Title

Associations Between Different Educational Stages and Match Playing Opportunities with Collective Efficacy and Group Cohesion: An Examination of competitive High-school and University rugby teams in Japan*¹

*¹ This study analyzed and interpreted some sample data used by the authors (Tatsumi and Tsuchiya, 2020) from a different perspective and supplemented this dataset with additional data based on the guidelines of The Japanese Psychological Association (2009).

Running title

Collective Efficacy and Group Cohesion in Rugby Players

Authors

Yasutaka Tatsumi ¹, Hironobu Tsuchiya ²

¹ Faculty of Sports Science, Kyushu Kyoritsu University, 1-8 Jiyuugaoka, Yahatanishi, Kitakyushu, Fukuoka 807-8585, Japan.

² Department of Sport Education, Osaka University of Health and Sport Sciences, 1-1 Asashirodai, Kumatori, Sennan, Osaka 590-0496, Japan.

E-mail
tatsumi@kyukyo-u.ac.jp
Abstract

This study aimed to examine the Collective Efficacy (CE) and Group Cohesion (GC) of players belonging to Japanese high school and university rugby teams, and to verify the associations between these concepts and educational stage and playing opportunities. The sample comprised 766 male high school and college rugby players, who belonged to highly competitive teams that have participated in national competitions. The breakdown of the sample was as follows: high school-roster players (116); high school-non-roster players, (206); university-roster players (108); and university-non-roster players (336). The survey was conducted in-season for control purposes, and only the winning teams in matches preceding and following the survey were targeted. The Japanese translated version of the Collective Efficacy Questionnaire for Sports (CEQS) was used to verify CE, and a Japanese translated version of the Group Environment Questionnaire (GEQ) was used to verify GC. Furthermore, two-way analysis of variance was performed on the values of the dependent variables for each level of the independent variables of educational stages (high school, university) shown as the total score of CE. Simple main effects analysis results indicated that, in the case of high school and university students, roster players displayed higher values than non-roster players. In addition, in the case of roster and non-roster players, high school students displayed higher values than university students. On the other hand, no interaction was shown for the total score of GC. A main effect of educational stage was observed in the analysis results, where high school students displayed higher values than university students. Moreover, regarding playing opportunities, roster players displayed higher values than non-roster players.

In addition, this study’s results demonstrate that all subscales of both concepts displayed similarities to the total scores; strongly suggesting that an association exists between different educational stages and playing opportunities, as well as between the concepts themselves. This showed that differences in CE and GC arose from differing educational stages and playing opportunities. The findings obtained in the present study can provide helpful insights that inform coaching and management of team sports in season.

Keywords: team psychology, teamwork, roster, CEQS, GEQ
1. Introduction

High athletic performance involves psychological and physical strength and skill (Nakagomi, 2016; Terada et al., 1996). In examining team performance in competitive sports, it is important to consider the concepts of collective efficacy and group cohesion. Collective efficacy (CE) expresses group competency (Bandura, 1982) and has been defined as “a group’s shared belief in its conjoint capability to organize and execute the courses of action required to produce given levels of attainment” (Bandura, 1997, p.477). CE is positively associated with team performance (Uchida et al., 2011). Group cohesion (GC) describes the interconnecting bonds between team members, and their connection to the group as a whole (Carron, 1982). It is defined as “a dynamic process that is reflected in the tendency for a group to stick together and remain united in pursuit of its goals and objectives” (Carron, 1982, p.124). GC is positively associated with team performance (Carron et al., 2002).

Among competitive sports teams, participation in activities that are directly related to the team’s purpose, such as winning matches, may influence each player’s CE and GC (Yamada et al., 2014). Since CE and GC have a positive association with team performance, verifying the association between CE, GC, and playing opportunities may provide important insights that inform the coaching and management of team sports in season. Furthermore, to gain in-depth knowledge, it is necessary to use sufficiently competitive teams (Tatsumi and Tsuchiya, 2020). However, research on the CE and GC of competitive sports teams is scarce. Existing studies focus on the results of either CE or GC in relation to a single team (Ronglan, 2007) or in relation to several teams in high- or low-level competition (Myers et al., 2007). Furthermore, although some studies consider a single team from different perspectives (Yamada et al., 2014), there are few cross-sectional studies using multiple teams to examine the relationship between CE and/or GC and playing opportunities. Moreover, to our knowledge, no studies have been conducted using multiple teams at a specified level of competition and during a given period (e.g., pre-season and in season). It is important to note that CE and GC tend to have a greater effect on performance in sports with more field players (Kawazu et al., 2012). Therefore, the present study aimed to address the existing study gap by focusing on rugby teams, which comprise 15 players. Rugby emphasizes the role of the captain, while other team
members take on differentiated positional roles. Accordingly, the psychological state of individual rugby players is likely to be reflected in team performance (Hodge et al., 2014).

Hodge et al. (2014) reported that the major psychological concepts involved in rugby are the presence of competence and group unity. However, the living environment of players (Mura et al., 1998) and the competition environment (Shimamoto and Yonekawa, 2014) may differ depending on the player’s educational stage (that is, high school or university). Therefore, the evaluation of the subordinate concepts that constitute team psychology may differ (Jindo et al., 2017). In addition, while a variation in team abilities strongly affects match outcomes, especially in rugby (Terada et al., 1996), this is only applicable to college-age students and above. In high school students, psychological factors have been shown to overwhelm most predictions of wins and losses (Terada et al. 1996). Therefore, the characteristics and tendencies of CE and GC may differ according to educational stages. Consequently, when examining both concepts, teams at different educational stages should be included.

Previous study indicates that cultural background has an impact on a sports teams’ psychological concepts (Chow and Feltz, 2008). Since most of the existing study on CE and GC has been conducted in Western countries, more studies focusing on teams from different cultures are needed (Uchida et al., 2011).

Therefore, the present study aimed to determine CE and GC among Japanese high school and university rugby teams; and to examine the associations between CE, GC, educational stage, and match playing opportunities. Ultimately, the findings obtained in this study will lend insight into the psychological dynamics of team sports.

2. Method
2.1. Participants and time frame

A postal survey was carried out between October 2017 and December 2018. This study used some of the sample data from Tatsumi and Tsuchiya (2020). In Tatsumi and Tsuchiya (2020), there was no control over the victory and losses of the matches immediately preceding and following the survey,
and the interpretation of the results was limited. Therefore, it was necessary to target only the winning teams in the target matches. Thus, in the present study, we extracted the data from the previous sample and combined it with the new data.

First, we extracted 337 participants (205 players from 3 high school teams, and 132 players from 2 university teams) who had won the target match, from the previous data. Then, according to the playing opportunities (roster vs. non-roster players) in the target match, we classified them into 69 roster players and 136 non-roster players from high school teams, and 42 roster players and 90 non-roster players from university teams. The new data included 440 participants (120 players from 2 high school teams, and 320 players from 3 university teams) from winning teams in the target matches. Excluding incomplete answers, 429 participants (117 players from high school teams, 312 players from university teams) were used for analysis (valid response rate: 97.5 %). In addition, as in the previous sample, we classified 47 roster players and 70 non-roster players in high school teams, and 66 roster players and 246 non-roster players in university teams. In summary, the participants analyzed in this study were 116 roster players and 206 non-roster players from high school teams, and 108 roster players and 336 non-roster players from university teams. For the purposes of this study, a roster player is defined as a player who was likely to play in both targeted matches as a registered player, and a non-roster player is defined as a player who was not registered in either or both of the targeted matches. All data used in this study were collected in-season, and the teams which played for the targeted matches were chosen at the same competitive level as far possible.

High school teams were those taking part in the semi-finals and finals in each prefecture’s qualifying rounds for the National Tournament, as well as those in each region’s invitational tournaments. University teams consisted of those participating in top-tier league matches and knockout tournaments, as well as the semi-finals and finals of the National Championship qualifying tournaments in each region. In addition, all teams were highly competitive and had previous experience with the National Championships. Table 1 shows the data for each team.

2.2. Procedures
This survey was based on the principles of the Declaration of Helsinki and was carried out based on adequate ethical considerations. Before the survey, the purpose, contents, and ethical contents of the study were explained directly to the representative of each team. Questionnaires were mailed out after permission was obtained to conduct the survey. Before administering the survey, details of the purpose, content, and aforementioned ethical considerations were expressed in writing to survey respondents.

In addition, signed consent was obtained from the survey respondents after the same content was conveyed orally to them by a representative. If survey respondents were under 20 years old, consent was also obtained from their parents through the representative. All team members were requested to participate in the survey. However, participants were informed in advance that participation in the survey was voluntary. Representatives were asked to conduct the surveys, then collect the questionnaires and return them to the researchers. All surveys were conducted once within the week preceding or following a match.

2.3. Measures

To measure CE, we used a Japanese translated version of the Collective Efficacy Questionnaire for Sports (CEQS) originally created by Short et al. (2005) (Nagao and Sugiyama, 2013; Uchida et al., 2014). The CEQS comprises five factors and twenty items; including Persistence (Factor 1), Preparation (Factor 2), Unity (Factor 3), Effort (Factor 4), and Ability (Factor 5). Respondents were asked to select from eleven answers on a Likert scale ranging from 0 (“not at all confident”) to 10 (“extremely confident”). Since each factor consisted of five items, the score range of each subscale was 0 to 20, and the total score ranged from 0 to 200. Higher scores indicated higher identification with the items. In addition, the reliability and validity of this scale was established by Short et al. (2005).

GC was measured using a Japanese translated version of the Group Environment Questionnaire (GEQ), originally created by Carron et al. (1985) (Oda et al., 2007; Uchida et al., 2014). The GEQ comprises four factors and eighteen items; including: Individual Attraction to the Group Social
Cohesion (ATG-S; Factor 1), Individual Attraction to the Group Task Cohesion (ATG-T; Factor 2), Social Integration-Social Cohesion (GI-S; Factor 3), and Group Integration-Task Cohesion (GI-T; Factor 4). Furthermore, ATG-S and GI-S were classed together as Social Cohesion (SC); and ATG-T and GI-T, as Task Cohesion (TC) (Carron et al., 1998). Respondents recorded answers on a Likert-scale ranging from 1 (“completely disagree”) to 9 (“fully agree”). ATG-S and GI-T were composed of 5 items, with a score range of 5 to 45. ATG-T and GI-S were composed of 4 items, with a score range of 4 to 36. The total score ranged from 18 to 162. Higher scores indicated higher agreement with the items. In addition, the reliability and validity of this scale was established by Brawley et al. (1987).

2.4. Statistical analysis

The independent variables of educational stage (high school, university) and playing opportunities (roster, non-roster players), the total scores of each scale, the subscale scores of the dependent variables, and the between-participants factor were subjected to an independent factor two-way analysis of variance (ANOVA). When an interaction was observed, a test for a simple main effect was performed, and if no interaction was observed, a test for a main effect was performed. IBM SPSS Statistics 25 was used for statistical analysis, and statistical significance was set at $p<0.05$ for all analyses.

3. Results

Figure 1 shows the results of the CEQS. An interaction was observed in total scores [$F (1, 762) =15.96, p<0.01$]. Simple main effects analysis results showed that, in the case of high school and university students, roster players displayed higher values than non-roster players ($F (1, 762) =61.42, p<0.01$, $F (1, 762) =5.87, p=0.02$, respectively). A simple main effect was also observed in roster and non-roster players, showing higher values in high school students than in university students ($F (1, 762) =50.54, p<0.01$, $F (1, 762) =11.71, p<0.01$, respectively). Moreover, interactions were observed in all subscale items. Overall, the roster players
scored higher than the non-roster players in the simple main effect of playing opportunities, and high school students scored higher than university students in the simple main effect of the educational stage.

Figure 2 shows the results of GEQ. No interaction was observed in total scores \(F(1, 762) = 0.47, p = 0.49\). Contrarily, results indicated that a main effect of educational stage was that high school students displayed higher values than university students \([F(1, 762) = 59.33, p < 0.01]\). Results showed that a main effect of playing opportunities was that roster players displayed higher values than non-roster players \([F(1, 762) = 30.83, p < 0.01]\). No interactions were shown in any of the subscale items. However, a main effect of educational stage was shown in all subscale items, and high school students displayed higher values than university students. In addition, a main effect of playing opportunities was also observed in all subscale items, and roster players displayed higher values than non-roster players.

4. Discussion

This study aimed to verify the CE and GC of players belonging to Japanese high school and university rugby teams, and to examine the associations between these concepts, educational stage, and playing opportunities. Interaction was observed in CE, with roster players displaying higher values than non-roster players, and a greater difference was evident between the two for high school students than for university students. In addition, high school students displayed higher values than university students, with a larger difference between the two for roster players than for non-roster players. Contrarily, this interaction was not observed for GC, but high school students displayed higher values than university students, irrespective of playing opportunities. Furthermore, roster players displayed higher values than non-roster players, irrespective of educational stage. Additionally, all subscales for both CE and GC displayed similarities to the total scores.

The CE results according to playing opportunities differ from Lichacz and Partington’s (1996) findings that members belonging to the same group tended to display uniform CE values. Uchida et al. (2017) examined the process of evaluating each individual’s CE based on the relative merits of
their performance in responding to a challenge imposed upon the group. They reported that members of poorly performing groups evaluated their CE solely on the basis of past experience, whereas individuals in superior-performing groups also considered their potential for contributing to the achievement of group goals. For the present study, it can be assumed that the group’s challenge is to win a match. Therefore, it may be said that the group displaying superior performance in response to the challenge is the roster players, while the group displaying inferior performance is the non-roster players. In other words, it is conceivable that the roster players in this study evaluated their CE from the perspective of a match participant, anticipating how capable they would be to contribute to a team victory, based on assumptions about the match as well as the opposition team. Therefore, it can be inferred that CE would be more highly rated among roster players than non-roster players in the period leading up to victorious matches. In addition, Ronglan (2007) considered previous achievements and match victories to exert the strongest influence on increasing CE. Therefore, it may also be true that roster players participating in a match and directly contributing to the team’s victory display experience higher CE. It also noted that there is no difference between non-roster and roster players in the Preparation and Effort subscales in college students. However, in high school students, roster players had higher scores than non-roster players in all items. Thus, the association between playing opportunities and CE differs in Preparation and Effort between high school students and university students.

The following discusses the CE results for the different educational stages. In this study, CE was defined as a concept of self-efficacy (SE) extrapolated to the population level (Feltz et al., 2007). Self-esteem is known as a constructive concept of SE, and previous study indicates that self-efficacy and CE are positively related (Woodruff and Cashman, 1993). Thus, higher self-esteem improves SE, which leads to higher CE. Shimamoto and Yonekawa (2014) revealed that challenging activities aimed at improving competitiveness positively influenced self-esteem. However, the above are specific results that were found only in high school students and have not been confirmed among university students. In this study, high school students may have had higher self-esteem than university students. Both matches and training against equally matched opposing teams can be
challenging. This is particularly true for high school roster players. In addition, Jindo et al. (2017) reported that in high school athletes, specializing in team sports improves the SE of roster players. This may also have affected the present study’s results. As previously mentioned, high school players in the present study are perceived to have higher self-esteem and SE than university players. These factors may explain the differences between the CEs of each educational stage. In addition, it is clear from the results that high school students generally evaluate CE highly, regardless of the opportunity to play in the match. However, in the subscales of Unity and Ability for non-roster players, no difference was observed between the values of high school and university students. From these results, it can be construed that Unity is evaluated similarly to Ability, regardless of the educational stages for non-roster players.

Regarding GC, previous studies have revealed that high school students are more likely than university players to unite as a team and strive for a common purpose (Fujita and Nomoto, 2015). Moreover, it has been reported that high school players tend to have a greater sense of unity than university players (Yamada et al., 2014). The results of this study support these observations. In addition, Mura et al. (1998) compared high school and university players and found that high school student’s lifestyles and personal relationships tend to be chiefly shaped by the school environment. Therefore, high school players may rate SC higher than university players among teams comprising students who attend the same school; this study appears to confirm this possibility. In addition, Nakamura et al. (2009) state that university students tend to prioritize activities in the pursuit of personal achievement over team goals when compared with educational stage up to and including high school. That is, when compared with high school students, university students tend not to rate TC as enthusiastically.

Regarding how differing playing opportunities affect GC results, Yamada et al. (2014) highlighted the greater sense of team belonging among roster players vis-a-vis non-roster players; which is supported by the present study’s results. While increasing opportunities for all team members to interact with key team members and coaching staff is effective in improving GC, roster players, in comparison with non-roster players, receive more direct guidance from coaches and more benefits.
from team meetings (Tatsumi and Tsuchiya, 2018). In addition, this tendency is more pronounced during the season (Tatsumi and Tsuchiya, 2018). Therefore, as observed in the present study, it is possible that more emphasis was placed on team unity and motivation among the roster players than the non-roster players. It can also be inferred that differences in GC occurred from the standpoint of playing opportunities. On the other hand, Yamamoto (1990) identified that roster players showed a greater appreciation of team atmosphere and freedom than non-roster players; that is, roster players tended to value SC more highly. Furthermore, because roster players found meaning in playing the sport itself (Yokota, 2002), they are regarded as being more passionate about playing and more motivated to achieve goals. It has been suggested that willingness to play and ambition are more likely to decline among non-roster players (Yokota, 2002). These findings may explain why roster players displayed higher TC values than non-roster players.

As previously stated, it can be presumed that high school players and roster players value the subordinate concepts of GC, SC, and TC more highly than university players and non-roster players. These observations are likely to have influenced the GC results in this study.

5. Significance of this study and future prospects

Notably, this study presents a Japanese case that fills a gap in the literature regarding non-Western studies on CE and GC. The majority of previous studies in this field were conducted in Western countries. Furthermore, few cross-sectional studies have reported on educational stage and playing opportunities, and their associations to CE and GC. Few studies on this subject control for variables such as match results, level of competition, and time frames. Additionally, this study, while limited to rugby teams, also demonstrates how the participant’s state of mind was reflected in team performance. This may provide helpful insights that inform future coaching and management of team sports.

6. Limitations of the study
In this study, the competition level of the target team, the survey period, and the victory or loss of the target match were controlled. Therefore, the generalizability of the results is limited. Further study should include data from different competition levels and from losing teams. In addition, we only analyzed data from individuals, but from different hierarchies of teams. Furthermore, we have not considered factors other than the educational stage and playing opportunities. Therefore, we did not clarify factors such as individual and team conditions and their impact on performance. Future studies will be necessary to consider the association between these factors from a new perspective.

7. Conclusion

The purpose of this study was to shed light on the CE and GC of players belonging to Japanese high school and university rugby teams, and to verify the associations between these concepts and educational stage and playing opportunities. Ultimately, interaction was observed in CE, with roster players displaying higher values than non-roster players, and a greater difference was evident between the two in high school students versus university students. In addition, high school students displayed higher values than university students, with a larger difference between the two for roster players than for non-roster players. This interaction was not observed in GC, but in all items, including the subscales, high school players displayed higher values than university players, irrespective of playing opportunities, and roster players displayed higher values than non-roster players, irrespective of educational stage. In the results of the present study, all subscales of both concepts displayed similarities to the total scores; this strongly suggests that an association exists between different educational stages and playing opportunities, as well as between both concepts themselves. In addition, it is interesting to note that CE displayed particularly high values in high school-roster players.

Future investigations into the topic may include all match results, different sports, and teams at different levels of play. These factors are likely to provide a comprehensive knowledge bank to optimize the management and coaching of sports teams.
Acknowledgments

We would like to sincerely thank the coaches and players. We would also like to extend our warmest gratitude to Mr. Akihito Yaita and Mr. Junji Shinohara.

References

Bandura, A. (1982). Self-efficacy mechanism in human agency. Am. Psychol., 37: 122-147.
Bandura, A. (1997). Self-efficacy: The exercise of control. W. H. Freeman: New York.
Brawley, L. R., Carron, A. V., and Widmeyer, W. N. (1987) Assessing the cohesion of teams: validity of the Group Environment Questionnaire. Journal of Sport Psychology., 9: 275-294.
Carron, A. V. (1982). Cohesiveness in sport groups: Interpretations and considerations. J. Sport Psychol., 4: 123-138.
Carron, A. V., Brawley, L. R., and Widmeyer, W. N. (1998). The measurement of cohesiveness in sport groups. Advances in sport and exercise psychology measurement., 23: 213-226.
Carron, A. V., Colman, M. M., Wheeler, J., and Stevens, D. (2002). Cohesion and performance in sport: A meta-analysis. J Sport Exerc Psychol., 24: 168-188.
Carron, A. V., Widmeyer, W. N., and Brawley, L. R. (1985). The development of an instrument to assess cohesion in sport teams: The Group Environment Questionnaire. J. Sport Psychol., 7: 244-266.
Chow, G. M., and Feltz, D. L. (2008). Exploring the relationships between collective efficacy, perceptions of success, and team attributions. Journal of Sports Sciences, 26: 1179-1189.
Feltz, D. L., Short, S. E., and Sullivan, P. J. (2007). Self-efficacy in sport: Research and strategies for working with athletes, teams, and coaches. Champaign, IL: Human Kinetics.
Fujita, I., and Nomoto, T. (2015). [A Study on Relations of the Type of the Coach and the Characteristic of the Team in the Baseball Coach to Junior High Students and High School Students]. Environment and Management: Journal of Shizuoka Sangyo University., 21: 67-79. (in Japanese)
Hodge, K., Henry, G., and Smith, W. (2014). A case study of excellence in elite sport: Motivational
climate in a world champion team. Sport Psychol., 28: 60-74.

Jindo, T., Suzukawa, K., Kai, Y., Kitano, N., Matsubara, I., Ueki, T., Osanai, H., Ochi, E., Aoyama, K., and Nagamatsu, T. (2017). [Generalized self-efficacy and related factors in sports activity characteristics in male adolescents]. Bulletin of The Physical Fitness Research Institute., 115: 8-14. (in Japanese)

Kawazu, K., Sugiyama, Y., and Nakasuga, T. (2012). [An Investigation of the Changing Relationship between the Collective Efficacy and Team Performance of a Sport Team for Different Sporting Events]. Japanese Journal of Sport Psychology., 39: 153-167. (in Japanese)

Lichacz, F. M., and Partington, J. T. (1996) Collective efficacy and true group performance. International Journal of Sport Psychology., 27: 146-158.

Mura, T., Tamura, S., Taomori, T., Sekiya, T., and Fujigawa, H. (1998). [The relationship between the lifestyle and mental health of male high school and university students]. Japan Society of Human Growth and Development., 26: 43-52. (in Japanese)

Myers, N. D., Payment, C. A., and Feltz, D. L. (2007). Regressing team performance on collective efficacy: Considerations of temporal proximity and concordance. Meas Phys Educ Exerc Sci., 11: 1-24.

Nagao, Y., and Sugiyama, Y. (2013). [Development of the japanese collective efficacy questionnaire for sports]. Kyushu Journal of Physical Education and Sport., 27: 1-11. (in Japanese)

Nakagomi, S. (2016). [Psychological support for athletes]. In Japanese Society of Sport Psychology (ed), Sport Mental Training Textbook Third Revised Edition (pp2-6). Tokyo: Taishukan. (in Japanese)

Nakamura, H., Shigeta, S., and Ariyoshi, M. (2009). [Influence of social support on athletes’ feelings of adjustment and the achievement motivation to their sport activities]. Tokyo Gakugei Univ. Division of Arts and Sports Sciences., 61: 121-127. (in Japanese)

Oda, N., Yamamoto, K., and Tokunaga, M. (2007). [Relationship with structure inspection of group cohesion in sports and the performance]. Report of the sports medicine scientific research
furtherance in the Mizuno sports promotion foundation. (in Japanese)

Ronglan, L. T. (2007). Building and communicating collective efficacy: A season-long in-depth study of an elite sport team. Sport Psychol., 21: 78-93.

Shimamoto, K., and Yonekawa, N. (2014). [The impact of sport experience in athletic clubs on life skills acquisition in adolescent golfers]. Bulletin of the Faculty of Education, Mie University. Educational science., 65: 327-333. (in Japanese)

Short, S. E., Sullivan, P., and Feltz, D. L. (2005). Development and preliminary validation of the collective efficacy questionnaire for sports. Meas Phys Educ Exerc Sci., 9: 181-202.

Tatsumi, Y., and Tsuchiya, H. (2018). Changes in high school rugby team’s psychological dynamics: focusing on group cohesion and collective efficacy. Journal of Sports Science and Health Academic Journal of Faculty of Sports Science, Chulalongkorn University., 19: 30-50.

Tatsumi, Y., and Tsuchiya, H. (2020). [Collective efficacy and group cohesion as seen from university and high school student opportunities to participate in a game: Age group-specific characteristics seen in top-ranking rugby teams]. The Japan Journal of Coaching Studies., 33: 185-196. (in Japanese)

Terada, Y., Okamoto, M., Takada, M., and Takatsu, H. (1996). [Study on psychological competitive ability of high school rugby players]. The Journal of Science of Culture and Humanities., 57: 39-44. (in Japanese)

The Japanese Psychological Association. (2009). [Code of ethics and conduct]. (in Japanese)
https://psych.or.jp/wp-content/uploads/2017/09/rinri_kitei.pdf (accessed 2020-2-4).

Uchida, R., Kugihara, N., Higashi, A., and Tsuchiya, H. (2017). [Effects of past experience on collective efficacy: Focusing on instrumentality of individual members]. Jpn J Physiol., 88: 219-229. (in Japanese)

Uchida, R., Machida, M., Tsuchiya, H., and Kugihara, N. (2014). [Revision and Japanese translation of the Collective Efficacy Questionnaire for Sports: Test of its construct validity]. Jpn. J. Phys. Educ. Health Sport Sci., 59: 841-854. (in Japanese)

Uchida, R., Tsuchiya, H., and Sugo, T. (2011). [Current collective efficacy research and future
perspectives for sports groups: focusing on performance relativity and analysis methods]. Jpn. J. Phys. Educ. Health Sport Sci., 56: 491-506. (in Japanese)

Woodruff, S. L., and Cashman, J. F. (1993). Task, domain, and general efficacy: A reexamination of the self-efficacy scale. Psychological Reports., 72: 423-432.

Yamada, K., Arai, H., Nakazawa, T., kawata, Y., Kamimura, A., Kitamura, K., and Hirosawa, M. (2014). [Relationship between Unity and Organizational Climate in Sports Teams: Examination of the Method Originating from Communication for Enhancing Team Unity]. Journal of Society of Sports Industry., 24: 113-127. (in Japanese)

Yamamoto, N. (1990). [A comparison of regulars and reserves regarding motives for participation to intercollegiate athletic clubs in an university]. Jpn. J. Phys. Educ. Health Sport Sci., 35: 109-119. (in Japanese)

Yokota, M. (2002). [Variation in the motivation and burnout scale with continuation or discontinuation of sports in high school athletes]. Jpn. J. Phys. Educ. Health Sport Sci., 47: 427-437. (in Japanese)
| Team   | Participants (Roster / Non-roster) | The best result of competition |
|--------|-----------------------------------|-------------------------------|
| A      | 97 (22/75)                        | National champion             |
| B      | 39 (24/15)                        | Semifinals in national championship |
| C      | 69 (23/46)                        | Semifinals in national championship |
| D      | 42 (23/19)                        | Last sixteen in national championship |
| E      | 75 (24/51)                        | Semifinals in national championship |

| Team | Participants (Roster / Non-roster) | The best result of competition |
|------|-----------------------------------|-------------------------------|
| F    | 72 (20/32)                        | Last sixteen in national championship |
| G    | 60 (22/38)                        | Last sixteen in national championship |
| H    | 102 (23/79)                       | National champion             |
| I    | 97 (20/77)                        | Semifinals in national championship |
| J    | 115 (23/60)                       | National champion             |
Figure 1 CEQS Subscale and Total Scores, Educational Stage and Playing Opportunities
Figure 2 GEQ Subscale and Total Scores, Educational Stage and Playing Opportunities
Name

Yasutaka Tatsumi

Affiliation

Faculty of Sports Science, Kyushu Kyoritsu University

Address

1-8 Jiyuugaoka, Yahatanishi, Kitakyushu, Fukuoka 807-8585, Japan

Brief Biographical History

2011-2013 Master program completed, Osaka University of Health and Sport Sciences
2013-2017 Lecturer, Faculty of Sports Science, Kyushu Kyoritsu University
2014-2017 Doctoral program completed with expulsion, Osaka University of Health and Sport Sciences
2017-present Associate Professor, Faculty of Sports Science, Kyushu Kyoritsu University

Main Works

Tatsumi, Y., and Tsuchiya, H. (2018). Changes in high school rugby team’s psychological dynamics: focusing on group cohesion and collective efficacy. Journal of Sports Science and Health Academic Journal of Faculty of Sports Science, Chulalongkorn University., 19: 30-50.

Tatsumi, Y. (2018). [Changes in the mood and emotions among staff of a collegiate male rugby team during summer training camps: Comparative study of men, women and grade on the same team]. Kyushu journal of physical education and sport., 33: 9-18. (in Japanese)

Tatsumi, Y., and Tsuchiya, H. (2020). [Collective efficacy and group cohesion as seen from university and high school student opportunities to participate in a game: Age group-specific characteristics seen in top-ranking rugby teams]. The Japan Journal of Coaching Studies., 33: 185-196. (in Japanese)
Membership in Learned Societies

Japan Society of Physical Education, Health and Sport Sciences

Japanese Society of Sport Psychology

Japanese Society for Athletic Training

The Japan Society of Coaching Studies

Japanese Society of Science and Football

Japanese Society of Clinical Sport Medicine

Kyushu Society of Physical Education and Sport