. 私は練習の前に自分のパフォーマンスを頭のなか
でリハーサルする。 1 2 3 4 5
13. 私は試合において必要な時、自分の活力のレベル
を上げることができる。 1 2 3 4 5

14. 試合中、私は失敗することを考える。 1 2 3 4 5

15. 私は、練習時間を使って自分のリラクゼーション

テクニックを練習する。 1 2 3 4 5

16. 私は練習中セルフトークを効果的に利用する。 1 2 3 4 5

17. もし私が試合においてナーバスになりすぎた時に

は、リラックスすることができる。 1 2 3 4 5

18. 私は試合が思い通りに運ぶ様子をビジュアライズ

する。 1 2 3 4 5

19. 私は練習中、邪魔になる考えをコントロールする

ことができる。 1 2 3 4 5

20. 私は練習がうまくいかない時、フラストレーショ

ンがたまり、イライラする。 1 2 3 4 5

21. 私は試合意中、自分のパフォーマンス維持のために

、自分に言い聞かせる特定のキーワードやフレーズが

ある。 1 2 3 4 5

22. 私は、自分自身の試合についての目標を達成したか

どうかを評価する。 1 2 3 4 5

23. 練習中、私の動きとスキルは次から次へと流れてい

くように思われる。 1 2 3 4 5

24. 私は、試合中にミスをした時、集中力を取り戻すこ

とに苦勞する。 1 2 3 4 5

25. 私は必要であれば、パフォーマンスの準備のために、

自分をリラックスさせることができる。 1 2 3 4 5

26. 私は、試合のためにとても具体的な目標を設定する。

1 2 3 4 5

27. 私は練習において、準備するためにリラックスをす

る。 1 2 3 4 5

28. 私は試合においてパフォーマンスをする準備として、

自分自身の感情を高ぶらせることができる。 1 2 3 4 5

29. 私は練習において、すべてのスキルや動きを、スキ

ルの個々の部分に集中することなく、自然に任せるこ

とができる。 1 2 3 4 5

30. 試合中私は「自動操縦モード」でパフォーマンスを

する。 1 2 3 4 5

31. 試合中、何かに動揺したとき、私のパフォーマンス

は悪くなる。 1 2 3 4 5

32. 試合中私はポジティブな考えを持ち続ける。 1 2 3 4 5

33. 私は試合中、自分のパフォーマンス維持のために、

自分自身にものを言う。 1 2 3 4 5

34. 試合において、私はパフォーマンスの感触について

自分の想像のなかでリハーサルする。 1 2 3 4 5

35. 私は自分自身に活力を与える方法を練習する。 1 2 3 4 5

36. 試合中、私は自分のセルフトークを効果的に利用す

る。 1 2 3 4 5

37. 私は練習時間を効率よく利用することを助長するた

めに、目標 1 2 3 4 5

38. 私はもし練習中に動きがおそいと感じた場合、自分

自身に活力を与えることに苦勞する。 1 2 3 4 5

39. 練習中、物事がうまくいかない時、私は自分自身の

感情をコントロールし続ける。 1 2 3 4 5

40. 私は試合のために、感情を高ぶらせるために必要と

されることを行う。 1 2 3 4 5

41. 試合中、私はパフォーマンスすることについてあま

り考えない—私は成り行きに任せる。 1 2 3 4

5

42. 練習において、私が自分自身のパフォーマンスをビ

ジュアライズするとき、どのように感じるかをイメー

ジする。 1 2 3 4 5

43. 私は試合において緊張しすぎているとき、リラックス

することが難しいと感じる。 1 2 3 4 5

44. ワークアウトの間、私は自分自身の活力レベルを高

めることが難しいと感じる。 1 2 3 4 5

45. 練習中、私は、自分自身の注意に効果的に集中する。 1 2 3 4 5

46. 私は、試合のために個人的なパフォーマンスの目標

を設定する。 1 2 3 4 5

47. 私はポジティブなセルフトークを通して、トレーニング

に対する意欲を高める。

1 2 3 4 5

48. 練習中、私はすべてがうまく流れているように感じる。

1 2 3 4 5

49. 私はトレーニング中、自分自身に活力をつける練習

する。

1 2 3 4 5

50. 私は長く続く練習では、自分の集中力を保つことに

苦勞する。

1 2 3 4 5

51. 私は、練習の効果を最大にするため、自分自身にポ

ジティブに話しかける。

1 2 3 4 5

52. 私は試合のための最適なレベルに自分自身の活力を

高めることができる。

1 2 3 4 5

53. 私は、練習のためのとても具体的な目標を持っている。

1 2 3 4 5

54. 試合中、私は意識的な努力はほとんどなく、直感的

にプレイ/パフォーマンスする。

1 2 3 4 5

55. 私は試合において、自分自身の競技におけるルーテ

ィーンを行う前にそのイメージをする。

1 2 3 4 5

56. 私は試合中にうろたえることを、イメージする。

1 2 3 4 5

57. 私は、最高の試合をするために、自分自身にポジテ

ィブに話しかける。

1 2 3 4 5

58. 私は練習のための目標は設定せず、ただそれに参加

し練習をする。

1 2 3 4 5

59. 私は試合において、自分自身のパフォーマンスを頭

の中でリハーサルする。

1 2 3 4 5

60. 私は練習においてうまくいかないとき、感情をコン

トロールすることに苦勞する。

1 2 3 4 5

61. 練習においてパフォーマンスがうまくいかない時、

私は集中力を維持できなくなる。

1 2 3 4 5

62. 試合において、自分自身の感情がベストなパフォー

マンスをすることへの妨げとなる。

1 2 3 4 5

63. 試合のプレッシャーにより、自分自身の感情をコン

トロールできなくなる。

1 2 3 4 5

64. 練習において、自分自身のパフォーマンスをビジュ

アライズするとき、私はビデオの中で自分自身を見

るようなイメージする。

1 2 3 4 5

APPENDIX B

DEMOGRAPHIC QUESTIONNAIRE

Demographic Information

Today' Date:_____

Name :_____ Age:_____

Team:_____

Years Playing Rugby:_____

Playing Position:_____

Professional Status: Pro Non-pro

Number of Games Played on National Team :_____

Mental Training Experience

Do you have any mental training experience? Yes No

If Yes,

Currently, do you individually work with mental consultant? Yes No

Have you ever individually worked with mental consultant? Yes No

Currently, does your team work with mental consultant? Yes No

Has your team ever worked with mental consultant? Yes No

基本情報

今日の日付: _____

名前: _____ 年齢: _____

チーム名: _____

競技年数: _____

ポジション: _____

競技形態: プロ アマチュア

代表キャップ数: _____

心理スキルは練習でのパフォーマンスにおいてどの程度重要ですか？

全 く 重要でない										非常に 重要である
1	2	3	4	5	6	7	8	9	10	

心理スキルは試合でのパフォーマンスにおいてどの程度重要ですか？

全 く 重要でない										非常に 重要である
1	2	3	4	5	6	7	8	9	10	

メンタルトレーニング暦

メンタルトレーニングの経験はありますか？ はい いいえ

もし、ある場合

現在、個人的にメンタルトレーニングの指導を受けていますか？ はい いいえ

今までに、メンタルトレーニングの指導を個人的に受けたことがありますか？ はい いいえ

現在、チームでメンタルトレーニングの指導を受けていますか？ はい いいえ

今までに、メンタルトレーニングの指導をチームで受けたことはありますか？ はい いいえ

APPENDIX C

COACHES' EVALUATION

Please rank 15 psychologically strong and 15 psychologically weak players on your team and write down their names. No one but the researcher have access to the result of this evaluation.

For this evaluation, a psychologically strong player refers to a player who has the ability to consistently perform toward the upper range of ones talent and skill, regardless of competitive or practice circumstances and overall level of physical ability.

	Psychologically strong players	Psychologically weak players
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

APPENDIX D

CONSENT FORM

Dear Participant:

My name is Shogo Tanaka and I am a graduate student at Michigan State University. I am studying Sport Psychology, which is a field that has grown over recent years due to the fact that athletes and coaches are putting a stronger emphasis on the mental aspect of sport to compliment the physical aspect. You are being asked to participate in a research study of psychological strategies in Japanese rugby players. The purpose of this form is to request your permission regarding participation in this research project for my master's thesis.

The purpose of the study is to assess performance and preparation strategies that Japanese rugby players are using. In this study you will be asked to complete a questionnaire that asks you to think about mental skills you may use in practice and competition settings. You will not receive money or any other form of compensation for participating in this study.

Completion of the questionnaire will last approximately 15 – 30 minutes and there is minimal risk for emotional or psychological harm should you choose to participate. You will not directly benefit from your participation in this study. However, your participation in this study may contribute to the understanding of psychological aspects of rugby performance. All of your information and scores in this study are anonymous, and your coaches or teammates will not have access to your responses. The access to your data will be limited to only the researcher and the Michigan State University's Human Research Protection Program and your confidentiality will be protected to the maximum extent allowable by law. At no time will your name be associated with any scores or statements made during the study. All of your information will be stored in a locked file cabinet in the locked room of the researcher for three years, whereupon it will be destroyed.

If you have any concerns or questions about this research study, such as scientific issues, how to do any part of it, or to report an injury, please contact my graduate advisor, Dr. Dan Gould (Tel: 517-432-0175, e-mail: drgould@msu.edu or regular mail: 210 IM Circle MSU, East Lansing, MI 48824) or the researcher, Shogo Tanaka (Tel: 517-420-5156, e-mail: tanakas4@msu.edu or regular mail: 1 IM Circle Michigan State University, East Lansing, MI 48824). If you have questions or concerns about your role and rights as a research participant, would like to obtain information or offer input, or would like to register a complaint about this study, you may contact, anonymously if you wish, the Michigan State University's Human Research Protection Program at 517-355-2180, Fax 517-432-4503, or e-mail irb@msu.edu or regular mail at 207 Olds Hall, MSU, East Lansing, MI 48824.

Your signature below assures that you have been informed about the nature of this study and why it is being conducted. Your participation is voluntary and that you may discontinue participation at any time, refuse to answer any questions, and that refusal to participate will involve no penalty or loss of benefits to which you would otherwise receive.

I voluntarily agree to participate in this research study.

Participant's Signature _____ Date _____

研究協力依頼及び同意書

調査にご協力くださる方へ

私はミシガン州立大学大学院の田中勝悟と申します。スポーツ心理学を専攻とし、多くのスポーツ選手、コーチが心理面におけるパフォーマンスへの影響を重要視する中で発展しているスポーツ心理学の研究をしています。

本研究は日本人ラグビー選手が練習時、試合時に用いる心理スキルを評価することを目的としています。本研究参加による身体的、精神的利益及び被害はありませんが、今後のラグビーのパフォーマンスにおける心理面での理解に役立つと考えられます。

調査への回答には15～30分程度かかります。本研究の目的、本研究への参加があなたの任意によるものであっても、参加拒否、質問への回答拒否による被害が発生することなく、いつでも研究参加を辞退することができます。また、この研究協力依頼はあくまでも私の修士論文研究である「日本人ラグビー選手の心理スキル評価」への参加をお願いするものであって、それに伴う金銭的報酬がないことをあらかじめご了承ください。

本研究に関する質問は、指導教官 Dan Gould(517-432-0175, drgould@msu.edu, 210 IM Circle MSU, East Lansing, MI 48823)、田中勝悟(517-420-5156, tanakas4@msu.edu, 1 IM Circle MSU, East Lansing, MI 48824)にお寄せ下さい。また、本研究におけるプライバシーの保護に関するご質問、ご意見はミシガン州立大学 Human Research Protection Program まで電話(517-432-4503)、メール(irb@msu.edu)、または郵送(202 Olds Hall, MSU, East Lansing, MI 48824)にてお問い合わせ下さい。

以下の署名は、あなたが本研究の目的、本研究への参加があなたの任意であること、研究参加をいつでも放棄できること、質問への回答を拒否できること、参加拒否によりどのような被害も被らないとことを理解したうえで、研究への参加に同意したことを証明します。

本研究の参加に同意します。

参加者署名_____ 日付_____

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