Original Article

Australia's National Rugby League's Player Development Framework: Evaluating strategies (2019)

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ABSTRACT

Rugby League (RL) is one of four football codes boasted across Australia; however, its participation rates are significantly lower when compared to other club sports, due to it being restricted to specific regions of Australia and viewed historically as a 'male only' sport. This is of particular concern throughout the junior competitions. Therefore, it is imperative that the National Rugby League's (NRL) future participation strategies adopt and reflect national / international 'best practices', so as to maintain and heighten positive and quality sporting opportunities, that are aimed to increase junior participation / retention, as well as build players' skills and personal development. The objective of this research is twofold, with the initial aim to demonstrate the clear alignment between the NRL's Player Development Framework (PDF) and national / international movements concerning shifts in junior sporting models. A secondary aim is to demonstrate the impact and participants' satisfaction levels concerning seven initiatives. A quantitative approach was employed to investigate participants' (children, n = 916; adults, n = 20) reported experiences from their direct involvement across the seven initiatives. Nine hundred and thirty-six (936) participants (youth between 4 to over 15 years, n = 916), seniors aged between 20 and over 41 years, n = 20) had data collected from seven initiatives, that were implemented across the five testing centres (Ipswich, Gold Coast, Brisbane, Toowoomba and Victoria) in 2019. The initiatives were identified as being the: 1) RISE (n = 73), 2) League Tag (n = 330), 3) Tackle Safe (n = 168), 4) 18-Month Policy (n = 155), 5) Development Competition (n = 138), 6) Community League (n = 20) and 7) Weight Related (n = 52). Participants were only required to complete the one online survey associated with the initiative they were involved in. Spearman's rho correlation (r) matrix was used to examine the strength of the association between variables, with p-values (p) employed to indicate statistically significant associations, at the one and two tails (p < .05* and p < .01**). Results have noticeably indicated that the full suite of programs have been well received and have gone to meet and support the PDF's aims. Of particular note, is the high level of participants' agreement (p < .000) indicating that the programs significantly improved their level of:1) confidence, 2) involvement, and 3) enjoyment. Importantly, data indicates that participants who identified with the aforementioned levels of agreement, were significantly (p < .000) and positively correlated with 4) higher levels of willingness to recommend each of the programs to peers.
Keywords: Sport; Participation; National Rugby League; Junior sport.

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INTRODUCTION

Junior sporting models: Creating change

Throughout 2016—2018, the NRL sought to understand the current state of national and international junior sport participation, how junior sport development models / frameworks presented similarities and / or differences throughout a national and globally context. From the reports (Appendices A and B), a number of recommendations were put forward in an attempt to steer future junior NRL implementation. In 2019, across five testing regions (Ipswich, Gold Coast, Brisbane, Toowoomba and Victoria), the NRL's Game Participation Committee Members, implemented seven player development initiatives, with these being the: 1) RISE, 2) League Tag Competitions, 3) 18 Month Registration, 4) Community League, 5) Development Competitions, 6) Tackle Safe, and 7) Weight Related. Notably, it was the aim of the seven initiatives to heighten the level of the impact and satisfaction, on NRL's three key player development objectives, being to: 1) Attract and retain participation, 2) Transition and nurture performance and 3) Foster personal development. Of importance, the NRL undertook a detailed search so as to legitimise and determine how such an approach, aligned with other national and international movements concerning participation in organised junior sport. Thus, a review of the literature, surrounding junior sporting models, was necessitated and findings of the review enabled the NRL to develop future policies and the seven initiatives that went to mirror a national and international strategic approach.

A major objective of this literature review was to present a burden of evidence that goes to indicate the national and international trends associated with junior player development strategies, that are solely aimed at increasing participation in organised sport by youth. This objective was achieved by highlighting a number of 'common threads' that presented themselves across the sporting literature. Specifically, it is clear, that across the globe, traditional approaches to junior sporting participation and performance is changing, with a view to create delivery models that are focused on a number of common motivational factors (Côté, Strachan, & Fraser-Thomas, 2016). It is envisaged, that the findings from this research, will provide a valuable 'foothold' into the world of junior player development models and as such, promote and encourage the future design, refine and implementation of strategies that are aimed at addressing increasing participation and further give legitimacy to NRL's PDF (2019) (Appendices C) and the subsequent seven initiatives.

An in-depth investigation, surrounding national and international junior sporting systems was undertaken, with an aim of understanding and improving participation and retention trends. Findings suggest that many countries (United Kingdom, United States, Norway, Canada, New Zealand) including Australia, have implemented evidence based, long term player developmental principles, in an attempt to guide national sporting organisations' junior programs, so as to better focus on heightening participation, performance and personal development levels of players. From the sporting literature, it would appear that sporting organisations that implement a number of junior player development strategies have experienced a greater improvement in the number of participants, across the junior ranks, as well as increasing and sustaining positive retention rates in organised sports.

The common approaches (from across the national and international literature) to junior sports improvement, are listed as having an emphasis on 6 fundamentals, being: 1) Diversity vs Specialisation, 2) Relative Age Effect, 3) Deliberate Play vs Deliberate Practice, 4) Maturation Effect, 5) Pygmalion Effect and 6) Matthew Effect. The forthcoming section will provide an elaboration on each sporting model and NRL's attempts to implement each.

Diversity vs Specialisation

Participating in sports is to develop well-round and diverse youth by promoting self- esteem, leadership, and relationship building with teammates as well as developing athletic abilities to be successful in a particular sport (Moesch, Elbe, Hauge, & Wikman, 2011). However, in combination with increased sport participation, it is now speculated that sports specialization including year-round sport-specific training, participation on multiple teams of the same sport, and focused participation in a single sport is also increasing (Mostafavifar, Best, & Myer, 2013; Myer et al., 2015). Sport specialization (SS), in junior sport, is described as continuous intense training over a year in a specific sport with the exclusion of all other sports whereas diversification or diversity in sport is a generalised training program which focuses on developing basic motor skills, common tactical strategies, non-specific physical training and enjoyment of participation in multiple sports (Dugas, 2017; Jayanthi, Pinkham, Dugas, Patrick, & Labella, 2013). In particular, early sport specialisation involve single-sport involvement, low Deliberate Play and progressive investment in Deliberate Practice with age. While sampling years/early diversity (age 6-12) in sport is characterised by multiple activities and sports involvement in early age with low and high involvement in Deliberate Practice and play respectively (Côté & Hay, 2002; Coutinho, Mesquita, & Fonseca, 2016).

Contrasting perspective exists for benefits and risks of early specialisation and diversification of junior sport (Federation, 2019). Some authors recommend that early diversification in early age has been reported to produce inherent enjoyment, elite achievements in team sports compared to early specialisation (Côté & Vierimaa, 2014). However, evidence from several retrospective studies of adult athletes has supported the concept of diversity before specialization as an important foundational element for talent development in one sport (Côté & Vierimaa, 2014). Early sporting diversification allows junior sport participants to gain physical, cognitive and psychosocial skills and increase motivation for participation (Jayanthi, LaBella, Fischer, Pasulka, & Dugas, 2015; Malina, 2010). The nurturing of talent through diverse sports activities without an intense focus on performance in one sport during childhood can have more positive and less negative consequences for all children involved in sport, while still facilitating the long-term development of elite performance (Galatti et al., 2017). Although early sport specialisation before the age of 13 years yield short term success and early development of skills and performance (Malina, 2010), the intrinsic risk elements associated with early sport specialisation, such as increased chances of injury from overuse, (Jayanthi et al., 2013) social isolation, physical exhaustion (Wiersma, 2000) and increased drop out due to lack of enjoyment (Gould, Tuffey, Udry, & Loehr, 1996; Wall & Côté, 2007) needs to be considered prior to designing the sport programs for juniors.

Taking consideration of the current evidence on diversity and specialisation and evidence-based policies for junior sport (Côté & Vierimaa, 2014), the NRL has set five guiding principles in their sporting programs for children under 13 years to improve participation and reduce / eliminate the negative aspect of specialised youth sport concerning training and competition. These five principles include: 1) deliver high quality, early and ongoing engagement, 2) offer a high amount of deliberate play for children, 3) delay specialisation in childhood and recognise the benefits of diversification, 4) develop optimum performance with specialised training initiated around 16 years of age and 5) freedom to choose a performance or participation pathway at around the time of transition from primary into secondary school.

Relative Age Effect

The Relative Age Effect (RAE) is a phenomenon in which children born in, or close to, a critical age cut-off period may have an advantage and disadvantages in sporting participation. (Stracciolini et al., 2016). The effect that birth timing and selection has on talent identification is simply known as the 'Relative Age Effect'(RAE). This was shown in a recent study (Stracciolini et al., 2016), where more mature soccer players

were faster than their 'less mature' peers due to a biological / physiological advantage (Ali, Pigou, Clarke, & McLachlan, 2017). As a result, it appears that the RAE (i.e., being born later potentially puts you at a disadvantage) is principally due to being physically, emotionally and cognitively less developed than other children (Stracciolini et al., 2016).

It is recognised that sporting organisations need to split children into teams using some sort of method, therefore, some suggestions or solutions have been proposed to help alleviate the effects of RAEs that have the potential to maintain and/or increase sporting participation, especially for juniors. Firstly, adaptations to the selection period or cut-off dates have been proposed. Kearney, (2015) suggested a change in selection period to make it longer, for example, 15 months, so children have opportunities to play with those who are older than them, as Côté et al. (2016) indicate that this can be advantageous for development in a number of ways. Conversely, it has also been recommended that the selection period be made shorter in order to minimise the relative age effect (Brown, Patel, & Darmawan, 2017). A study conducted by Eime, Young, Harvey, Charity and Payne (2013) found a 96% reduction in RAEs as a result of shortening the cut-off period to a length of six months, between 1 January and 1 July, suggesting this may be a potential avenue for other sporting organisations, such as the NRL, to explore in attempt to increase junior player participation.

In addition to considering a change to the cut-off period, two additional factors to consider are (a) how players are grouped; and (b) raising awareness of RAEs. To provide juniors with the opportunity to play, develop their skills and abilities, and engage in fair competition, Musch and Grondin (2001) suggest that multiple squads or teams be designed that are reflective of multiple standards. These differing squads or teams can help as some athletes may be at a high skill or technical level but are not as physically developed (Baker, Côté, & Abernethy (2003). Through these grouping strategies, it has the potential to encourage junior players to remain in the sport as they can be provided with the appropriate time and effort in order to continue developing their skills and abilities without it all going to those who are perceived more talented as a result of the RAE. It is important that awareness and understanding of RAEs are communicated throughout organisations and amongst coaches, as they play a key part in helping minimise the effects (Musch & Grondin, 2001). Therefore, the NRL has developed the seven initiatives with these recommendations in mind, in an attempt to minimise the RAEs and the Matthew, Pygmalion and Galatea effects in an attempt to maintain and potentially increase the number of junior players in the sport.

In the Australian context, relative age refers to the difference in age between children in the same age group (Musch & Grondin, 2001), where Jan 1 is used as the cut-off date. The potential consequences of relative age are described as the RAE. In consideration of the research emphasised RAE, the NRL has launched the 18 Month Registration Policy (18MRP) to provide more opportunity for players who are born between July and December to register in the year level immediately below their calendar grouping. This NRL initiative is primarily aimed to increase player retention and personal development. The NRL (2018) outline that what parents, coaches and selectors deem as 'talent' can be based on a child's physical maturity rather than their abilities and potential. Therefore, if a child receives positive support and encouragement from parents and coaches based on initial, and sometimes mistaken, perceptions of ability, this has the potential to increase the advantage already given to the child by the RAE (Hancock, Adler, & Côté, 2013). Further, the continued communication of expectations, whether high or low, can see the child aligning their own beliefs and actions with those perceptions manifested by parents and/or coaches, which can often be misguided as a result of the relative age effect (Richard, 2016). Therefore, recognising the existence of RAEs and their effect on junior players is important, as research has connected the occurrence of RAEs to decreased sporting participations rates (Gould, 1987).

Deliberate Play vs Deliberate Practice

Deliberate Play (backyard sporting activity) is considered intrinsically motivated sporting activities to promote fun and enjoyment with immediate gratification. These activities allow junior players to experiment with rules, tactics, participant sizes and ages (Côté et al., 2016). Deliberate Play promotes movement problem solving, creativity, diversification, variability, and adaptability of skills, self-challenge, and mastery. *Deliberate Practice* is referred to as highly structured sporting programs involving specific drills and training to develop a person physically and physiologically (Côté & Erickson, 2015). Deliberate Practice needs demand great effort without immediate rewards and are only aimed to improve performance rather than inherent enjoyment (Côté & Vierimaa, 2014; Ericsson, Krampe, & Tesch-Römer, 1993).

The NRL has considered the Developmental Model of Sport Participation which incorporates a significant amount of Deliberate Play when designing junior sporting programs in order to create an environment for juniors that are enjoyable, as it has been reported that a lack of fun is a significant contributor to drop out rates in junior sport. Although producing elite-level athletes is still a goal, it should not be the primary focus of junior sporting programmes. It has been identified that Deliberate Practice and Early Specialisation does not necessarily need to occur to produce elite-level athletes. Studies have indicated that athletes participated in a variety of activities and sports as children and primarily engaged in Deliberate Play rather than Deliberate Practice (Baker et al., 2003). Therefore, this reinforces the notion that the inclusion of Deliberate Play in junior sporting programmes can ensure players are having fun and want to remain a sporting participant (Kelley & Carchia, 2013; Talpey, Croucher, Bani Mustafa, & Finch, 2017), which can potentially lead to the development of professional athletes in the sport of NRL.

Maturation Effect

The developmental factors of athletes such as growth, maturation and adaptation process play a vital role in determining the success of talent identification and development programs in junior sport. In particular, the relative individual differences in growth and maturation among the junior players, of same age, creates a challenge related to opportunity (selected for participation), training and competition (Hancock et al., 2013). While considering unequal start and stop points, that is in growth in body size of children of same age, there are key effects on individual children's physical and skill development. The Maturation Effect is usually referred to as the time variation of genetically programmed series of changes (puberty onset time, tempo, extent of growth in growth spurt) and its impact on junior sports participation programs is very evident, especially the impact it has throughout contact sports, where physical development is an important factor to success (Brown et al., 2017). Evidence suggests that the interrelated areas of development (somatic, neurologic, cognitive and psychosocial) and level of maturation, of each area, can be used a guide to determine a player's level of involvement in general and specific sport participation (Brown et al., 2017). Therefore, sport organisations should recognise the variable nature of maturation among children and ensure that approaches cater to differing maturing rates and that there is no single transition point from junior to more senior level of sporting involvement (Commission, 2012).

The NRL has recognised, that junior players, with delayed physical growth and maturity, may be disadvantaged when competitions are based on chronological age. Hence, organised sporting activities should provide positive experiences regardless of their developmental status (Côté & Hay, 2002). Training methods, for junior players, need to be aligned to their status of tissue adaptation of physical stress, individual growth, and maturation and should differ from a senior or elite athlete training method (Brown et al., 2017). Common musculoskeletal injuries due to overuse or trauma include soft tissue injuries (muscle, ligaments, tendon), fractures during a growth spurt, growth plate injuries from high or repetitive loading in some sports (Brown et al., 2017).

In complementing the current research evidence, it is evident that the NRL have already implemented a number of initiatives, which provide developmental opportunities for players from age 13 onwards, thus delaying Early Specialisation with consideration of varying maturation rates. It is further evident, that all seven initiatives, that the NRL has developed and implemented throughout 2019 and beyond, align with contemporary research concerning the Maturation Effect and junior players in RL.

Pygmalion Effect

In general, the Pygmalion Effect is described as the ideology that greater the expectation placed on an individual, the greater the result that individual will achieve. Since Pygmalion Effects are said to reflect the teacher-pupil or employer-employee kind of relationship, this ideology well suits for the coach-player relationship in sport. In conjunction with the above aforementioned RAE, the Pygmalion Effect describes the coach selection and subsequent interaction with a player that perpetuates and magnifies the RAEs. As such, coaches will always have higher expectations for players, however, expectations based on false beliefs might perpetuate unfair advantages (Hancock et al., 2013). For example, a coach's inappropriate or greater expectation/s on junior players, based on their physical maturity, may lead to false or higher expectations on relatively older players (Chan, Lonsdale, & Fung, 2011). Therefore, it is evidenced that coaches, selectors and parents perpetuate the Pygmalion effect in sport based on misguided assumptions (Hancock et al., 2013). The NRL recognises such an effect on player selection, coach / player relationships and expectations. Therefore, the suite of initiatives has a broad and general aim to cater to all ability levels, irrespective of their gender, ability levels, interests or physical, emotional development and thus eliminating unrealistic expectations on junior RL players.

Matthew Effect

The Matthew Effect (closely aligned with the RAE) explains the situations where individuals begin with the initial advantage and those advantages continue over time (Soares, 2011; Hancock et al., 2013). In sport, the Mathew Effect explains how relatively older children in a team sport begin with advantage and continue to have this advantage over time. For example, children enrolled in a team sport may acquire early skill advantages compared to peers who may enrol one or two years later (LiberalAus, 2019). This initial advantage is described as the Matthew Effect that negatively influences the enrolment decisions of parents. A study on French football players reported that relatively older players were over-represented while younger players were under-represented. Also, the authors of the study suggest the enrolment bias in mainly due to parent's decision and are accountable for the genesis of RAEs (Hancock et al., 2013; Musch & Grondin, 2001). Therefore, Mathew Effects, relative to age need, to be eliminated to reduce inequitable birth-date distributions and provide a fairer environment for sport (League, NZNRL, 2019). The NRL recognises such an effect on player selection, coach / player relationships and expectations. Therefore, the suite of initiatives has a broad and general aim to cater to all ability levels, irrespective of their gender, ability levels, interests or physical, emotional development and thus eliminating biased actions and favouritism towards older junior RL players.

This review draws from a number of search tools and data bases, to ensure that the most rigorous and contemporary national and international approaches to junior participation and performance are presented. Such a thorough approach has provided significance evidence, concerning elements of the junior sporting culture which is / has been undergoing modification and delivery change, as well as identifying a philosophical shift, concerning NRL's junior RL participation and performance. Importantly, this review and research findings acknowledges, that sports and the discourses that constitute them, have become one of the more influential narratives in 21st century culture. Specifically, this review and research undertaking are concerned with giving meaning to and create an understanding about the multifaceted processes and influences that

have contributed to the changing nature to junior sporting participation and performance into the early 21st century.

METHODOLOGY

Design
A quantitative approach was employed to investigate participants' (children, $n = 916$; adults, $n = 20$) reported experiences from their direct involvement in the seven NRL initiatives. Parental guidance was encouraged for survey completion by participants under the age of 15. The initiatives were identified as being: 1) RISE ($n = 73$), 2) League Tag ($n = 330$), 3) Tackle Safe ($n = 168$), 4) 18 Month Policy ($n = 155$), 5) Development Competition ($n = 138$), 6) Community League ($n = 20$) and 7) Weight Related ($n = 52$).

Participants
Nine hundred and thirty-six (936) participants (youth: 4 to over 15 years, $n = 916$, seniors: 20 to over 41 years, $n = 20$) had data collected from seven initiatives, that were implemented across the five testing centres (Ipswich, Gold Coast, Brisbane, Toowoomba and Victoria) in 2019. Participants were only expected to complete one online survey related to the program they completed. All participants' data were de-identified and anonymous. Data collection were undertaken between June 2019 and September 2019.

Data collection
An online survey was employed and sent via an email to participants who had direct involvement with and throughout one of the seven NRL initiatives implemented in 2019. The online survey was administered by the NRL's Participation Education, Projects and Strategy team. Each question had a number of self-reflecting questions, resulting in detailed participant profiling (5-point Likert scales and 10 / 11-point scales). This study was approved (May 2019) by the Griffith University Ethics Committee (Queensland, Australia). The National Rugby Participation Education, Projects and Strategy team reviewed the project.

Data analysis
Data analysis was undertaken using Statistical Package for the Social Sciences (SPSS) (PASW20). Data preparation involved the development of one SPSS file to incorporate all responses from the final survey undertaken. The initial data analysis used Frequencies to provide a profile of respondents by personal variables (demographics). The Mean (M) and Frequency (%) was calculated using SPSS to allow comparison across groups. The validity and reliability of the data collection instrument (online survey) was increased by including a number of statistical measures, these being: 1) Bartlett's test of sphericity ($p < .05$) and (Kaiser-Meyer-Olkin = $> .800$) identified, with Bartlett's test of sphericity indicating that there were significant relationships amongst items ($p = .001$), 2) Cronbach's Alpha procedure was to provide evidence for the Internal Consistency (CA = $> .700$ acceptable), 3) Spearman's rho correlation (r) matrix was used to examine the strength of the association between personal variables and 4) p-values (p) indicated statistically significant associations, at the one and two tail ($p < .05*$ and $p < .01**$).

RESULTS

As indicated in Table 1, the relative efficacy of each of the seven initiatives is indicated as against the percentage of participants willingness to give the program/s the three highest ratings (1 (lowest) – 10 (highest) scale).

Table 1. Percentage of participants prepared to give individual programs one of the three highest ratings.

The seven NRL programs/ Ratings:	8	9	10	Total
RISE	11.6	10.1	75.4	97.1
18-month registration / policy	10.7	7.1	68.6	86.4
Community league interpretations	15.0	5.0	50.0	70.0
Weight related	21.2	9.6	25.0	55.8
League tag	8.8	6.4	34.2	49.4
Tackle safe	4.8	17.9	10.7	33.4
Development competition	10.9	11.6	8.7	31.2

As indicated in Figure 1, the percentage (%) of participants who indicated that the program they were involved in influenced their decision to play RL in 2019 (Retention Rates).
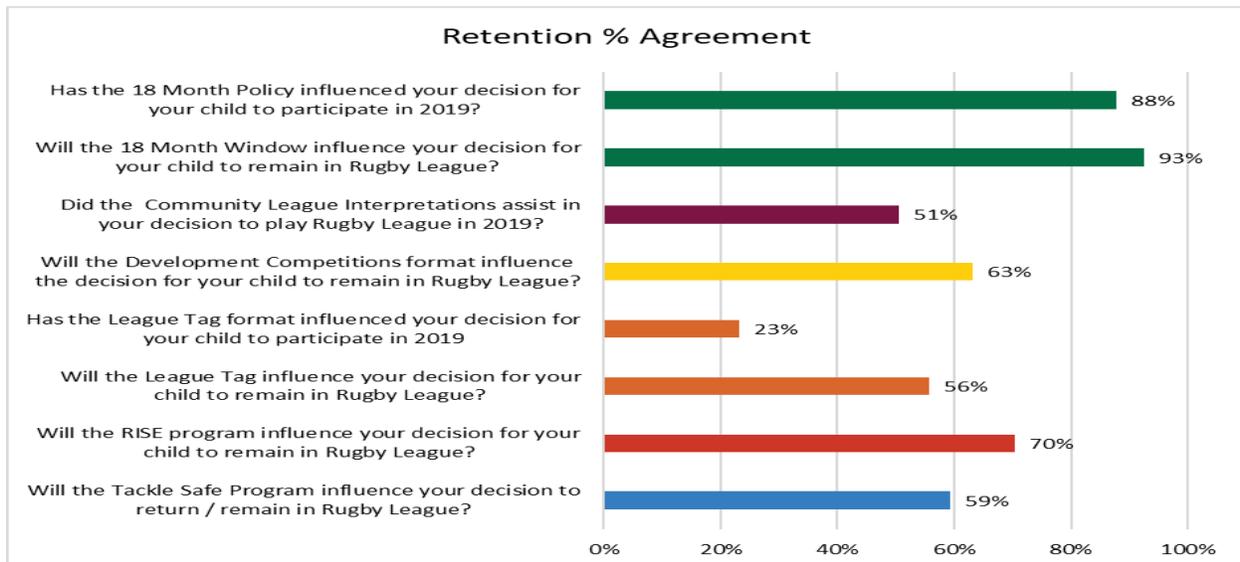
Figure 1. Retention across programs.
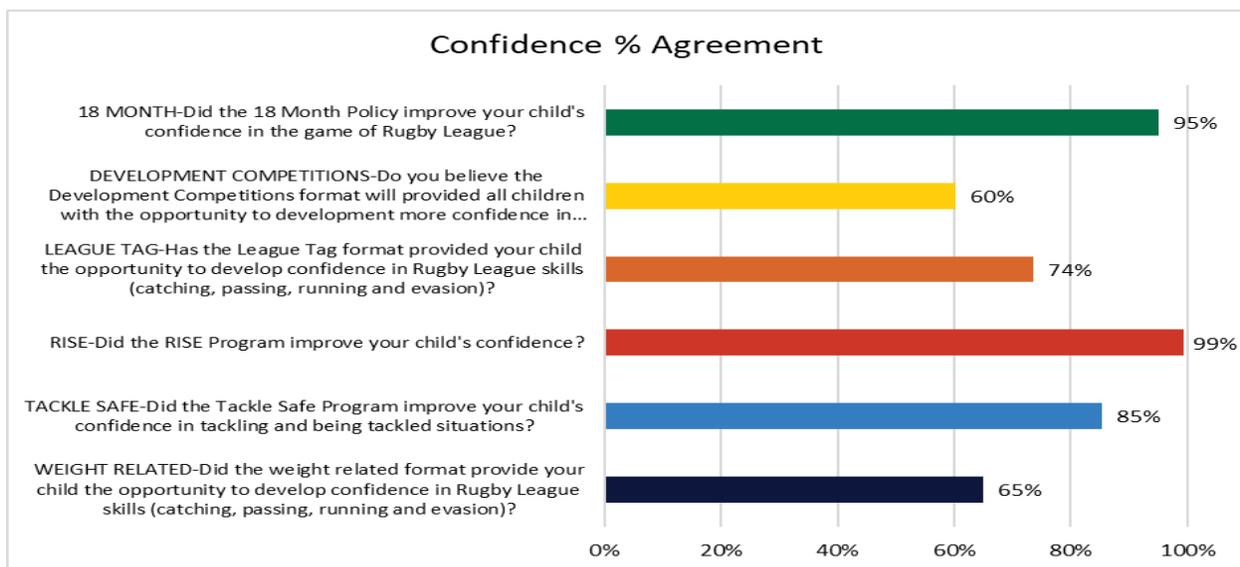
Figure 2. Increased confidence levels.

As indicated in Figure 2, the percentage (%) of participants who indicated that the program they were involved in improved their (participant) confidence (Confidence in Skills).

As indicated in Figure 3, the percentage (%) of participants who indicated that the program they were involved in was an enjoyable experience (Enjoyment in Participating).
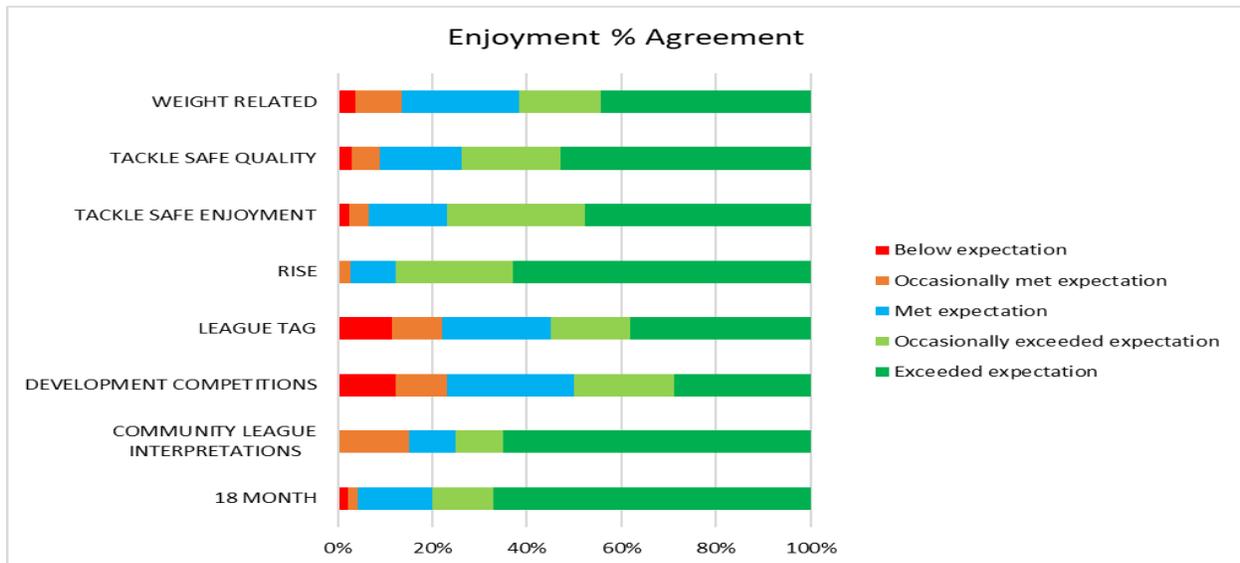

Figure 3. Enjoyment expectations.

As indicated in Figure 4, the percentage (%) of participants who indicated that the program they were involved in had the potential to increase their involvement (Involvement Opportunities).
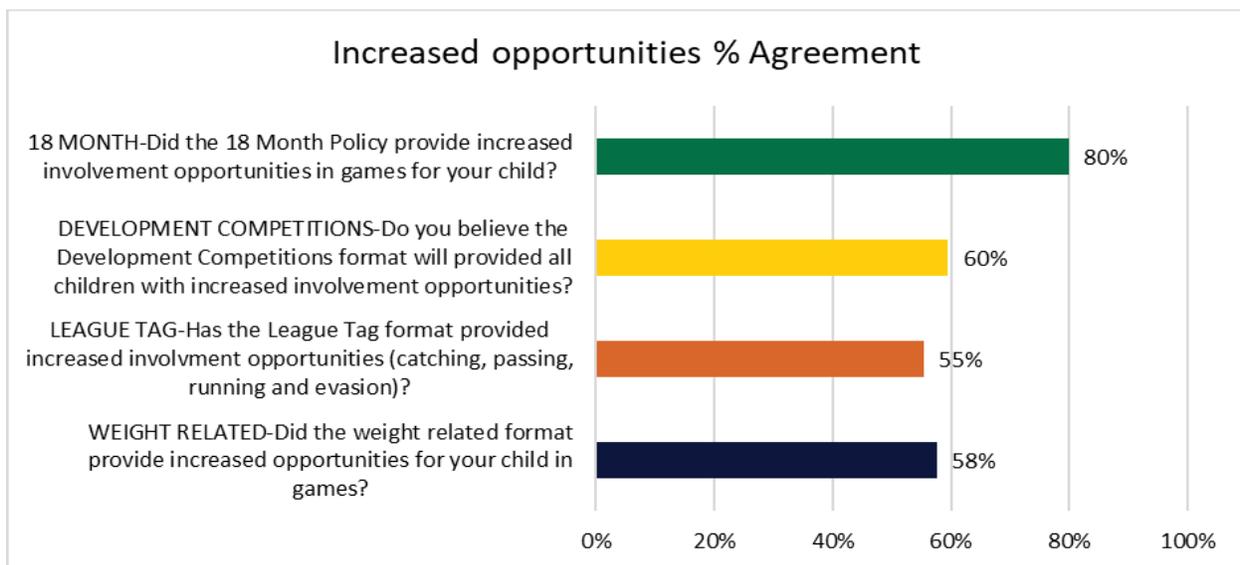
Figure 4. Increased involvement opportunities.

As indicated in Figure 5, the percentage (%) of participants who indicated that after completing the program they were involved in would recommend it to others (Program Recommendation).
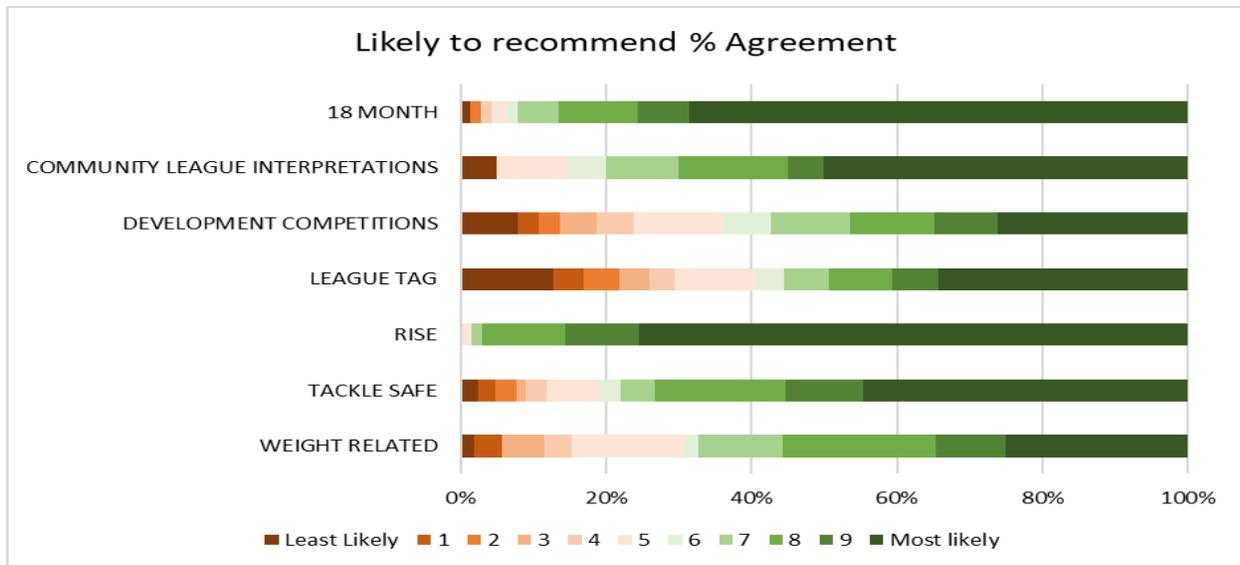
Figure 5. Likelihood of recommendation.

Rise

A total of 73 participants attended programs at four locations: Gold Coast, Toowoomba, Wagga Wagga, and Coffs Harbour, with participant numbers relatively equally divided between the four locations, the largest percentage being at the Gold Coast (36%) and the smallest percentage at Toowoomba (18%). As indicated in Table 2, agreeing that the RISE program was value for money, was enjoyable, influenced the decision for child to remain in Rugby League, and favourably rating the communication channels used within the RISE program, was significantly and positive correlated with higher levels of recommendation of the RISE league program.

Table 2. Significant correlates of level of recommendation of the RISE rugby league program.

Statistics	Spearman's rho	Sig. (2- tailed)
How would you rate the value for money of the RISE Program?	.557**	.000
How would you rate your child's enjoyment of the RISE Program?	.702**	.000
Will the RISE Program influence your decision for your child to remain in Rugby League?	.375**	.001
How would you rate the communication channels used within the RISE Program?	.518**	.000

*** Correlation is significant at the .01 level (2-tailed). * Correlation is significant at the .05 level (2-tailed).*

As indicated in Figure 6, more than 90% of participants at the RISE program reported that it improved their child's confidence (97%), that it improved their child's competence (96%), assisted in the improvement of their son's character (96%), and developed valuable connections with other players and coaches (99%).

As indicated in Figure 7, more than 90% of participants reported that child's enjoyment of the RISE program met expectations (12%), occasionally exceeded expectations (25%) or exceeded expectations (63%). None of the participants reported that their child's enjoyment of the RISE program fell below expectations.

As indicated in Figure 8, more than 90% opted for ratings in the 8-10 range, with 12% selecting a rating of 8, 10% selecting a rating of 9, and 75% selecting the top rating of 10.
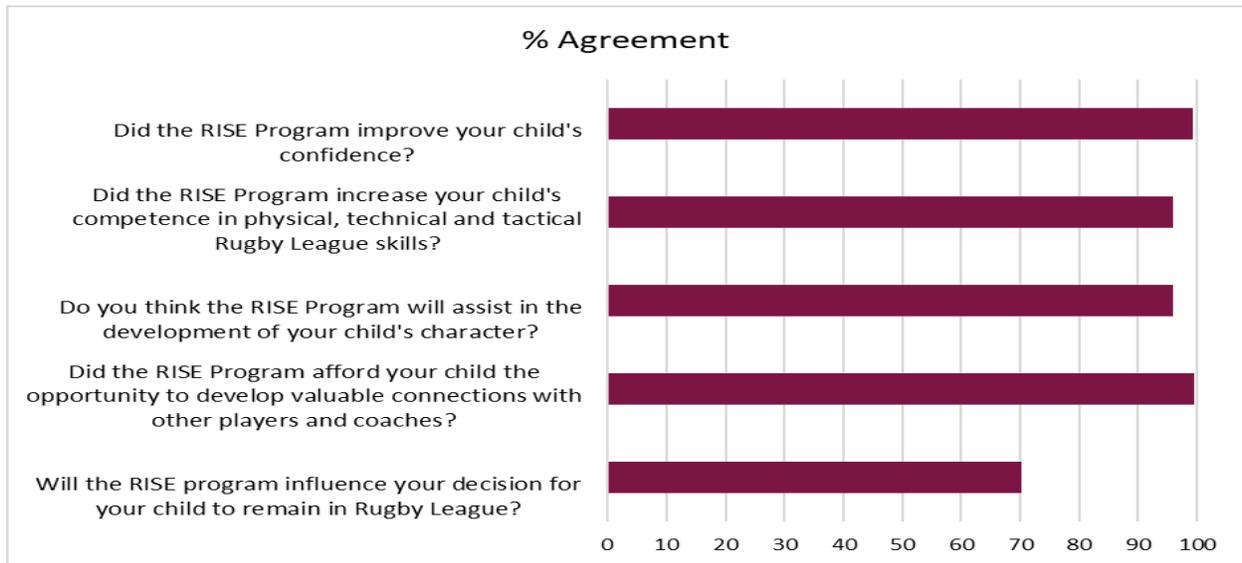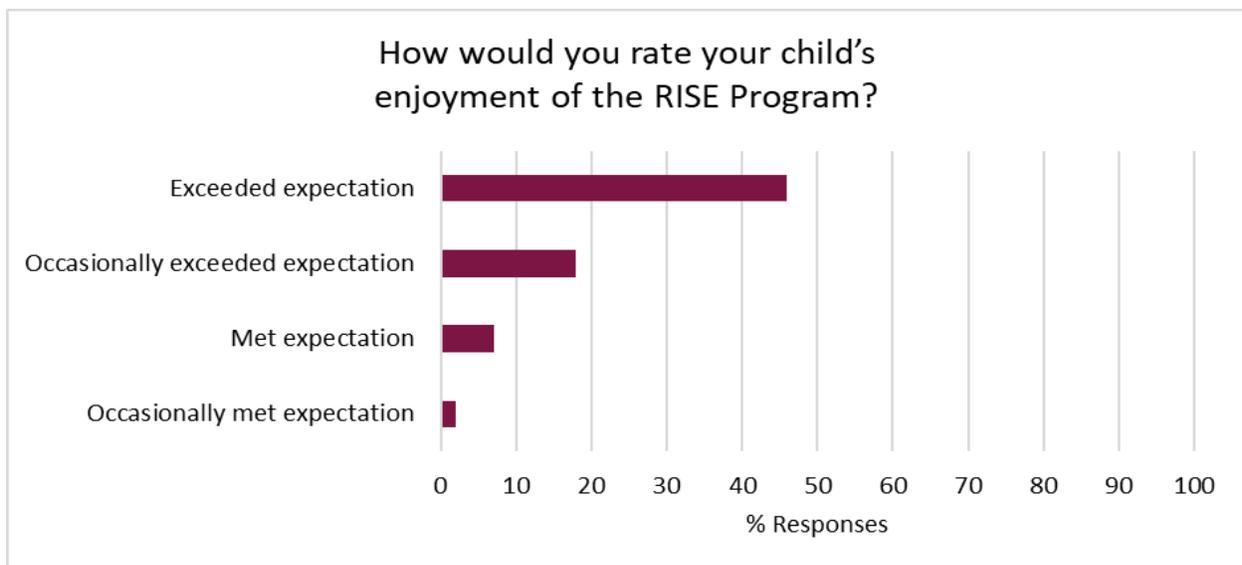

Figure 6. RISE program increases in participants' 5 Cs.

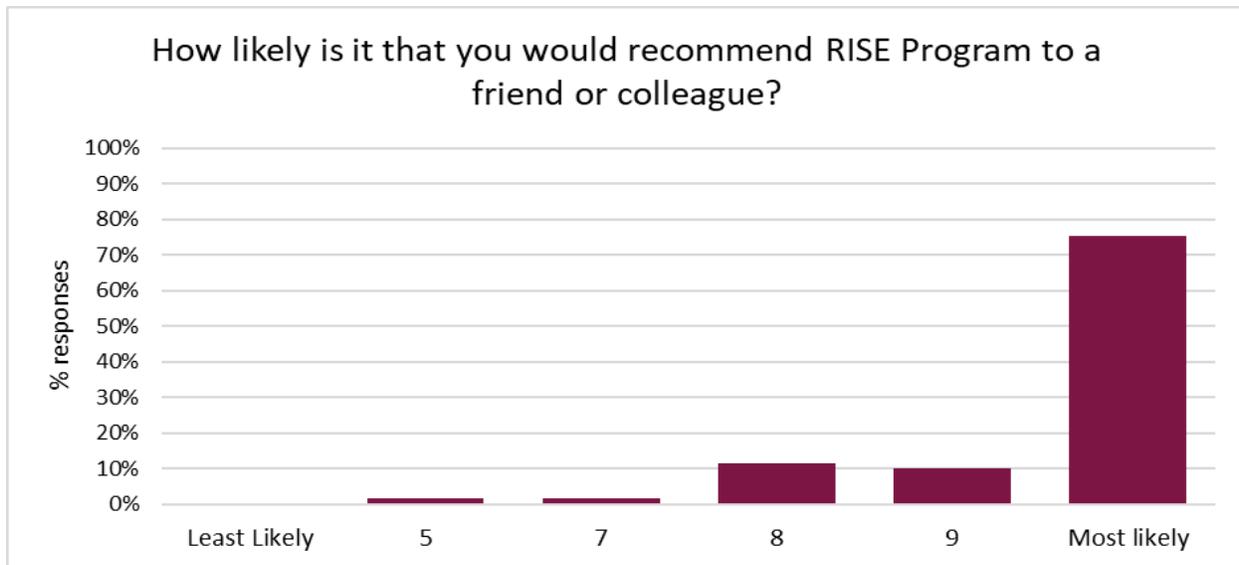

Figure 7. Participants' enjoyment levels of RISE.

Figure 8. Participants' likelihood of recommending RISE.

League Tag

A total of 330 participants completed the league tag survey and reported their ages as being in a range from 3 years old to 9 nine years old. More than 90% of these were in the 6 to 6-year- old age group (17 missing responses). Almost 90% of the participants were male (89.6%). Of the 330 participants, 88% were based in Queensland, 12% in Victoria, and one was based in NSW. As indicated in Table 3, the League Tag format provides children with the opportunity to develop more confidence in Rugby League skills, and also provides increased involvement opportunities, and giving a higher rating of enjoyment of Rugby League playing in the league tag format was significantly and positive correlated with higher levels of recommendation of the league tag format league program.

Table 3. Significant correlates of level of recommendation of league tag program.

Statistics	Spearman's rho	Sig. (2- tailed)
Did the League Tag format influence your decision for your child to participate in 2019?	.264**	.000
Has the League Tag format provided your child the opportunity to develop confidence in Rugby League skills (catching, passing, running and evasion)?	.628**	.000
Has the League Tag format provided increased involvement opportunities (catch, pass, running and evasion) in games for your child?	.605**	.000
How would you rate your child's enjoyment levels of Rugby League in the League Tag format?	.801**	.000

**. Correlation is significant at the .01 level (2-tailed). *. Correlation is significant at the .05 level (2-tailed).

As indicated in Figure 9, almost ¾ (73%) reported that the league tag program had improved their child's confidence (93%) in Rugby League skills, and about 55.5% reported that it had provided increased involvement opportunities in games for their child.
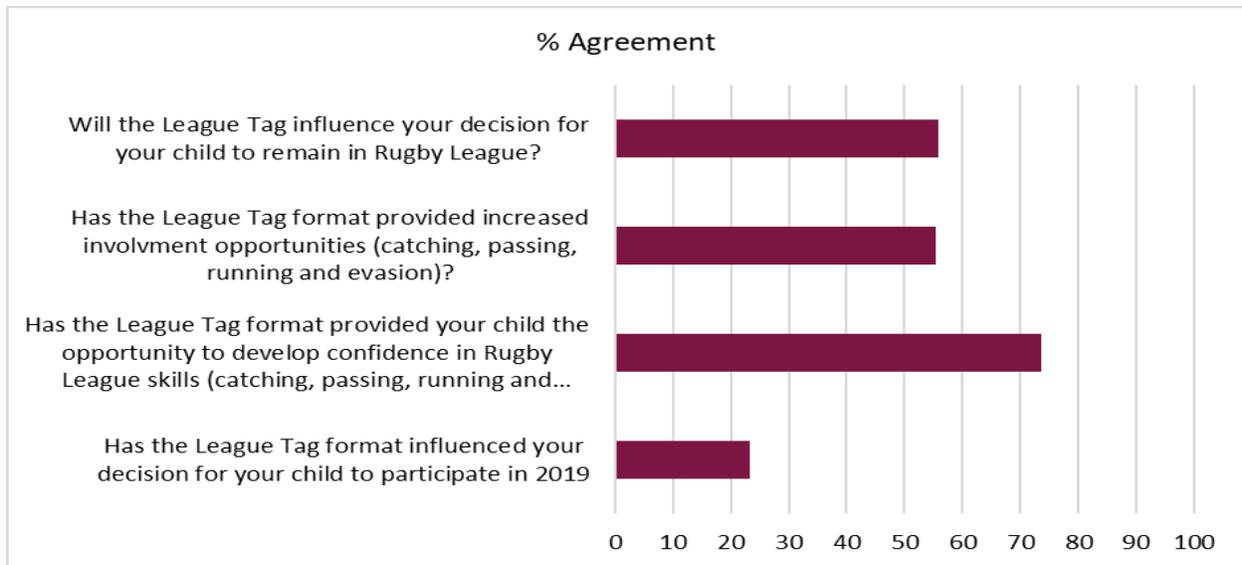
Figure 9. League Tag program increases in participants' confidence, involvement and influences to return.

As indicated in Figure 10, almost 80% (78%) of the 330 participants reported that their child's enjoyment of the league tag program met expectations (23%), occasionally exceeded expectations (17%) or exceeded expectations (38%). Out of the 330 participants, a total of 38 (11.5%) reported that their child's enjoyment of the league tag program fell below expectations.
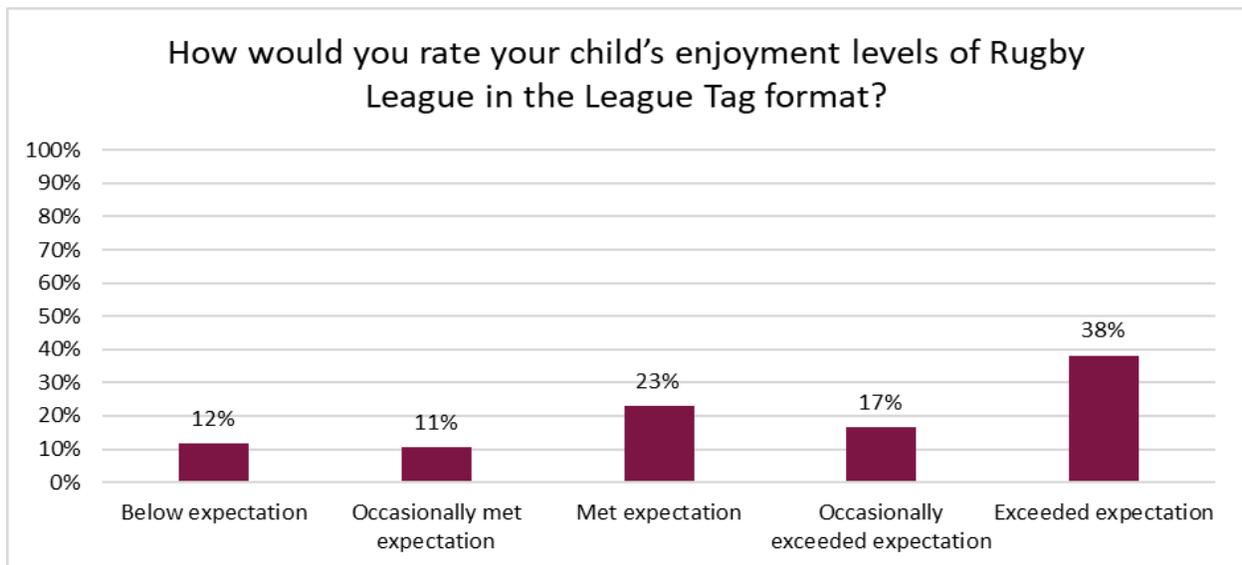

Figure 10. Participants' enjoyment levels of League Tag.

As indicated in Figure 11, participants were asked how likely it was that they would recommend the league tag program to a friend or colleague, using an 11 point ordinal rating scale [(Highly unlikely (0) to Highly Likely (10)], almost half (47%) opted for ratings in the 8-10 range, with 9% selecting a rating of 8, 6% selecting a rating of 9, and 34% selecting the top rating of 10.
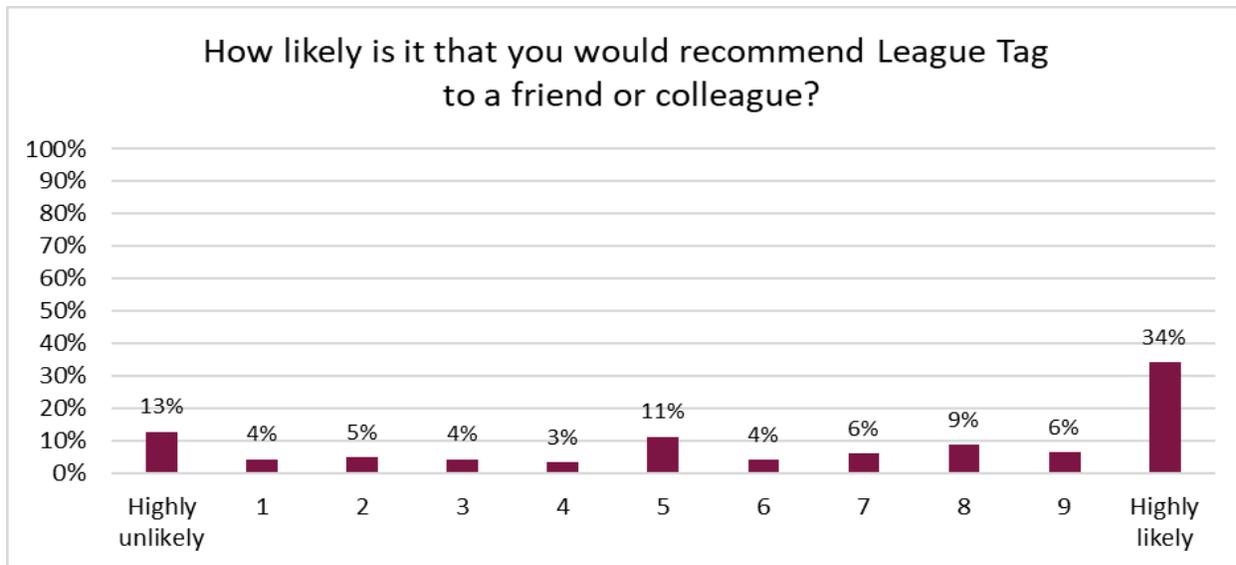
Figure 11. Participants' likelihood of recommending League Tag.

Tackle Safe

A total of 168 participants completed the Tackle Safe program survey. Of these at total of 156 (95.7%) were in the 4 to 11-year-old age group. Finally, of the 168 participants, over 90% reported being from Queensland clubs (97.6%), and another four that they were from Victorian clubs. As indicated in Table 4, agreeing that the Tackle Safe program improved the child's confidence and competence in tackling and being tackled, rating the program as enjoyable and of good quality, agreeing that the program influenced the decision for child to remain in Rugby League, and did influence the decision to remain in NRL, was significantly and positive correlated (Spearman's Rho = .417, p < .01) with more highly recommending the Tackle Safe league program to friends and colleagues.

Table 4. Influence of decision to remain on level of recommendation of Tackle Safe program.

Statistics	Spearman's rho	Sig. (2- tailed)
Did the Tackle Safe program improve your child's confidence in tackling and being tackled situations?	.578**	.000
Did the Tackle Safe program improve your child's competence in tackling and being tackled situations?	.521**	.000
How would you rate your child's enjoyment of the Tackle Safe program?	.668**	.000
How would you rate the quality of the Tackle Safe program delivered?	.652**	.000
Will the Tackle Safe program influence your decision to return / remain in Rugby League?	.432**	.000
Tackle Safe program did influence decision to remain in NRL	.432**	.000

** Correlation is significant at the .01 level (2-tailed). * Correlation is significant at the .05 level (2-tailed).

As indicated in Figure 12, of the 168 participants, almost 90% reported that the Tackle Safe program improved their child's confidence (85%) and competence (86%) in tackling and being tackled.
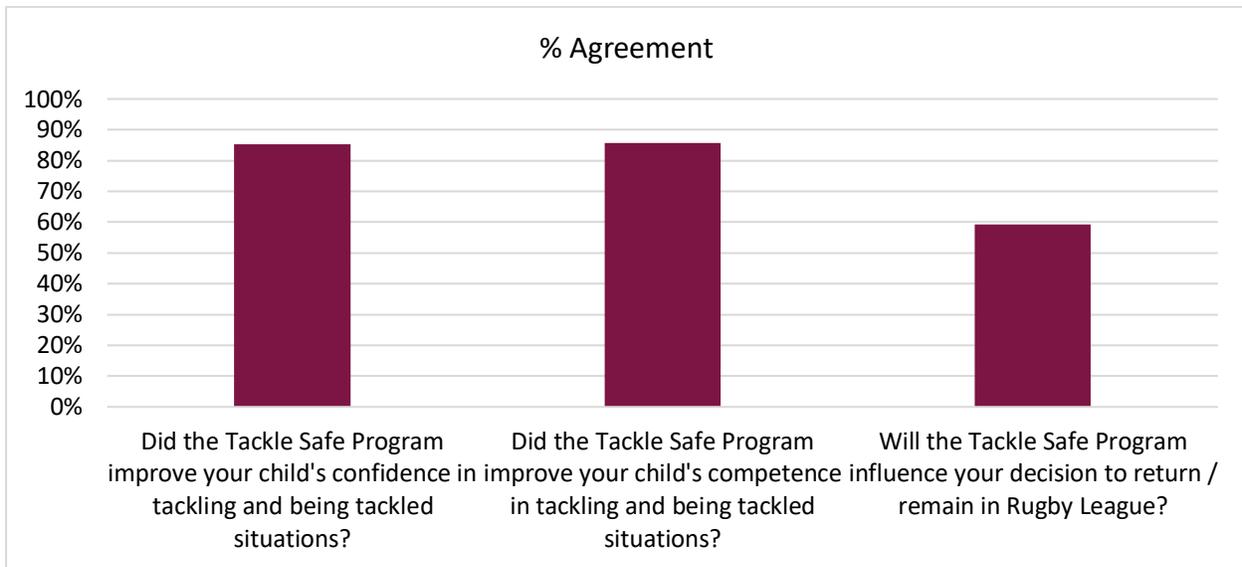
Figure 12. Tackle Safe increases in participants' confidence, involvement and influences to return.

As indicated in Figure 13 participants were asked to rate their child's enjoyment of the Tackle Safe program. More than 90% of these reported that their child's enjoyment of the Tackle Safe program met expectations (17%), occasionally exceeded expectations (29%) or exceeded expectations (48%). Only four participants reported that their child's enjoyment of the Tackle Safe program fell below expectations. When asked to rate the quality of the Tackle Safe program. Only five participants reported that the quality of the Tackle Safe program fell below expectations.
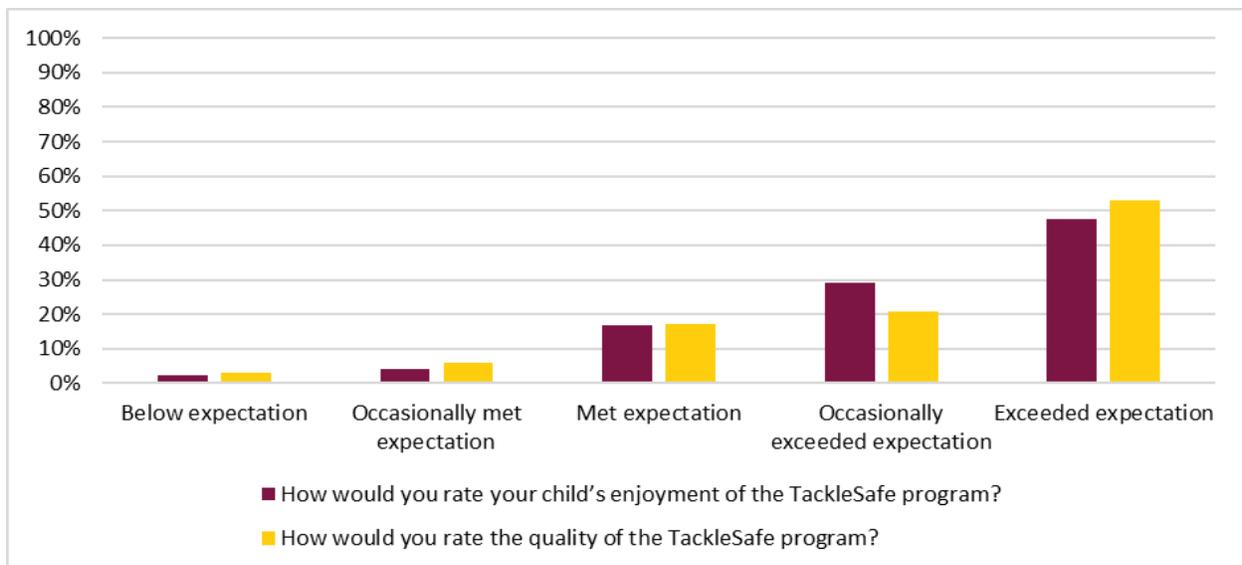

Figure 13. Participants' enjoyment levels and quality of Tackle Safe.

As indicated in Figure 14, when asked how likely it was that they would recommend the Tackle Safe program to a friend or colleague, 75% opted for ratings in the 8-10 range, with 18% selecting a rating of 8, 11% selecting a rating of 9, and 45% selecting the top rating of 10.
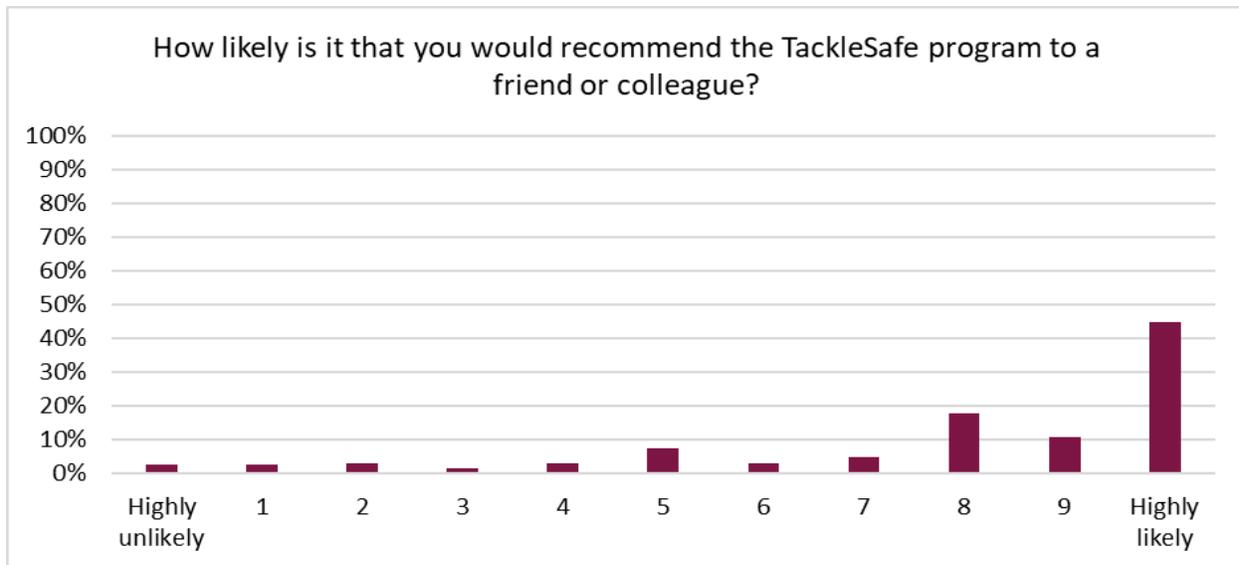
Figure 14. Participants' likelihood of recommending Tackle Safe.

18-Month Registration / Policy

Of the 155 participants that completed the survey, all but one of those who gave their age were 6 to 19 years of age. Almost 60% of these were in the 11 to 15-year-old age group (10 missing responses). Of the 155 participants, 80% were based in Queensland, 12% in NSW, and the remaining 8% in Victoria. As indicated in Table 5, agreement that the 18-month policy provided increased involvement in games, and higher levels of the child's enjoyment of Rugby League due the 18-month policy significantly correlated with higher levels of recommendation of the 18-month registration policy.

Table 5. Significant correlates of level of recommendation of 18-month policy program.

Statistics	Spearman's rho	Sig. (2- tailed)
Did the 18-month policy provide increased involvement opportunities in games for your child?	.248**	.003
How would you rate your child's enjoyment levels of Rugby League due to the 18 Month Window?	.556**	.000

**. Correlation is significant at the .01 level (2-tailed).*. Correlation is significant at the .05 level (2-tailed).

As indicated in Figure 15, of the 155 participants, 86% reported that the 18-month policy had influenced their decision for the child to participate in 2019. More than 90% reported that the 18-month policy program had improved their child's confidence (93%) and about 73% reported that it had provided increased involvement opportunities in games for their child.

As indicated in Figure 16, participants were asked to rate their child's enjoyment of the 18- month policy program using a five-point Likert scale. More than 90% of the 155 participants reported that their child's enjoyment of the 18-month policy program met expectations (16%), occasionally exceeded expectations (13%) or exceeded expectations (67%). Only three participants reported that their child's enjoyment of the 18-month policy program fell below expectations.

As indicated in Figure 17, participants were asked how likely it was that they would recommend the 18-month policy program to a friend or colleague, using an 11-point ordinal rating scale. Almost 90% opted for ratings

in the 8-10 range, with 11% selecting a rating of 8, 7% selecting a rating of 9, and 69% selecting the top rating of 10.
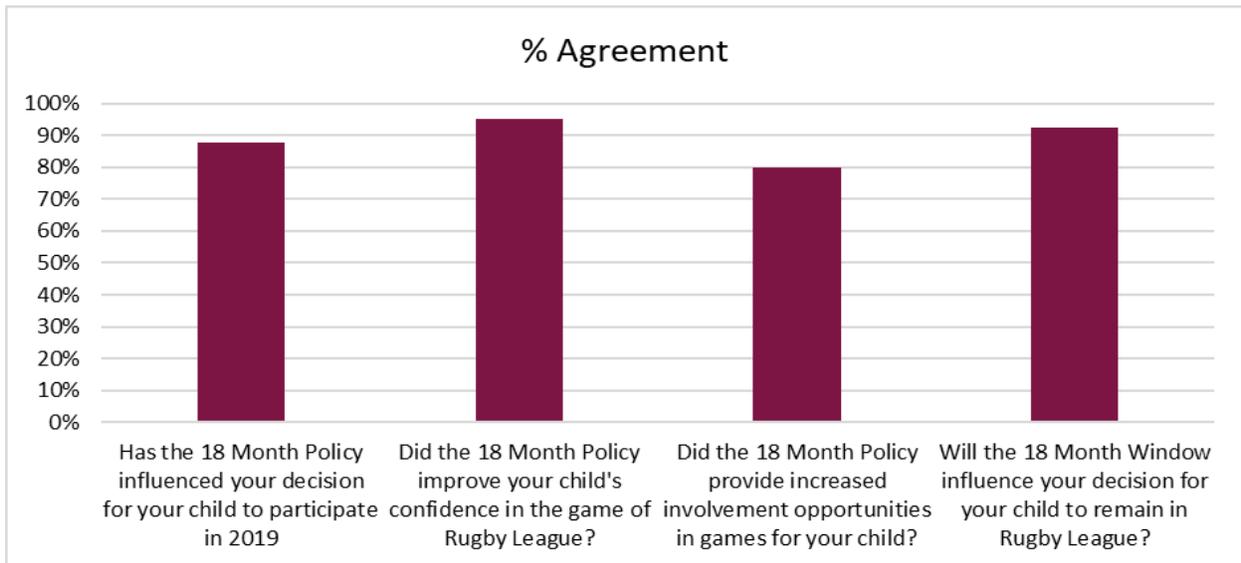

Figure 15. 18-month policy increases in participants' confidence, involvement and influences to return.

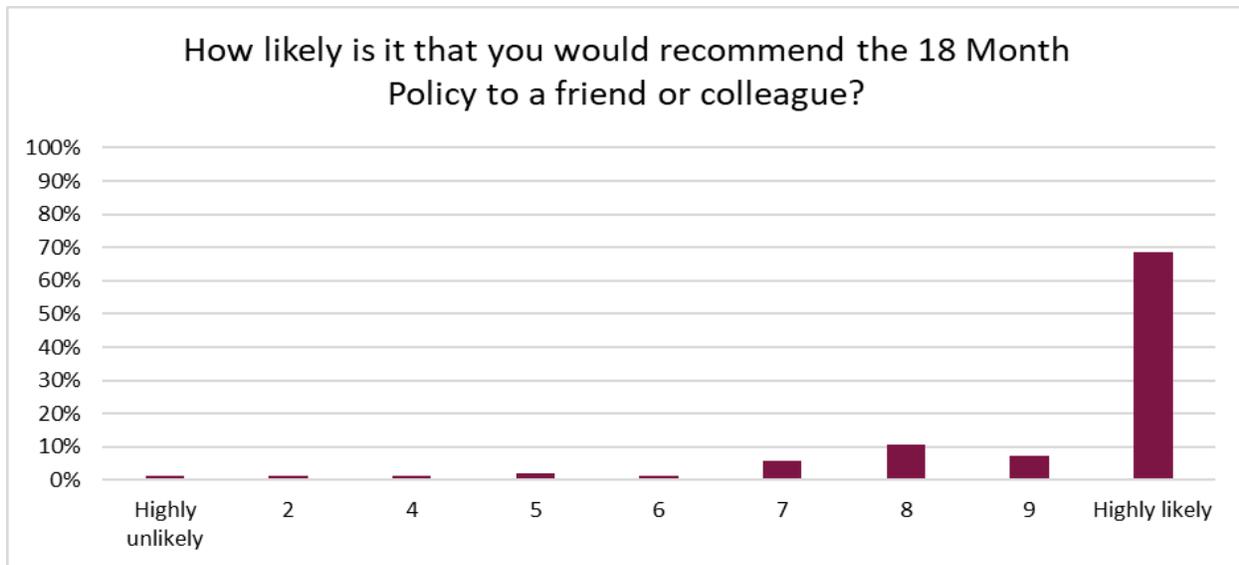Figure 16. Participants' enjoyment levels of 18-month policy.

Figure 17. Participants' likelihood of recommending 18-month policy.

Development Competition

A total of 138 participants from clubs in two Australian states, Victoria (13%) and Queensland (87%) completed the Development competition survey. As indicated in Table 6, the Development Competition format provides children with the opportunity to develop more confidence in Rugby League skills, and also provides increased involvement opportunities, agreeing that the development competition format has created an environment more conducive to inclusive, supportive and respectful behaviours and an environment for a coach to focus on the development of all team members, and finally giving a higher rating of enjoyment of Rugby League playing in the development competitions format was significantly and positive correlated with higher levels of recommendation of the development competition format league program.

Table 6. Significant correlates of level of recommendation of development competition program.

Statistics	Spearman's rho	Sig. (2- tailed)
Do you believe the Development Competitions format will provide all children with the opportunity to develop more confidence in Rugby League skills?	.677**	.000
Do you believe the Development Competitions format will provide all children with increased involvement opportunities?	.711**	.000
Has the Development Competitions format created an environment that was more conducive to inclusive, supportive and respectful behaviours for participants and spectators?	.670**	.000
Do you believe the Development Competitions format provides the environment for a coach to focus on the development of all team members?	.606**	.000
How would you rate your child's enjoyment levels of Rugby League playing in the Development Competitions format?	.773**	.000

** Correlation is significant at the .01 level (2-tailed). * Correlation is significant at the .05 level (2-tailed).

As indicated in Figure 18, of the 138 participants, 60% reported that the development competition program had improved their child's confidence (93%) and about 59% reported that it had provided increased involvement opportunities in games for their child. Of the 155 participants, 55% agreed that the development competition format created an environment that was more conducive to inclusive, supportive and respectful behaviours for participants and spectators. Participants were asked if the development competition program influenced their child's decision to remain in Rugby League. Of the 138 participants, 63% responded, Yes, it did. Participants were also asked if the development competition format provided the environment for a coach to focus on the development of all team members. Of the 138 participants, 50% responded, Yes, it did.

Figure 18. Development Competition improves confidence, involvement, inclusiveness, decision to return and coaching environment.

Figure 19. Participants' enjoyment levels of Development Competition.

As indicated in Figure 19, participants were asked to rate their child's enjoyment of the development competition program using a five-point Likert scale. About 75% of the 138 participants reported that their

child's enjoyment of the development competition program met expectations (27%), occasionally exceeded expectations (21%) or exceeded expectations (29%). Out of the 138 participants, a total of 17 (12%) reported that their child's enjoyment of the development competition program fell below expectations.
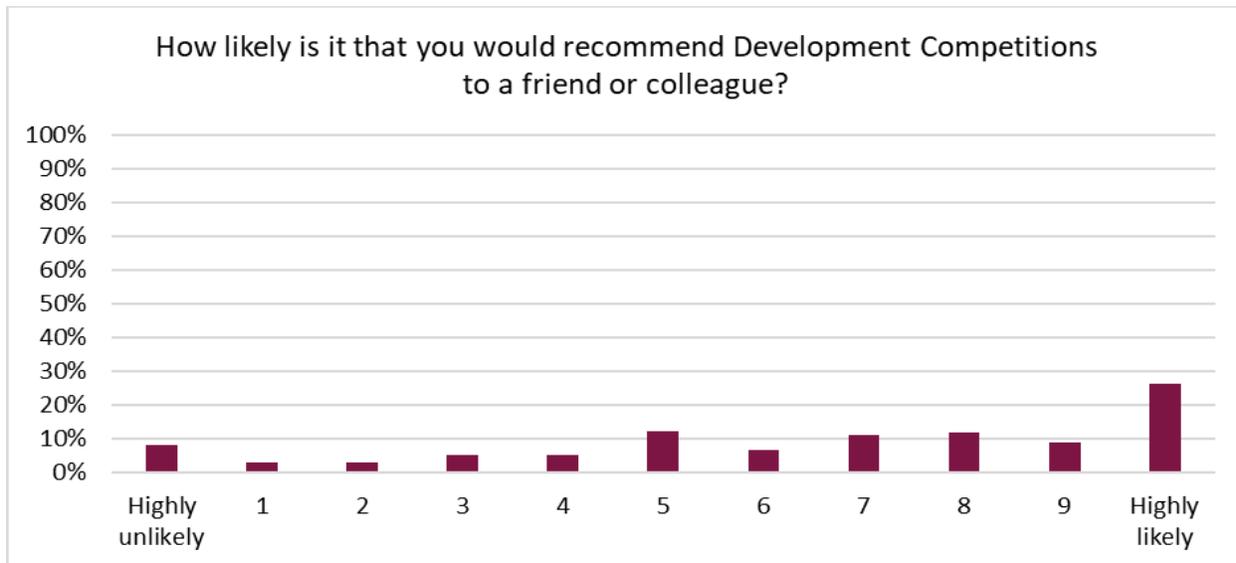

Figure 20. Participants' likelihood of recommending Development Competition.

As indicated in Figure 20, when asked how likely it was that they would recommend the development competition program to a friend or colleague, using an 11 point ordinal rating scale [(Highly unlikely (0) to Highly Likely (10)], slightly less than half (47%) opted for ratings in the 8-10 range, with 12% selecting a rating of 8, 9% selecting a rating of 9, and 26% selecting the top rating of 10.

Community League Interpretations

The 20 participants ranged in age from 20 to 41 years of age, with the largest subset being 35 years old (N = 5). Of the 20 participants, 65% were based in NSW. As indicated in Table 7, a higher rating of enjoyment of Rugby League playing under the Community League Interpretations was significantly and positive correlated with higher levels of recommendation of the Community League Interpretations.

Table 7. Significant correlates of level of recommendation of Community League Interpretations.

Statistics	Spearman's rho	Sig. (2-tailed)
How would you rate your enjoyment levels of Rugby League playing under the Community League Interpretations?	.865**	.000

*** Correlation is significant at the .01 level (2-tailed).* Correlation is significant at the .05 level (2-tailed).*

As indicated in Figure 21, 50% of participants reported that the Community League Interpretations had influenced their decision to play Rugby League in 2019. Of the 20 participants, 90% reported the Community League Interpretations created a game day environment that promoted socialisation and a sense of connection within the Rugby League community.

As indicated in Figure 22, participants were asked to rate their enjoyment of Rugby League playing under Community League Interpretations, by using a five-point Likert scale. Almost 90% of the 20 participants reported that their enjoyment of Rugby League met expectations (10%), occasionally exceeded expectations

(10%) or exceeded expectations (65%). None of the participants reported that their enjoyment fell below expectations.

As indicated in Figure 23, participants were asked how likely it was that they would recommend the Community League Interpretations format to a friend or colleague, using an 11-point ordinal rating scale. 70% opted for ratings in the 8-10 range, with 15% selecting a rating of 8, 5% selecting a rating of 9, and 50% selecting the top rating of 10.
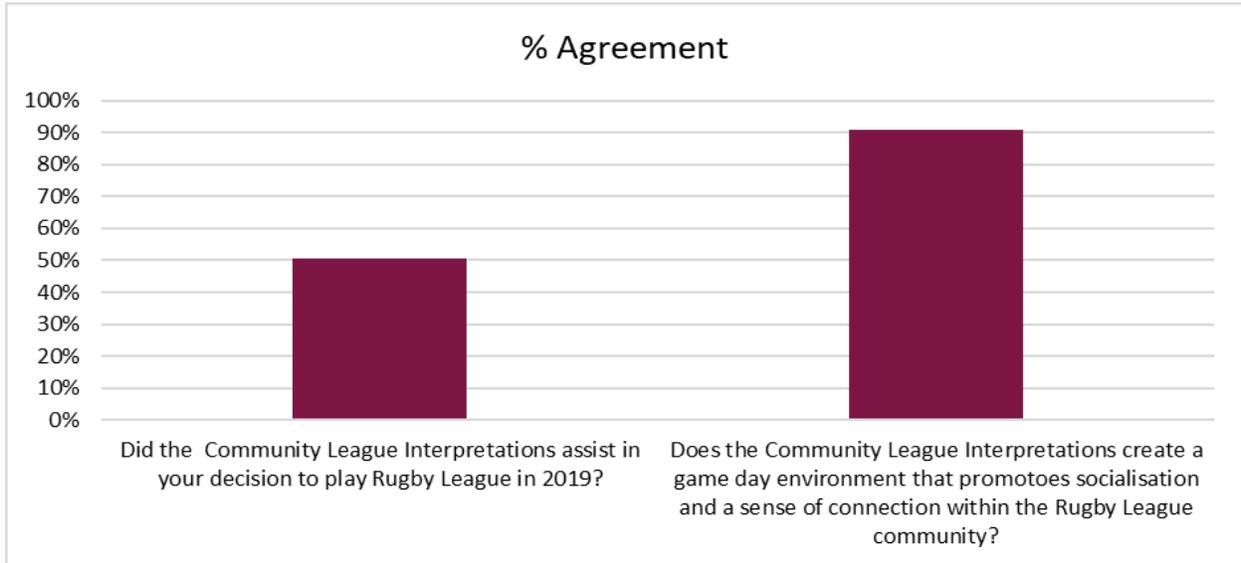

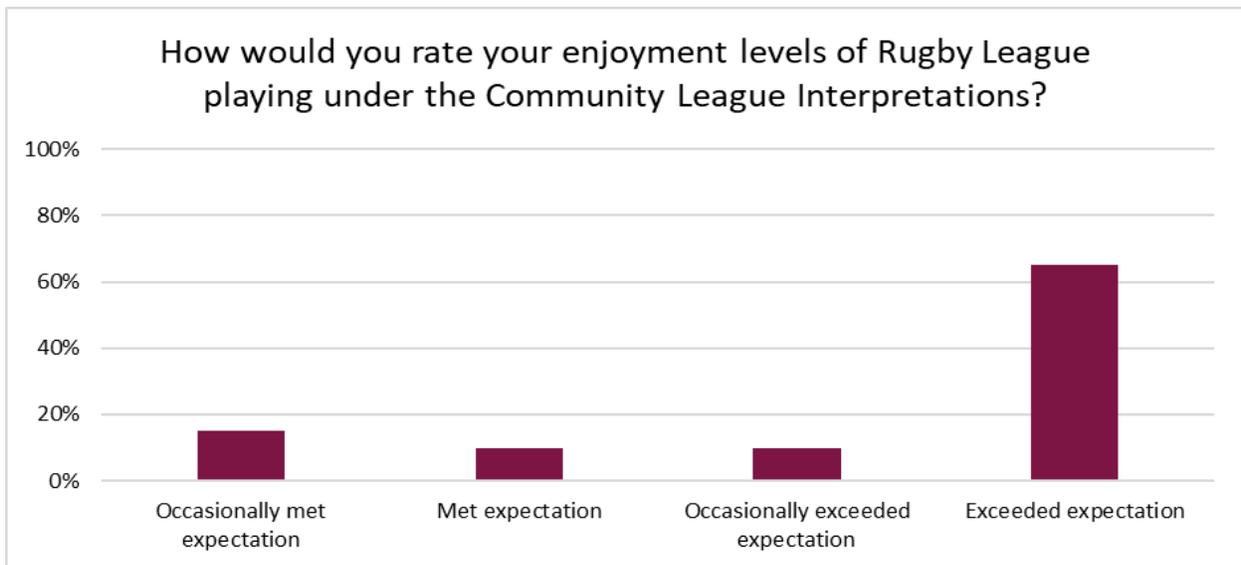Figure 21. Participants' levels of connection, socialisation and decision to play.

Figure 22. Participants' enjoyment levels of Community League Interpretations.
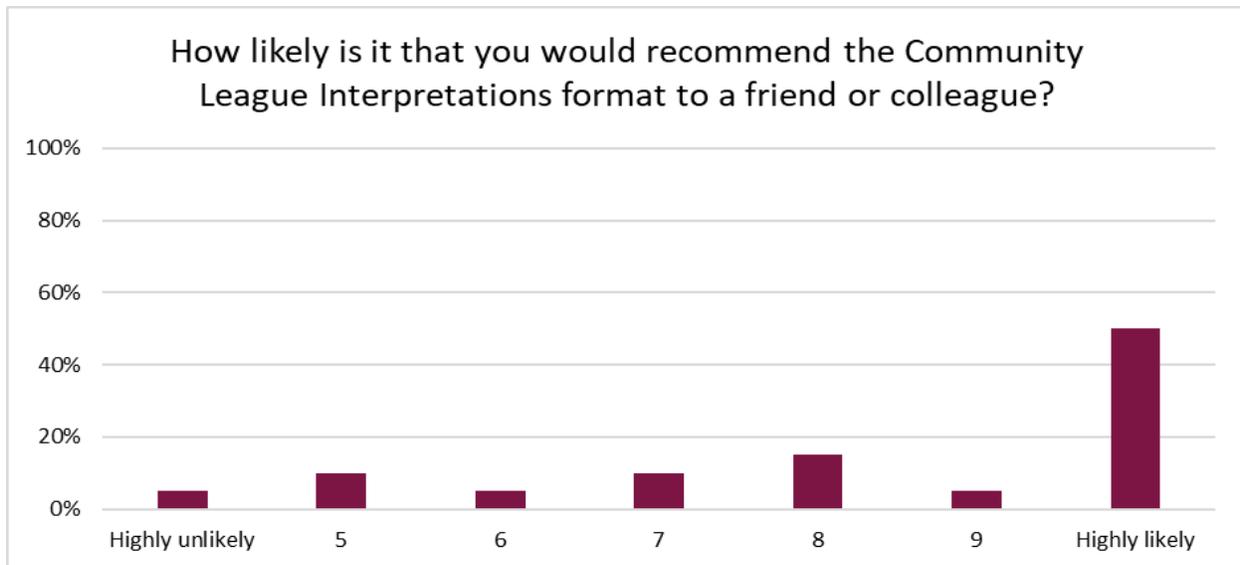
Figure 23. Participants' likelihood of recommending Community League Interpretations.

Weight Related

Of the 52 participants who completed the survey, ages ranged from 12-16, with 96% of them in the 13-14-year-old age group. Participants came from four zones, with the same percentage (25%) coming from each of these zones. As indicated in Table 8, agreement that the restricted weight format provided increased enjoyment and involvement in games, positive enjoyment while playing under the weight related guide format, interest in playing in a season-long weight-related competition, and interest in combining multiple age groups were all positively and significantly correlated with higher levels of recommendation of the weight related Rugby League program.

Table 8. Significant correlates of level of recommendation of weight related Rugby League program.

Statistics	Spearman's rho	Sig. (2-tailed)	N
Did the weight related format provide your child the opportunity to develop confidence in Rugby League skills (catching, passing, running and evasion)?	.493**	.000	52
Did the weight related format provide increased involvement opportunities for your child in games?	.422**	.002	52
How would you rate your child's enjoyment levels of RL playing in the weight related format?	.527**	.000	52
How would you be interested in playing a season-long weight related format competition?	.672**	.000	52
Do you think combining multiple age groups (e.g., U13 and U14) in a weight related format competition would be a positive?	.448**	.001	52

*** Correlation is significant at the .01 level (2-tailed).* Correlation is significant at the .05 level (2-tailed).*

As indicated in Figure 24, 65% of participants, reported that the weight related format had provided their child with the opportunity to develop in Rugby League skills, and 58% reporting that the weight related format had provided increased involvement opportunities for their child in games. Of the 52 participants, about 2/3 (*n* = 35) reported that they would be interested in their child playing in a season-long weight related

competition if it were provided in 2020. Of the 52 participants, about 62% (*n* = 32) reported that combining multiple age groups (e.g., U13 & U14) in a weight related competition would be a positive.
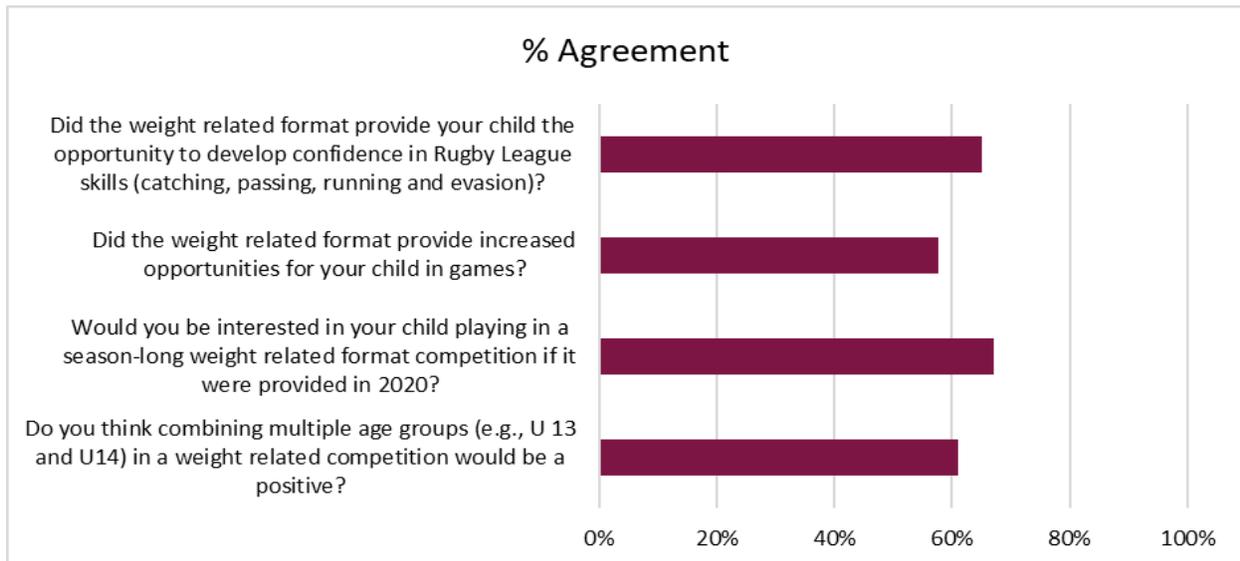

Figure 24. Participants' levels of increased confidence, involvement, interest and combining groups.

As indicated in Figure 25, participants were asked to rate their child's enjoyment of Rugby League playing in the weight related format using a five-point Likert scale. Almost 90% of these reported that their child's enjoyment of Rugby League playing in the weight related format met expectations (25%), occasionally exceeded expectations (17%) or exceeded expectations (44%). Only two participants reported that their child's enjoyment of the weight related program fell below expectations.
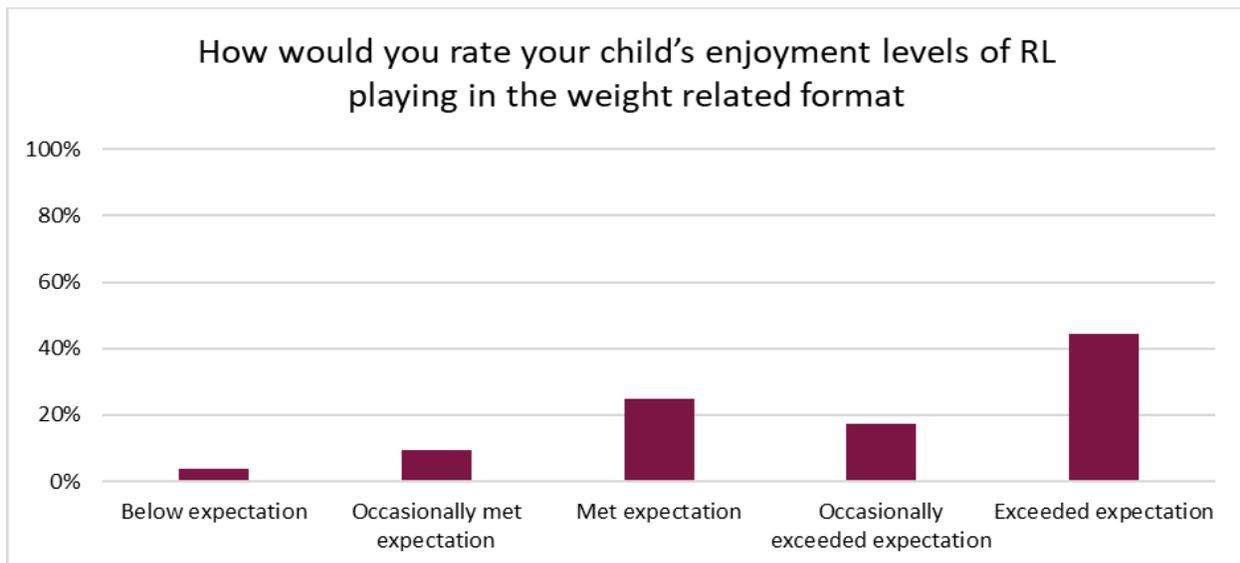

Figure 25. Participants' enjoyment levels of weight related format.

As indicated in Figure 26, participants, were asked how likely it was that they would recommend the weight related Rugby League program to a friend or colleague, using an 11-point ordinal rating scale. 56% opted for

ratings in the 8-10 range, with 21% selecting a rating of 8, 10% selecting a rating of 9, and 25% selecting the top rating of 10.
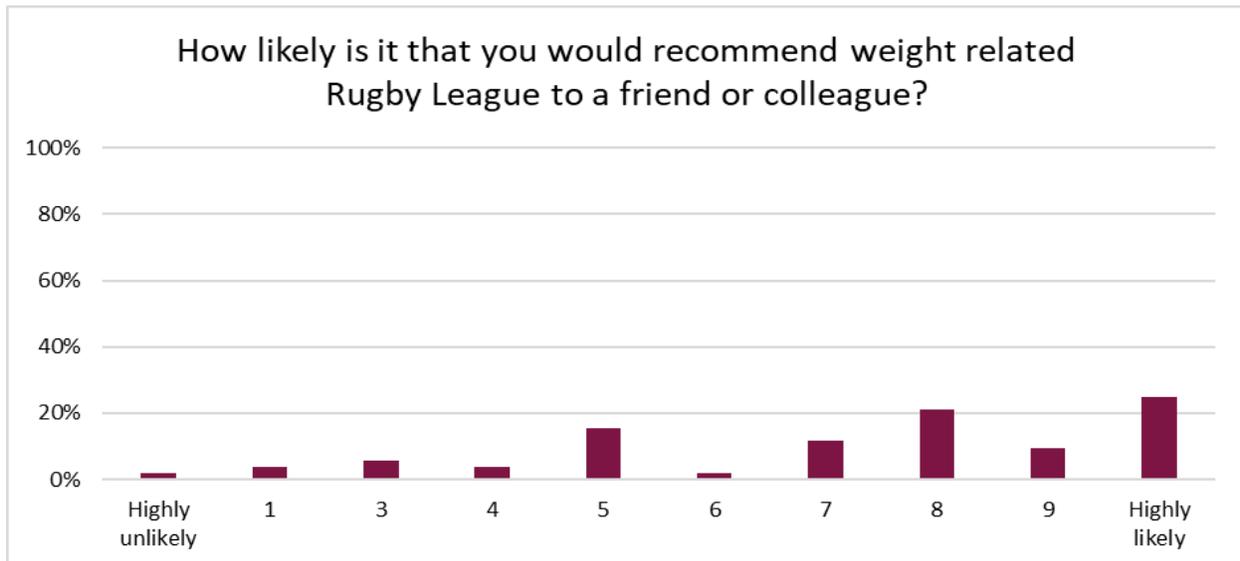

Figure 26. Participants' likelihood of recommending weight related.

DISCUSSION

Throughout 2016—2018, the NRL sought to understand the current state of national and international junior sport participation, how junior sport development models / frameworks presented similarities and / or differences throughout a national and globally context. Of importance, the NRL undertook such an undertaking, to determine how the PDF aligned with other national and international movements concerning participation in organised sport. In general, many countries (United Kingdom, United States, Norway, Canada, New Zealand) including Australia, have implemented evidence based, long term player developmental principles, in an attempt to guide national sporting organisations' junior programs, so as to better focus on heightening participation, performance and personal development levels of players. It was found that the most common themes, in junior sport development, across countries include: 1) focus on enjoyment, 2) early diversity in sport, 3) attainment of physical literacy before maturation, 4) late sport specialisation, 5) competitions structure according to the developmental stage, 6) parental and family support and 7) quality coaching.

This research undertaking presented a number of important findings that were seen to align with national and international junior sporting models. When looking across the findings, from participating in the seven NRL initiatives, there were a number of prominent patterns of significance ($p < .000$) that emerged from the data. Of importance, were the participants' high levels of approval / agreement, that the NRL seven initiatives went to heighten their, 1) confidence, 2) involvement, 3) enjoyment and 4) willingness to recommend initiatives to peers. It was found that increased 'confidence' was the predominate principle / theme that was indicated by participants as having the most impact from the seven initiatives. Confidence can be seen as overriding other NRL principles and is viewed as a positive aspect of the NRL's seven initiatives. Importantly, data indicates that participants who identified with the aforementioned levels of agreement, were significantly ($p < .000$) and positively correlated with higher levels of willingness to recommend each of the programs to peers.

In this light, it can be posited, that the NRL's seven initiatives have provided participants with the opportunities to experience appropriately challenging, fun and skill / play based learning environments that go to heighten participation levels. Similarly, such experiences, are indicated as having positive effects on youths' self – esteem, physical literacy levels and general mental and social wellbeing (Côté et al., 2016). It is further understood that positive sporting experiences (such as the seven initiatives) foster positive citizenship, social success, peer relationships, positively correlates with academic performance and leadership skills (Eime et al., 2013).

Importantly, the suite of initiatives, have been underpinned with an evidence based, strategic footing, which is based on contemporary literature and research, associated with national and international best practices in junior sport implementation and youth development. It is clear that such a strategic approach has brought forth initiatives that have been well received by participants and have the real potential to create long lasting and sustainable change throughout the NRL community. What is more, such outcomes align with the strategic direction of the NRL's Player Development Framework (PDF) (Appendices C). Importantly, the overall data distribution, has identified a significant clustering, that can be aligned closely with the 3Ps—*performance*, *participation* and *personal development*. Significant ($p < .000$) patterns of associations, aligned with the 3Ps, have emerged from this research, and are indicated as being:

1. Participation: Playing the game (i.e., involvement, enjoyment, supportive coaches).
2. Performance: Individual skills / technique development (i.e., tacking, passing, running, evasion, catching).
3. Personal: Wellbeing (i.e., connection, self-confidence, socialisation, inclusiveness).

It is also evident that the seven NRL initiatives, implemented throughout 2019, across five testing sites, have also addressed and had a positive impact on the foundational principles of the PDF and has clearly aligned with these five program objectives, which had a number of specific aims. These are aimed to build a junior players': connection, confidence, character, competence, contributions. With this said, the overall aim of the seven initiatives and junior PDF were aimed to provide an environment that fosters:

- Connection: A sense of belonging and the feeling of being valued within the RL community.
- Confidence: Belief in one's own ability, the confidence to have a go' and the feeling that one can rely on their peers.
- Character: Moral and socio-emotional development as well as sportsperson ship that will contribute to the overall positive RL environment, develop good citizens and influence socialisation.
- Competence: Personal mastery within the technical, tactical and physical skills of RL, appropriate to developmental stage.
- Contribution: A desire for players to continue their involvement in the RL community beyond playing to help the game advance.

Recommendations from this research undertaking take on a 'future orientated' approach, in those further considerations be given to implementing the seven initiatives throughout other centres and districts throughout Australia. Importantly, a recommendation is for the NRL's initiatives to cater appropriately to different market segments offering a sufficient assortment of program variations to cater to a diverse and changing array of participant motivations (Kellett & Warner, 2011). This 'attraction process', as set out by Sotiriadou, Shilbury, & Quick, (2008), identifies that the funds, programs and strategic direction offered by Australia's sporting organisations need to focus on increasing mass participation and place an emphasis on heightening junior development and retention.

CONCLUSION

This research has been developed from an extensive search across numerous research data bases and search tools, with an aim to ensure that the most contemporary and relevant information, pertaining to junior sports development models, was explored and presented. The result of such a search, has allowed for the presentation of national and international 'best practices', concerning junior sports participation models. The read and subsequent results have demonstrated an evidence- based approach, from a number of countries and sports models, and will go to legitimise the NRL's strategic approach to secure the future of junior participation in RL.

The 2019 testing phase (seven initiatives) was in response to notable national / international trends concerning junior sport; with particular attention to addressing and increasing junior participation trends. Of concern, is the expressed need to ensure that future junior RL participation and performance remains child-driven, with an emphasis on recreational free play for enjoyment and not aimed to be adult-driven, highly structured, deliberate practice, or solely devoted to sports-specific skill development. The NRL has responded accordingly, to address such concerns, and as such, this research findings have demonstrated the clear interplay and alignment between national and international 'best practices' and philosophical shifts concerning junior sporting development models and the NRL's strategic directions into the early 21st century.

Findings and recommendations from this research have identified a clear alignment with NRL's 'future orientated' approach to securing and maintaining junior participation into the 21st century, by highlighting recent attempts across the globe to address the decreasing junior participation in organised, traditional sporting models. This review has demonstrated that a 'common thread' exists concerning approaches to heighten junior participation both nationally and internationally and as such has gone to inform the design and implementation of NRL's seven initiatives. These commonalities have resulted in providing a framework for existing, individual sporting organisations to follow, by way of adopting the practices that are / have proven effective in addressing the declining nature of junior sporting involvement. As such, it can be indicated that the NRL's PDF is ahead of the game, is cutting edge, and has demonstrated an approach that will ensure the continual success of the game of RL across the junior sporting landscape throughout Australia.

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No potential conflict of interest was reported by the author.

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APPENDICES

A.   Investigating motives that influence Australia's Rugby League retention rates–2016.
https://www.playrugbyleague.com/framework/research/national-retention-study/
B.   National Junior Rugby League Players' Experiences–2017
https://www.playrugbyleague.com/framework/research/environmental-study/
C.   Player Development Framework (PDF)
https://www.playrugbyleague.com/framework
RISE
https://www.playrugbyleague.com/framework/pdfprograms/rise-rugby-league-development-
    competitions/
League Tag
https://www.playrugbyleague.com/framework/pdfcompetitionmodels/tag-rugby-league/
Tackle Safe
https://www.playrugbyleague.com/framework/pdfprograms/tackleready/
18 Month Policy
https://www.playrugbyleague.com/framework/pdfprograms/18-month-registration-window/
Development Competition
https://www.playrugbyleague.com/framework/pdfcompetitionmodels/development-competitions/
Community League
https://www.playrugbyleague.com/framework/pdfcompetitionmodels/community-league-competitions/
Weight Related
https://www.playrugbyleague.com/framework/pdfprograms/weight-related-competitions/